This version of the FSU catalog contains the programs available to students during the 2020-2021 academic year. It was derived from the online catalog that is used as a tool to help students learn more about the programs available at Ferris, as well as make it easier to determine program requirements, degree offerings, and course pre requisites.

Academic Affairs

Office of the Provost and Vice President of Academic Affairs
This Catalog is intended to provide students, prospective students and families with written information regarding the different colleges, programs, degrees, courses, and student services offered at Ferris State University.

Each college within the University maintains current information on program admissions, degree completion requirements, course prerequisites and related information. Therefore, although the University endeavors to provide current information in this Catalog at the time of publication, students, prospective students, and families are encouraged to obtain current written information on program admissions, degree completion requirements, and course prerequisites, from the individual colleges.

The University reserves the right to change the contents of this Catalog at any time without notice. Because this Catalog is for informational purposes only, it does not establish any contractual relationship with the University.

Contact: Dr. Leonard Johnson at LeonardJohnson@ferris.edu

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Students with disabilities requiring assistance or accommodation may contact Educational Counseling & Disabilities Services at (231) 591-3057 in Big Rapids, or the Director of Counseling, Disability & Tutoring Services for Kendall College of Art and Design at (616) 451-2787 ext. 1136 in Grand Rapids. Employees and other members of the University community with disabilities requiring assistance or accommodation may contact the Human Resources Department, 420 Oak St., Big Rapids, MI 49307 or call (231) 591-2150. Inquiries and complaints of disability discrimination may be addressed to the 504 Coordinator/Educational Counselor, 820 Campus Dr., Arts and Sciences Commons 1017, Big Rapids, MI 49307 or by telephone at (231) 591-3057. Other inquiries or complaints of discrimination may be addressed to the Director of Equal Opportunity, 120 East Cedar St., Big Rapids, MI 49307 or by telephone at (231) 591-2152; or Title IX Coordinator, 805 Campus Dr., Big Rapids, MI 49307, or by telephone at (231) 591-2088.

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Accountancy

Program Requirements

Accountancy, BS Program Checksheet

Includes:

- Major Courses and General Education Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Accountancy?

An accounting education can lead to a highly respected and rewarding career. Accountants routinely earn incomes that are in the top 5 percent of the community in which they live. If you elect to major in Accountancy, you may prepare yourself for a variety of careers in industry, government, not-for-profit organizations, and public accounting. Many accountants are self-employed and operate their own business.

The Accountancy program at Ferris is a professional, career-oriented course of study. Classes are offered which allow students to design their degree to fit their particular interests. Our graduates qualify to take professional accounting examinations such as Certified Public Accountant (CPA), Certified Internal Auditor (CIA), Certified Management Accountant (CMA), and Certified Fraud Examiner (CFE). Our faculty bring relevant academic and real-world experience to the classroom along with a spectrum of licensures in these areas. Whatever the course of instruction, employers laud the extensive level of preparation our graduates bring to the workplace.

For those considering the CPA, unlike other universities, our bachelor's degree covers all of the content required to sit for the examination. Of increasing interest are our dual degrees (e.g. - Accountancy/CIS and Accountancy/Finance); demanding in nature, but producing highly sought-after graduates. We also offer several minors and concentrations tailored to individual areas of interest which can be used to fulfill the 150 hour educational requirements. For more information on career opportunities in this field, visit bls.gov and enter "occupational outlook" in the search engine.

Career Opportunities

According to the Federal Bureau of Labor Statistics, accounting is one of the fastest growing professions. The job market for Accountancy graduates remains very strong, even during temporary economic downturns. Options include:

- Public accounting-auditing, taxation, and consulting
• Private/industrial accounting-financial and cost accounting
• Governmental/nonprofit accounting-fund accounting
• Forensic accounting-investigative accounting

Accountants are in high demand by government agencies such as the IRS, FBI, and CIA. Accounting also provides an excellent undergraduate background for a law degree.

Our graduates are prepared for advanced study in Accountancy, leading to career opportunities in accounting education. Accounting provides an excellent foundation for non-accounting business careers including banking, consulting, and small business ownership.

More Information

Accountancy, Finance, & Info Systems
119 South Street, BUS 212
Big Rapids, MI 49307-2284
231-591-2434
AFIS@ferris.edu

The College of Business is accredited by the Accreditation Council for Business Schools and Programs (ACBSP). Next accreditation review is February 2028.

http://www.acbsp.org
Accountancy

Program Requirements

Accountancy, Minor Program Checksheet

Includes:

- Minor Courses and Elective Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose an Accountancy Minor?

The Accountancy Minor complements major fields of study in other programs and enhances a students' marketability in the business world by providing a more in-depth education regarding the financial information of a company. It also allows students to choose a concentration in a particular area of accounting such as forensic accounting or taxation.

The Accountancy Minor consists of six courses, or 18 credit hours. Four of the six courses are required and provide students with the accounting basics essential to all areas of accounting. The two electives can then be tailored to the interests of the student.

More Information

Accountancy, Finance, & Info Systems
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AFIS@ferris.edu
Accountancy

Program Requirements

Accountancy, AAS Program Checksheet

Includes:

- Major Courses and General Education Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Accountancy?

An accounting education can lead to a highly respected and rewarding career. If you elect to major in Accountancy, you may prepare yourself for a variety of accounting careers in industry, government, not-for-profit organizations, and professional services.

Career Opportunities for Graduates in Accountancy

More and more employers are demanding a degreed individual to fill staff accounting and office positions. This program provides a solid basis in accounting as well as the computer accounting skills that are critical to employers. An Associate degree in Accountancy can be just the thing to open doors for entry-level positions that provide excellent earnings potential.

For More Information

Accountancy, Finance, & Info Systems
119 South Street, BUS 212
Big Rapids, MI 49307-2284
231-591-2434
AFIS@ferris.edu

The College of Business is accredited by the Accreditation Council for Business Schools and Programs (ACBSP). Next accreditation review is February 2028.
http://www.acbsp.org
Accountancy/Computer Information Systems

Program Requirements

Accountancy/Computer Information Systems, BS Program Checksheet

Includes:

- Major Courses and General Education Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Accountancy/Computer Information Systems?

An accounting education can lead to a highly respected and rewarding career. Accountants routinely earn incomes that are in the top 5 percent of the community in which they live. If you elect to major in Accountancy, you may prepare yourself for a variety of careers in industry, government, not-for-profit organizations, and public accounting. Many accountants are self-employed and operate their own business.

The Accountancy program at Ferris is a professional, career-oriented course of study. Classes are offered which allow students to design their degree to fit their particular interests. Our graduates qualify to take professional accounting examinations such as Certified Public Accountant (CPA), Certified Internal Auditor (CIA), Certified Management Accountant (CMA), and Certified Fraud Examiner (CFE). Our faculty bring relevant academic and real-world experience to the classroom along with a spectrum of licensures in these areas. Whatever the course of instruction, employers laud the extensive level of preparation our graduates bring to the workplace.

Of increasing interest is our Accountancy/CIS degree: demanding in nature, but producing highly sought-after graduates. For those considering the CPA, unlike other universities, our bachelor's degree covers all of the content required to sit for the examination. In addition, we offer several minors and concentrations tailored to individual areas of interest which can also be used to fulfill the 150 hour educational requirements. For more information on career opportunities in this field, visit bls.gov and enter "occupational outlook" in the search engine.

Career Opportunities

The Ferris Accountancy/CIS curriculum is designed to provide students with valuable tools in Information Systems and Accountancy necessary to solve problems faced by businesses today. Students with expertise in both Accountancy and Computer Information Systems have high marketability, and are in high demand. The abilities to resolve the many and varied accountancy
and information needs of business can lead to positions such as Controller, Cost Analyst, Director of Information Systems, Computer Programmer, System Analyst, and many other related categories.

**More Information**

Accountancy, Finance & Info Systems  
119 South Street, BUS 212  
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AFIS@ferris.edu

The College of Business is accredited by the Accreditation Council for Business Schools and Programs (ACBSP). Next accreditation review is February 2028.  
http://www.acbsp.org
Accountancy/Finance

Program Requirements

Accountancy/Finance, BS Program Checksheet

Includes:

- Major Courses and General Education Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Accountancy/Finance? - Program Spotlight

An accounting education can lead to a highly respected and rewarding career. Accountants routinely earn incomes that are in the top 5 percent of the community in which they live. If you elect to major in Accountancy/Finance, you may prepare yourself for a variety of careers in industry, government, not-for-profit organizations, and public accounting. Many accountants are self-employed and operate their own business.

The Accountancy program at Ferris is a professional, career-oriented course of study. Classes are offered which allow students to design their degree to fit their particular interests. Our graduates qualify to take professional accounting examinations such as Certified Public Accountant (CPA), Certified Internal Auditor (CIA), Certified Management Accountant (CMA), and Certified Fraud Examiner (CFE). Our faculty bring relevant academic and real-world experience to the classroom along with a spectrum of licensures in these areas. Whatever the course of instruction, employers laud the extensive level of preparation our graduates bring to the workplace.

Of increasing interest is our Accountancy/Finance degree: demanding in nature, but producing highly sought-after graduates as well as being the only degree of its kind in the state. For those considering the CPA, unlike other universities, our bachelor's degree covers all of the content required to sit for the examination. We also offer several minors and concentrations tailored to individual areas of interest which can be used to fulfill the 150 hour educational requirements. For more information on career opportunities in this field, visit bls.gov and enter "occupational outlook" in the search engine.

Career Opportunities

Graduates of this dual major possess an excellent foundation for future growth and career development. They are highly marketable and in high demand. Graduates qualify for careers such as accountants, financial analysts, credit analysts, stock brokers, real estate agents or brokers, bankers, and financial planners or counselors. They are prepared to assume responsible entry-level managerial positions in accountancy or finance.
More Information

Accountancy, Finance, & Info Systems
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The College of Business is accredited by the Accreditation Council for Business Schools and Programs (ACBSP). Next accreditation review is February 2028.
http://www.acbsp.org
Actuarial Science

Program Requirements

Actuarial Science, BS Program Checksheet

Includes:

- Major Courses and General Education Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Actuarial Science? - Program Spotlight

Actuaries use their analytical skills to assess and manage risk. They deal with the design, financing and operation of insurance plans. Typical problems could include setting the premium for automobile insurance, insuring an athlete against injury or determining the payout for a sweepstakes contest.

Actuaries are in demand in business and industry, and the average salary is quite high. Prospective actuaries take a series of tests, and this program will prepare you for the first test, which should lead to quick employment.

Career Opportunities?

Actuaries are in demand in business and industry. Their great work environment, job security, future outlook and salary make this field one of the most attractive careers every year. Employment and advancement in the field are strongly dependent upon passing a series of professional exams. This program prepares students for the first two exams with two 3-credit preparation courses. This level of support for exam preparation may be the highest in the state.

More Information

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EMAIL: MathDepartment@ferris.edu

Department of Mathematics
Ferris State University
820 Campus Drive/ASC 2021
Big Rapids, MI 49307
Phone: 231-591-2565
Advanced CTE Administration

Program Requirements

Advanced CTE Administration, Certificate Program Checksheet

Includes:

- Certificate Courses
- Graduation Requirements

Why Choose Advanced CTE Administration?

The goal of the 9 credit Advanced Graduate Certificate in CTE Administration is to develop performance for CTE professionals in the practice of managing CTE programs. The program will increase understanding of CTE administrative policies and procedures including legal and ethical practices and provide participants with leadership capabilities to implement effective CTE programs that increase student retention and prepare students for a globally competitive workforce.

Career Opportunities for Graduated in Advanced CTE Administration

This certificate will enhance the learners knowledge and may lead to increase in salary based on new skills and/or credit hours.

For More Information

Graduate Coordinator, School of Education.

231-591-5361. SOE@ferris.edu
Advanced Geographic Information Systems

Required Courses

Why Choose Geographic Information Systems Certificate?

A Geographic Information System uses computers and software to leverage the fundamental principle of spatial data and information management. It is a tool used for managing information according to where it is located. There is currently a shortage of qualified professionals to fill GIS related positions in diverse disciplines ranging from different levels of government to various private companies to large corporations. GIS is one of the most important components in approaching global problem solving. It helps us look for patterns in both the man-made and natural worlds. People in business, government, education, and natural resources are using GIS to analyze markets, manage parcels of land, conduct research, and protect natural resources.

What is GIS?

Geographic Information Systems (GIS) is a computerized method for displaying spatial data. This means that information about the world is stored in a database and can be viewed on a map. The information can be just about anything. Take your house as an example. There are a lot of different kinds of information you can collect about your house - price, size, number of bedrooms, the year it was built. All of this information can be stored in a table created in a program like MS Excel. This database is the beginning of an Information System. Your house also has an address. The address is a type of geographic information. You put the two kinds of data together - information + geographic and you have GIS. You can see where the house is located and you can see information about the house.

Why should I take a GIS class?

GIS is a multidisciplinary discipline that relates to applications in various other fields. GIS can help deal with complex issues by modeling the earth and developing generalizations about how it functions. It can also be used in a variety of ways for any endeavor linking information to features on the ground.

Career Opportunities

What is the employment outlook for the GIS industry?

The growth of GIS applications in desktop computing is expanding exponentially, creating new and exciting developments. GIS technology represents a billion dollar industry worldwide, growing 25% per year and serving 50,000 to 100,000 users in more than 100 countries. At this time, job opportunities outnumber qualified graduates. There will continue to be a need for GIS professionals to deal with newer and tougher air and water regulations, as well as civil engineers to rebuild the nation's infrastructure. Look at this site to see the type of jobs offered and
qualifications desired by employers.

www.gjc.org

**Admission Requirements**

GPA of a 2.0 or higher. Completion fo ENGL 150 with a minimum grade of "C" or higher, or permission of program.

**Graduation Requirements**

A minimum of 50% of the total credits required must be earned at Ferris State University.

A minimum grade of C- is required for each course in certificate.

Cumulative GPA must be a 2.0 or higher.

**More Information**

Surveying Engineering Program  
915 Campus Drive, SWN 312  
Big Rapids, MI 49307-2291  
Phone: 231-591-2633  
email: surveying@ferris.edu

www.ferris.edu/surveying/

College of Engineering Technology  
Ferris State University  
1009 Campus Drive  
Big Rapids, MI 49307-2280  
Phone: 231-591-2890
Advanced Studies in Accounting

Program Requirements

Advanced Studies in Accounting, Graduate Certificate Checksheet

Includes:

- Certificate Courses
- Admission Requirements
- Graduation Requirements

Why Choose Advanced Studies in Accounting?

Responding to industry trends, Ferris State University's College of Business Graduate Programs has created graduate-level advanced studies certificates. These four course sequences can be used to obtain stand-alone certificates or as emphasis areas leading to master's degrees in either Information Security and Intelligence or a Master of Business Administration.

The Advanced Studies Certificate in Accounting will supplement Ferris State University's current Bachelor Degree in Accounting as well as provide depth of specific accounting related topics for individuals who do not have an undergraduate accounting degree. This certificate will enable students to advance their knowledge and skills necessary for success in any business-related profession. The certificate provides students a comprehensive understanding of business in a global environment, research methodologies for various topics encountered in business, and reinforces the requirement to maintain ethical standards in all business relationships. Coupled with the Ferris MBA, graduates will be prepared for leadership positions in many industries.

The Bureau of Labor Statistics states that employment in business and financial occupations will rise by 10% by 2026 – faster than the average. Analysts determined that expected globalization and complicated regulations will lead to a greater need for accounting professionals with knowledge of global issues.

Graduate Management Admission Council (GMAC), research has concluded that finance and accounting concentrations have ranked in the top three sought concentrations for MBA students.

More Information

College of Business Graduate Programs
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Ferris State University
Advanced Studies in Business Intelligence

Program Requirements

Advanced Studies in Business Intelligence, Graduate Certificate Checksheet

Includes:

- Certificate Programs
- Admission Requirements
- Graduation Requirements

Why Choose Advanced Studies in Business Intelligence?

Responding to industry trends, Ferris State University's College of Business Graduate Programs has created graduate-level advanced studies certificates. These four or five course sequences can be used to obtain stand-alone certificates or as emphasis areas leading to master's degrees in either Information Security & Intelligence or a Master of Business Administration.

The Advanced Studies Certificate in Business Intelligence is designed to prepare individuals with both theoretical and practical experience in designing, developing and utilizing database and informatics systems. Students will utilize tools and techniques including predictive, geographic, and link/visual analysis in a big data/data analytics environment.

More Information

College of Business Graduate Programs
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Big Rapids, MI 49307-2434
Phone: 231-591-2168
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Web: www.ferris.edu/MISI
Advanced Studies in Design and Innovation Management

Program Requirements

Advanced Studies in Design and Innovation Management, Graduate Certificate Checksheet

Includes:

- Certificate Courses
- Graduation Requirements

Why Choose Advanced Studies in Design and Innovation Management?

Responding to industry trends, Ferris State University's College of Business Graduate Programs has created graduate-level advanced studies certificates. These four course sequences can be used to obtain stand-alone certificates or as emphasis areas leading to a Master of Business Administration.

*The Advanced Studies Certificate in Design and Innovation Management* equips professionals to leverage design thinking as a change agent that enhances the organizational effectiveness of any business, in any industry. Through a blend of individual and collaborative learning experiences, students develop a comprehensive understanding of the ways in which the method, measure, and language of design drive the practice of business and the process of innovation, and emerge as leaders capable of building a thriving culture of innovation within organizations. (This certificate is offered at Kendall College of Art and Design in Grand Rapids, Michigan)

More Information

College of Business Graduate Programs
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E-mail: ShannonYost@ferris.edu
Web: https://ferris.edu/mba
Or: http://www.kcad.edu/programs/graduate/design-and-innovation-management-certificate/
Advanced Studies in Global Logistics

Program Requirements

Advanced Studies in Global Logistics, Certificate Checksheet

Includes:

- Certificate Courses
- Admission Requirements
- Graduation Requirements

Why Choose Advanced Studies in Global Logistics?

The Professional Development Certificate in Global Logistics provides upper level coursework in logistics, foreign culture, purchasing, and physical distribution. It builds on a person's current knowledge and experience to become more effective in making supply chain management decisions on a global or national level.

More Information

Management Department
119 South Street/BUS 212
Big Rapids, MI 49307-2284
Phone: 231-591-2427
Email: MGMT@ferris.edu
Advanced Studies in Incident Response

Program Requirements

Advanced Studies in Incident Response, Graduate Certificate Checksheet

Includes:

- Certificate Courses
- Admission Requirements
- Graduation Requirements

Why Choose Advanced Studies in Incident Response?

Responding to industry trends, Ferris State University's College of Business Graduate Programs has created graduate-level advanced studies certificates. These four course sequences can be used to obtain stand-alone certificates or as emphasis areas leading to master's degrees in either Information Security and Intelligence or a Master of Business Administration.

The Advanced Studies Certificate in Incident Response is designed to prepare individuals to secure computers, networks, and systems against intrusions and unauthorized access, test and assess security measures, and forensically analyze the environment to determine events and situations that may have occurred in a digital environment. Students will have the opportunity to sit for a variety of certification examinations in Penetration Testing and Digital Forensics.

More Information

College of Business Graduate Programs
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Web: www.ferris.edu/business/programs/MISI
Advanced Studies in Investment

Program Requirements

Advanced Studies in Investment, Certificate Checksheet

Includes:

- Certificate Courses
- Admission Requirements
- Graduation Requirements

Why Choose Advanced Studies in Investment?

The Investment Analysis Certificate provides a student in any major with the tools and techniques to evaluate investments.

More Information

Accountancy, Finance & Info Systems
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AFIS@ferris.edu

The College of Business is accredited by the Accreditation Council for Business Schools and Programs (ACBSP). Next Accreditation Review is February 2028.
http://www.acbsp.org
Advanced Studies in Lean Systems and Leadership

Program Requirements

Advanced Studies in Lean Systems and Leadership, Graduate Certificate

Includes:

- Certificate Courses
- Graduation Requirements

Why Choose Advanced Studies in Lean Systems and Leadership?

Responding to industry trends, Ferris State University's College of Business Graduate Programs has created graduate-level advanced studies certificates. These four course sequences can be used to obtain stand-alone certificates or as emphasis areas leading to master’s degrees in either Information Security and Intelligence or a Master of Business Administration.

The Advanced Studies Certificate in Lean Systems and Leadership delivers a comprehensive education for applying lean concepts to various industries: e.g. banks, nonprofits, offices, hospitals, restaurants, manufacturing. The classes prepare individuals to lead, manage, and evaluate a continuous improvement system in a complex work environment. This cutting edge approach will provide graduates with highly sought-after capabilities to improve operational & financial performance and monitor growth within any type of organization.

More Information

College of Business Graduate Programs
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Big Rapids, MI 49307
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Web: https://ferris.edu/mba
Advanced Studies in Performance Metrics

Program Requirements

Advanced Studies in Performance Metrics, Graduate Certificate Checksheet

Includes:

- Certificate Courses
- Graduation Requirements

Why Choose Advanced Studies in Performance Metrics?

Responding to industry trends, Ferris State University's College of Business Graduate Programs has created graduate-level advanced studies certificates. These four course sequences can be used to obtain stand-alone certificates or as emphasis areas leading to master's degrees in either Information Security and Intelligence or a Master of Business Administration.

The Advanced Studies Certificate in Performance Metrics Certificate is designed to educate students in how to appropriately measure various strategies, projects and activities with respect to effectiveness, quality and efficiency. Students will obtain the certificate upon fulfillment of the requirements listed below.

More Information

College of Business Graduate Programs
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Phone: 231-591-2168
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Web: https://ferris.edu/mba
Advanced Studies in Project Management

Program Requirements

Advanced Studies in Project Management, Graduate Certificate Checksheet

Includes:

- Certificate Courses
- Graduation Requirements

Why Choose Advanced Studies in Project Management?

Responding to industry trends, Ferris State University's College of Business Graduate Programs has created graduate-level advanced studies certificates. These four course sequences can be used to obtain stand-alone certificates or as emphasis areas leading to master's degrees in either Information Security and Intelligence or a Master of Business Administration.

The Advanced Studies Certificate in Project Management prepares students for careers in program, project, and portfolio management. Several aspects of the Project Management Institute's Project Management Body of Knowledge are integrated into the courses including integration, scope, time, cost, ROI, quality, communication, human resources, risk, and procurement. Additionally, agile frameworks such as SCRUM are also explored. Students research leadership styles and learn how it differs from management. Projects are assessed for risk and risk management strategies constructed using ethical approaches.

More Information

College of Business Graduate Programs
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Phone: 231-591-2168
E-mail: ShannonYost@ferris.edu
Web: www.ferris.edu/MISI
Advanced Studies in Supply Chain Management and Lean Logistics

Program Requirements

Advanced Studies in Supply Chain Management and Lean Logistics, Graduate Certificate Checksheets

Includes:

- Certificate Courses
- Graduation Requirements

Why Choose Advanced Studies in Supply Chain Management and Lean Logistics?

Responding to industry trends, Ferris State University's College of Business Graduate Programs has created graduate-level advanced studies certificates. These four course sequences can be used to obtain stand-alone certificates or as emphasis areas leading to master's degrees in either Information Security and Intelligence or a Master of Business Administration.

The Advanced Studies Certificate in Supply Chain Management and Lean Logistics is designed to prepare students to analyze and provide solutions for situations involving the integrated supply chain (manufacturing, purchasing, logistics and transportation, business development and operations, et al). The courses provide students with an ever increasing base of knowledge on how to create value added strategies. This knowledge is exercised through the optimal application of logistics and supply chain coordination. Future managers and executives will use this knowledge the rest of their careers.

More Information

College of Business Graduate Programs
119 South Street, BUS 212B
Big Rapids, MI 49307-2434
Phone: 231-591-2168
E-mail: ShannonYost@ferris.edu
Web: https://ferris.edu/mba
Advanced Studies in Total Quality Management in Education

Program Requirements

Advanced Studies in Total Quality Management in Education, Graduate Certificate Program

Checksheet

Includes:

- Certificate Courses
- Graduation Requirements

Why Choose the Total Quality Management in Education Certificate Program?

The Advanced Certificate in Total Quality Management for Education is centered around the principles of total quality management (TQM) and the Malcolm Baldridge National Quality Award Criteria for Educational Programs. This comprehensive certificate is designed to provide an in-depth knowledge of TQM principles, the Baldridge Award Criteria, and an understanding of how to conduct an assessment using the Baldridge criteria. The focus of the four certificate courses is an understanding of the value that Baldridge brings to your organization and how to use the Baldridge Award Criteria for Education as a change management tool. With a focus on strategic goals and indicators, this certificate offers school leaders an approach to help guide district, school and classroom improvement planning.

More Information

College of Education & Human Services
School of Education
Bishop Hall Room 421
Ferris State University
1349 Cramer Circle
Big Rapids, MI 49307-2737
Telephone: (231) 591-5361
Advertising/Integrated Marketing Communications

Program Requirements

Advertising/Integrated Marketing Communications, Certificate Program Checksheet

Includes:

- Certificate Courses
- Admission Requirements
- Graduation Requirements

Why Choose an Advertising/Integrated Marketing Communications Certificate?

Identified by the U.S. Dept. of Commerce as one of the fastest-growing career fields, the Advertising/Integrated Marketing Communications Certificate will build these skills for you:

- Understanding media and markets
- Learning how corporations communicate effectively
- Learning how to effectively manage integrated marketing communications
- You will be exposed to the latest thinking regarding creating and writing ads and skillfully placing them for maximum success in influencing customers. You will also learn how to manage the relationships between advertising agencies and their clients.

Career Opportunities

Students with an advertising and integrated marketing background are in demand at companies and agencies that market using advertising, direct and digital marketing, sales promotion, public relations, content marketing, and social media. Jobs include work in account services, digital and offline media buying, research, creative, content marketing and social media.

More Information

Marketing Department
119 South Street, BUS 212
Big Rapids MI 49307-2284
Phone: 231-591-2426
E-Mail: MKTG@ferris.edu
Advertising/Integrated Marketing Communications

Program Requirements

Advertising/Integrated Marketing Communications, Minor Program Checksheet

Includes:

- Minor Courses and Elective Courses
- Admission Requirements
- Graduation Requirements

Why Choose an Advertising/Integrated Marketing Communications Minor

If you choose to enroll in this minor, you will be one of a very few select students to receive a minor in Advertising/Integrated Marketing Communications from a College of Business. The emphasis of your minor will not be in the creation of copy or illustration, but in developing integrated marketing communications campaigns that effectively convey an organization's message through the strategic combination of advertising, direct and digital marketing, sales promotion and public relations techniques. As a graduate with this minor, you will be highly sought by companies and/or ad agencies looking for people with a solid grounding in business that are capable of managing client relationships and building marketing success. You will learn such concepts as:

- Understanding markets and media
- Learning how corporations communicate effectively
- Serving as a bridge-builder between your organization and the customers who desire to use your organization's products and services.

You will find yourself in a very competitive, challenging and rewarding career. Your career ladder will often lead to high-paying senior management, executive and/or leadership positions.

The minor is based on the idea that there is no substitute for experience. As a student, you become directly involved in the integrated marketing communications and advertising process. You write copy, create layouts, develop media plans and produce integrated marketing communications strategies. Also, you will choose two specialized classes that will help to focus your career preparation.

Career Opportunities

Integrated marketing communications is a field that offers an astonishing number and variety of specialized career opportunities. It encompasses all the facets of integrated marketing communications, including general advertising, sales promotion, direct and digital marketing, publicity, trade shows and more. You will find yourself in a very competitive, challenging and
rewarding career in this field in positions such as account executives, copywriters, creative
directors, managers, media planners and buyers, salespeople and researchers. Your career
ladder will often lead to high-paying senior management, executive and/or leadership positions.

More Information

Marketing Department
119 South Street, BUS 212
Big Rapids, MI 49307-2284
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E-mail: MKTG@ferris.edu
African American Studies

Program Requirements

African American Studies, Minor Program Checksheet

Includes:

- Minor Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose the African American Studies Minor? - Program Spotlight

African Americans have made important creative, political and intellectual contributions to the United States and to the cultures of the world. In the study of the history, cultural expression, and political struggles of African Americans, students are given the opportunity to gain a deeper appreciation and understanding of this diverse, dynamic culture and people. In addition, the minor allows students to develop writing and critical thinking skills that are essential to job placement and advancement.

More Information

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Department of Humanities
Ferris State University
1009 Campus Drive/JOH 119
Big Rapids, MI 49307-2280
Phone: 231-591-3675
Allied Health Sciences

Program Requirements

Allied Health Science, AAS Program Checksheet

Includes:

- Major Courses and General Education Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Allied Health Sciences?

The Associate of Applied Science in Allied Health Sciences degree provides an opportunity for three separate groups of students to earn a degree. First are those students who are required to enroll in an associate degree program while earning qualification or meeting requirements for entry into a bachelor degree program. Second the program benefits students who choose to only complete an associate degree program. And the third group of individuals who benefit from this degree are those who have a credential or license in a health profession but who require a degree for employment enhancement.

The program allows students to develop competencies that can be matched with their intended career and/or educational goals. Students can also earn certificate options within the degree that will provide additional specificity.

Career Opportunities

Although it is not the intent of this degree to prepare students for a specific career, it does prepare graduates for entry level or healthcare support positions within healthcare agencies that require a background in medical terminology and an understanding of the health care field. This degree may open doors to other professional opportunities or inspire an interest in advanced study.

According to the Bureau of Labor Statistics, healthcare support positions for associate degree graduates are projected to grow by about 23 percent between 2014 and 2024 (http://www.bls.gov/careeroutlook/2015/article/projections-occupation.htm).

More Information

College of Health Professions
Ferris State University
200 Ferris Drive
Big Rapids, MI 49307-2740
Allied Health Sciences

Program Requirements

Allied Health Sciences, BS Program Checksheet

Includes:

- Major Courses and General Education Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Allied Health Sciences?

The Bachelor of Science in Allied Health is a completion degree for graduates of associate degrees in the various healthcare disciplines who are interested in pursuing a bachelor's degree to advance in their chosen profession. FSU students may enter the degree while pursuing their healthcare-related associate degree.

The curriculum is designed to allow students to transfer 50 credits of professional coursework into the degree. The curriculum includes courses earned during the associate degree, completion of all required general education courses specified by the university, the College of Health Professions upper-level core requirements, and 19 credits of electives. The curriculum has been designed to allow students to develop baccalaureate-level competencies that can be well-matched with their intended career and professional goals. The program is offered on-line to accommodate the needs of adult learners.

Career Opportunities

The graduates of this program will be able to pursue positions that may open doors to other professional opportunities that require a bachelor's degree as the entry-level. As the bachelor's degree becomes the standard entry-to-practice for many healthcare careers, graduates of this program will be prepared to meet this requirement. Likewise, graduates will be prepared to enter graduate programs to pursue alternative career paths.

Graduates who possess both a professional certification in one of the healthcare professions and a bachelor's degree will face higher job prospects than those with an associate degree only. Employment of healthcare occupations is projected to grow 14 percent from 2018 to 2028, much faster than the average for all occupations, adding about 2.3 million new jobs. (http://www.bls.gov/ooh/healthcare/home.htm).

For additional information, please contact.

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More Information
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Phone: 231-591-2261
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Applied Mathematics

Program Requirements

Applied Mathematics, BS Program Checksheet

Includes:

- Major Courses and General Education Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Applied Mathematics? - Program Spotlight

The Applied Mathematics concentration is designed for students who want a broad knowledge of mathematics and its many types of applications. Courses in statistics, operations research and computer science can be combined for a well-rounded applied mathematics foundation.

Career Opportunities

Students who graduate with an Applied Mathematics degree find careers in almost every industry: healthcare, technology, communications, government, banking, etc. Applied Mathematicians are in high demand because their general analytical skills are valuable and can be used in many different fields.

More Information

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820 Campus Drive/ASC 2021
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Phone: 231-591-2565
Applied Mathematics/Computer Science

Program Requirements

Applied Mathematics/Computer Science, BS Program Requirements

Includes:

- Major Courses and General Education Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Applied Mathematics/Computer Science?

The need for people with a computer science background is very high and continues to grow. Virtually every organization relies heavily on computers. Computer scientists write programs, develop algorithms and design software.

Career Opportunities

The field of computational mathematics combines knowledge of computer science with that of mathematics and is in great demand throughout the world.

More Information

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Department of Mathematics
Ferris State University
820 Campus Drive/ASC 2021
Big Rapids, MI 49307-2225
Phone: 231-591-2565
Architectural Technology

Program Requirements

Architectural Technology, AAS Program Checksheet

Includes:

- Major Courses and General Education Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Architectural Technology?

The two-year Architectural Technology curriculum provides a comprehensive framework of technical abilities and conceptual knowledge that form the foundation of the architecture profession. Specifically, the curriculum is designed with an emphasis on visual communication, building materials, building systems, and digital technology, combined with architectural history, sustainability, and design principles.

Under the guidance of the faculty of professional, licensed architects, the program’s mission is to prepare students to continue education for a baccalaureate degree in professions related to the built environment.

Taught by practitioners, the Architectural Technology curriculum is unique in its emphasis on the practice of the profession. Studio classes provide students with experience in the areas of residential and commercial building materials, CAD and BIM (Building Information Modeling), building codes, presentation techniques, architectural history, and architectural design. The curriculum provides skills, knowledge, and the preparation necessary for success in further educational opportunities after graduation. The majority of AAS graduates continue their education at Ferris and ladder into one of the following baccalaureate programs: BS in Architecture and Sustainability, BS in Facility Management, or a BS in Construction Management.

Many associate degree graduates take advantage of a double degree path that includes two of the following baccalaureate degrees: a BS in Architecture and Sustainability, a BS in Facility Management, or a BS in Construction Management. These paths consist of a structured, organized curriculum that allows students to complete the associate degree and two baccalaureate degrees in five years. (Further preparation may be required for entry into the Construction Management program.)

Career Opportunities

The ongoing expansion and specialization in technological applications of building systems and
environmental issues, as well as the growth in architectural services, has greatly increased the need for skilled architectural technicians to function in a support role with architects and other professionals related to the built environment.

A beginning technician works closely with a team to produce design development drawings, construction documents, and specifications. With experience, the architectural technician becomes involved in other phases of work such as project field observation, preparation of written specifications, building code analysis, CAD, BIM (Building Information Modeling), and presentation of designs.

More Information

School of Built Environment
Architecture and Facility Management Programs
915 Campus Drive, SWN 101
Big Rapids, MI 49307
Phone: 231-591-3100
classroom[at]ferris.edu
www.buildyourfutu.re/ferris

Ferris State University
College of Engineering Technology
1009 Campus Drive, JOH 200
Big Rapids, MI 49307
Phone: 231-591-2890
classroom[at]ferris.edu
www.ferris.edu/technology
Architecture and Sustainability

Program Requirements

Architecture and Sustainability, BS Program Checksheet

Includes:

- Major Courses and General Education Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Architecture and Sustainability?

The two-year Architecture and Sustainability curriculum grows from the AAS degree in Architectural Technology providing students with the foundation of technical knowledge critical in architectural education. The Bachelor of Science program adds to this foundation with studio courses in architectural design, environmental systems, and additional technical courses that shape a comprehensive undergraduate program in architecture.

The special emphasis of the program is the integration of sustainable building principles at all levels of the curriculum. Architectural materials and systems selection, site planning, community development, and historic preservation are increasingly understood to play a vital role in the reduction of waste in terms of energy and natural resources. The program is designed to allow students to explore these important aspects of the profession of architecture. This critical evolution in architectural education prepares students to take their place in the next generation of professionals.

Taught by practitioners, the curriculum provides skill, knowledge, and aspirations necessary to allow students to become successful professionals and prepare students to:

- Enter the employment market as intern architects
- Continue education for a master's degree in architecture and eventual licensure as a registered architect

Courses and studios in the program are structured to mirror the professional office environment requiring students to be motivated and self-directed. Studios balance the practical and the theoretical aspects of architecture, design, and planning to reflect the complex set of parameters that shape the architecture profession.

A special focus of the program is the Small Town Studio (ARCH 441.) This unique program component allows students to engage directly with their community and explore how architecture and planning can expand on the cultural and economic potential of small towns in Michigan and...
regionally.

**Career Opportunities**

A recent study by the National Council of Architectural Registration Boards (NCARB) suggests that the next generation of architects will need to be capable of integrating the practices of sustainability into established work methods. Specialized training in sustainability as it relates to building materials, design, and planning, as well as the development of an organic relationship between buildings and their environment, will be a valuable credential in the decades ahead.

There are no geographic limitations on employment opportunities, however, educational requirements for architectural licensure vary by state, so students should research these requirements, as well as the requirements for graduate education should they choose to pursue a Master's degree.

**More Information**

School of Built Environment  
**Architecture and Sustainability Program**  
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Ferris State University  
**College of Engineering Technology**  
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Big Rapids, MI 49307  
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email: technology@ferris.edu  
www.ferris.edu/technology
Art History

Program Requirements

Art History, Minor Program Checksheet

Includes:

- Minor Courses and Additional Requirements
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose the Art History Minor? - Program Spotlight

Art is at the core of the human experience, helping us to communicate our ideas and values visually. Art History minors study art in order to understand human culture and society. We study various media such as paintings, sculptures, prints, and photographs, as well as large-scale works of architecture and urban planning. Because we experience so much of our world visually, it is important to learn to analyze what we see. A minor in Art History will help prepare students to observe carefully, think critically, and respond creatively in whatever career paths they choose to pursue.

A minor in Art History provides interdisciplinary study that will complement a wide range of majors. Introductory courses offer a broad survey of art from Prehistory to the twenty-first century. Specialized courses provide in depth study of ideas and historical periods. These classes include Greek & Roman Art, American Art, African American Art, Modern Art, and Women and Art. Study Abroad courses are also taught by Ferris professors in Europe, with visits to world class museums and monuments.

More Information

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Humanities Department
Ferris State University
1009 Campus Drive, JOH 119
Big Rapids, MI 49307
PHONE: 231-591-3675
Automotive Engineering Technology

Program Requirements

Automotive Engineering Technology, BS Program Checksheet

Includes:

- Major Courses and General Education Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Automotive Engineering Technology?

The AET program is a four-year degree program that concentrates on engineering skills required by the automotive industry. Students receive hands-on laboratory experience in engineering processes, mechanical testing, metallurgy, emission, and dynamometer testing. In addition, an on-the-job engineering internship is an important part of the program.

AET is an instructional program that prepares individuals to apply basic engineering principles and technical skills in support of engineers and other professionals engaged in developing, manufacturing, and testing self-propelled ground vehicles and their systems. Includes instruction in vehicular systems technology, design and development testing, instrument calibration, test equipment operation and maintenance, and report preparation.

Career Opportunities

Every global automotive manufacturer doing business in America requires engineering development with the precise skills offered by this program, many graduates are faced with the difficult decision of choosing from several highly desirable and lucrative job offers.

More Information

School of Automotive and Heavy Equipment
Automotive Engineering Technology Programs
708 Campus Drive, AUT 101
Big Rapids, MI 49307
Phone: 231-591-2655
Email: auto@ferris.edu
https://www.ferris.edu/CET/auto-heet/

Ferris State University
College of Engineering Technology
1009 Campus Drive, JOH 200
The Bachelor of Science in Automotive Engineering Technology at Ferris State University is accredited by the Engineering Technology Accreditation Commission of the Accreditation Board for Engineering and Technology (ETAC-ABET). The next accreditation review is scheduled for 2022. http://www.abet.org/
Automotive Management

Program Requirements

Automotive Management, 2+2 BS Program Checksheet

Includes:

- Major Courses and General Education Courses
- Admission and Transfer Requirements
- Graduation Requirements

Program Requirements

Automotive Management, 0+4 BS Program Checksheet

Includes:

- Major Courses and General Education Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Automotive Management?

The Automotive Management (AMGT) program, formerly Automotive & Heavy Equipment Management (AHM), is a baccalaureate degree program that focuses on providing the transportation industry with state-of-the-art technical and business managers for service, parts, sales, leasing, warranty, and customer relations positions. Opportunities exist with car, truck, equipment, and component manufacturers; suppliers; dealers; fleets; insurance companies; the aftermarket; local and federal government agencies.

The AMGT program prepares graduates for careers in the service sector. Regardless of where a product is designed or manufactured, graduates are prepared to provide knowledgeable, skilled, world-class customer service. One in seven jobs in the United States is related to transportation, primarily in the service sector, and these jobs cannot be outsourced. The AMGT program emphasizes developing verbal and written communication as well as organizational and time management skills. On-the-job management internships further prepare the graduate to enter this lucrative field with experience.

The AMGT program has two baccalaureate options:

The 2+2 option is available for students with an Auto Service, Heavy Equipment, or Auto Body related associate degree who desire to obtain a Bachelor's degree. This option expands on the...
previously earned 2-year associate degree by adding the junior-senior year curriculum to earn a Bachelor's degree in Automotive Management. Available at the main campus in Big Rapids, MI, and fully online thru Ferris Online/Statewide.

The 0+4 option is available for high school graduates who know they want a technical and business management degree. This option has a technical focus in the first two years, which then transitions into the Auto Management junior-senior year curriculum. Only available at the main campus in Big Rapids, MI.

**Career Opportunities**

Upon completion of this degree, graduates enter the field as: Service Managers, Field Service Representatives, Field Service Engineers, Sales Representatives, Customer Relations Managers, Insurance Adjusters, Fleet Managers, Parts Managers, Regional Parts Managers, Account Managers, Finance Managers, Sales Managers, Aftermarket Managers, Warranty Administrators, Service Advisors, and Body Shop Managers.

Because every global manufacturer and supplier doing business in America requires managers with the precise skills offered by this program, many graduates face the difficult decision of choosing from several highly desirable and lucrative employment opportunities. Graduates are often sought by industry leaders including GM, Ford, Chrysler, Toyota, Honda, Nissan, Hyundai, Cummins Engine, Detroit Diesel, TAC Automotive, State Farm Insurance, as well as major dealership groups.

**More Information**

School of Automotive and Heavy Equipment

**Automotive Management Program**

220 Sports Drive, HEC 203
Big Rapids, MI 49307
Phone: 231-591-2810
Email: amgt@ferris.edu
https://www.ferris.edu/CET/auto-heet/

**Automotive Management Program Online/Statewide**

410 Oak Street, ALU 117
Big Rapids, MI 49307
Phone: 231-591-2340
Email: online@ferris.edu
https://HTMLS/online/programs/automotivemanagement_bst.htm

Ferris State University

**College of Engineering Technology**

1009 Campus Drive, JOH 200
Big Rapids, MI 49307-2280
Phone: 231-591-2890
Email: technology@ferris.edu
www.ferris.edu/technology
Automotive Management

Program Requirements

Automotive Management, Minor Program Checksheet

Includes:

- Minor Courses and Directed Electives
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose the Automotive Management Minor?

This minor is designed to provide students with a solid overview of the business and cultural side of the transportation industry. Students are prepared to transition into sales, marketing, distribution, and customer relations positions with vehicle and equipment manufacturers, suppliers, dealers, and aftermarket companies.

Ferris has been providing the automotive industry with entry-level managers since 1971, and is well known and respected for providing individuals with these skills.

More Information

School of Automotive and Heavy Equipment
Automotive Management Program
220 Sports Drive, HEC 203
Big Rapids, MI 49307
Phone: 231-591-2810
Email: amgt@ferris.edu
https://www.ferris.edu/CET/auto-heet/

Ferris State University
College of Engineering Technology
1009 Campus Drive, JOH 200
Big Rapids, MI 49307-2280
Phone: 231-591-2890
Email: technology@ferris.edu
www.ferris.edu/technology
Automotive Service Technology

Program Requirements
Automotive Service Technology, AAS Program Checksheet

Includes:

- Major Courses and General Education Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Automotive Service Technology?

This program features instruction in modern facilities with an emphasis on automotive diagnosis, inspection, adjustments, and service. In addition, students are taught to test, diagnose, service and replace electronic controls, fuel injection components and accessories, air conditioning units, power windows and seats, lighting circuits, and safety and warning devices.

Students complete more than 550 hours of repair and adjustment on vehicles under the supervision of automotive service faculty. Students who wish to continue their education may pursue a bachelor's degree in Automotive Management, Automotive Engineering Technology or nearly 20 other degree programs.

Career Opportunities

The importance of competent automobile repair in today's mobile society cannot be overstated. Because vehicles have skyrocketed in cost and are kept in service longer, there is a shortage of trained, knowledgeable technicians.

Skilled technicians are needed to perform preventive maintenance, repairs, and adjustments. Challenges in this field include servicing electrical systems, brakes, wheel alignments, fuel injection systems, transmissions, and driveline repairs, among many others.

Employment opportunities exist in every community and in all parts of the country. Advancement in the field is available, from service person to manager to shop owner. The opportunities are limitless.

More Information

School of Automotive and Heavy Equipment
Automotive Engineering Technology Programs
708 Campus Drive, AUT 101
Big Rapids, MI 49307
The Associate of Applied Science in Automotive Service at Ferris State University is accredited by the National Automotive Technicians Education Foundation (NATEF). The next accreditation review is scheduled for 2020. http://www.natef.org/
Basic CNC Programming and Machine Operation

Program Requirements

Basic CNC Programming and Machine Operation, Certificate Program Checksheet

Includes:

- Certificate Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose a Basic CNC Programming & Machine Operation Certificate?

This certificate gives you hands-on experience in working with CNC machines. You will learn how to program, setup, and operate CNC mills and lathes. The required course sequence provides a well-rounded experience in basic machining, 3D parametric solid modeling, and CNC programming and machine operation.

Career Opportunities

This certificate is a great compliment to any manufacturing-related technical or business program because it combines closely related technical skills that are in high demand throughout the industry.

More Information:

School of Design and Manufacturing

Manufacturing Engineering Technology Programs

915 Campus Drive, SWN 220
Big Rapids, MI 49307
Phone: 231-591-2511
Email: ManufacturingDegrees@ferris.edu
https://www.ferris.edu/CET/design-mfg/Manufacturing/homepage.htm

Ferris State University

College of Engineering Technology

1009 Campus Drive, JOH 200
Big Rapids, MI 49307-2280
Phone: 231-591-2890
Email: technology@ferris.edu
www.ferris.edu/technology
Biochemistry

Program Requirements

Biochemistry, BS Program Checksheet

Includes:

- Major Courses and General Education Courses
- Admission Requirements
- Graduation Requirements

Why Choose Biochemistry BS? - Program Spotlight

The Bachelor of Science (BS) degree in Biochemistry at Ferris provides a core of chemistry courses that includes organic, inorganic, physical chemistry, and biochemistry. These courses take the student through the atomic and molecular nature of matter and ultimately focus on the behaviors of matter in living systems. The chemistry is supported by solid coursework in mathematics, physics and biology. Biochemistry students should have a particular interest in and aptitude for science, especially as it pertains to living systems, and a desire to explore the connections with other fields of knowledge. Advanced students may participate in independent study and undergraduate research projects.

Career Opportunities

In these days of rapid advances in the biosciences—from genetically engineered agricultural products to artificial photosynthesis to DNA fingerprinting—there are few careers that have no connection to chemistry and biochemistry. A BS in Biochemistry can prepare a student for a number of professional schools including medical, dental, veterinarian, even law school. Biochemists are often employed as research assistants in industry, government, education and health service. It can also be a very useful degree for individuals who are considering careers in interdisciplinary fields, for example, marketing new technologies, technical writing/communication, forensic analysis and so on. A major in biochemistry provides an education in a dynamic field with applications to suit a wide variety of personal career goals.

More Information

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Department of Physical Sciences
Ferris State University
820 Campus Drive/ASC 3021
Biochemistry

Program Requirements

Biochemistry, BA Program Checksheet

Includes:

- Major Courses and General Education Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Biochemistry? - Program Spotlight

The Bachelor of Arts (BA) degree in Biochemistry at Ferris provides a core of chemistry courses that includes organic, inorganic, physical chemistry, and biochemistry. These courses take the student through the atomic and molecular nature of matter and ultimately focus on the behaviors of matter in living systems. The chemistry is supported by solid coursework in mathematics, physics and biology. It stresses breadth with fewer required chemistry courses than a Bachelor of Science degree but good scientists also need to be exposed to the arts, the social sciences, and humanities. Biochemistry students should have a particular interest in and aptitude for science, especially as it pertains to living systems, and a desire to explore the connections with other fields of knowledge. Advanced students may participate in independent study and undergraduate research projects.

Career Opportunities

In these days of rapid advances in the biosciences—from genetically engineered agricultural products to artificial photosynthesis to DNA fingerprinting—there are few careers that have no connection to chemistry and biochemistry. A BA in Biochemistry can prepare a student for a number of professional schools including medical, dental, veterinarian, even law school. Biochemists are often employed as research assistants in industry, government, education and health service. It can also be a very useful degree for individuals who are considering careers in interdisciplinary fields, for example, marketing new technologies, technical writing/communication, forensic analysis and so on. A major in biochemistry provides an education in a dynamic field with applications to suit a wide variety of personal career goals.

More Information

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Department of Physical Sciences
Biology

Program Requirements

Biology, BS Program Checksheet

Includes:

- Major Courses and General Education Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Biology?

The B.S. Biology programs provides a quality bachelor's degree in biology. Ferris is a recognized leader in vocational education, and students take 36 or more credit hours in biology courses plus eight or more semester credit hours in biology-related courses. The B.S. Biology program is individually designed, matching the abilities of each student with his/her academic interests. The B.S. Biology program at Ferris is flexible, allowing students of differing abilities and interests to choose a program of study that best fits them. The program also incorporates applied courses from the Ferris College of Health Professions and College of Pharmacy, creating a unique bachelor's degree in biology.

Career Opportunities

Graduates of the B.S. Biology program are in high demand in the science and technology industry and may enter highly competitive professional programs. Students wishing to complete a health professions science degree program can work toward a bachelors degree in applied biology to increase their knowledge of basic science and increase their chances for employment advancement. Students may also choose to use this degree as a prerequisite for advanced study, such as medicine, dentistry or Optometry. Students may also choose to use their bachelor's degree to pursue advanced degrees in the biological sciences. Because admission to advanced programs is competitive, academic excellence as an undergraduate is important.

More Information

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Department of Biological Sciences
Ferris State University
820 Campus Drive/ASC 2004
Big Rapids, MI 49307
Biology

Program Requirements

Biology, Minor Program Checksheet

Includes:

- Minor Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose the Biology Minor?

This minor is designed for students who desire to gain a general understanding of all major areas of the biological sciences. This minor is suitable for all students in all majors who want to advance their knowledge of living systems and their interactions with the environment.

More Information

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Big Rapids, MI 49307
Phone: 231-591-2550
Biology Education

Program Requirements

Biology Education, BS Program Checksheet

Includes:

- Major Courses and General Education Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Biology Education?

Biology teachers combine strong quantitative skills with keen observational skills to explore the living world at scales ranging from molecular and cellular to community and global. The technological revolution has added an infectious new excitement to the lessons of biology. Biology education today provides access to new knowledge, helping people understand how things happen in the natural and physical environment.

The employment outlook for biology education students is excellent. Graduates of Biology Education are highly sought after for High School biology, Middle School science, as well as education programs at zoos, aquaria, nature centers, botanical gardens, and environmental camps. This program partners well with Chemistry Education and Mathematics Education for teachers in the most demand across the nation. Ferris has a strong program centered around the Michigan Test for Teacher Certification in Biology, emphasizing the ecology, genetics and evolution, organismal biology, cellular function, and scientific inquiry.

Graduates are prepared to teach in high schools and also have the necessary basic preparation to enter a career in industry or pursue an advanced degree in science. One semester of directed teaching at the secondary level is required. A teaching minor is strongly recommended.

Career Opportunities

Biology education is a four-year curriculum that may be selected as a major. A teaching minor is strongly recommended. You cannot have a biology teaching minor with this teaching major. Successful completion of the program leads to recommendation for a Michigan secondary provisional certificate. The program is designed to take full advantage of the unusual, hands-on Ferris instructional capabilities in developing both teaching and subject matter competency. Students receive the broad background in classroom, laboratory and field training essential to be effective teachers.

Teacher Certification Requirements
As required by the State of Michigan to receive teacher certification, all teacher candidates must: (1) Meet MDE (CAEP) cohort standards, (2) pass the pedagogy tests in their subject area majors, and (3) have a 2.75 minimum GPA to receive teacher certification in Michigan. These state requirements are in addition to the FSU graduation requirements of your individual program.

More Information

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Telephone: (231) 591-5361

ADVISOR: Dr. Scott Herron
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Biology Teaching for Secondary Education

Program Requirements

Biology Teaching for Secondary Education, Minor Program Checksheet

Includes:

- Minor Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Teaching Minors for Secondary Education Majors

The Secondary Education program highly recommends the completion of a teaching minor.

More Information

School of Arts and Science
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Ferris State University
1349 Cramer Circle
Big Rapids, MI 49307-2737
Telephone: (231) 591-5361
Biology/Environmental Biology

Program Requirements

Biology/Environmental Biology, BS Program Checksheet

Includes:

- Major Courses and General Education Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Environmental Biology? - Program Spotlight

The environment belongs to everyone. Unfortunately, not everyone is taking care of the environment.

Ferris is a world leader in career-oriented education and is committed to undergraduate education. Ferris also has an exceptionally strong commitment to academic advising. In the Environmental Biology, your academic advisor specializes in just environmental biology. The Applied Biology program at Ferris allows you to customize your academic program to meet both your academic abilities and career goals.

Sciences at Ferris are a University strength in part because of long-term nationally recognized science programs in pharmacy and optometry. You will be taught basic science courses by the same science faculty. The low student-faculty ratio at Ferris means that most basic science labs are taught by the science professors themselves.

Career Opportunities

Environmental policies and concerns are major issues facing everyone in the world in the twenty-first century. Career opportunities exist in environmental law, government, industry and academia.

More Information

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Biology/Forensic Biology

Program Requirements

Biology/Forensic Biology, BS Program Checksheet

Includes:

- Major Courses and General Education Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Forensic Biology? - Program Spotlight

You've seen them on T.V. gathering evidence at a crime scene or testing DNA samples in a lab. They are forensics experts, scientific detectives who search for clues that answer the "who, what and when" questions of a legal investigation. If you have an inquiring mind and like biology and chemistry, you may be interested in Ferris State's Forensic Biology degree.

Forensic biology is the application of biological knowledge and laboratory techniques to criminal and civil investigations as well as to the identification of unknown individuals. The forensic biology degree builds on a solid foundation of biology and chemistry, with unique core courses in forensic biology, forensic chemistry, forensic human pathology and forensic DNA analysis. The degree is designed for the student who is interested in analyzing biological evidence as it relates to legal and other investigations, or collecting and processing evidence at a crime scene or in a laboratory. It is also excellent preparation for graduate work in specialized areas of forensics.

Students receive extensive training in the collection and analysis of biological evidence in both lab and field settings. Students learn how to evaluate mock crime scenes that include decomposition of animal remains in the field. They also learn how to document, collect and analyze the insects, plants and other biological evidence to determine the time of death. Students learn to identify skeletal remains, and evaluate trauma.

Career Opportunities

Forensic biology is in the midst of a revolution, and the need for well-trained forensic biologists is growing at a rapid pace. The demand for qualified forensic biologists is increasing due to the technological advances in the last five years in genetics and molecular biology.

Graduates with this degree would be eligible for entry-level positions in forensic laboratories, medical examiners offices and law enforcement agencies. It should be stressed, however, that further graduate-level education might be required for you to become employable in your chosen career. To fully prepare for any career you should understand the necessary qualifications. In the
area of forensic biology, one good source of current job openings and the background required
can be found at the American Academy of Forensic Sciences website (www.aafs.org).

More Information

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PROFESSIONAL ADVISOR: Jenice Winowiecki
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Department of Biological Sciences
Ferris State University
820 Campus Drive/ASC 2004
Big Rapids, MI 49307
Phone: 231-591-2550
Biology/Pre-Dentistry

Program Requirements

Biology/Pre-Dentistry, BS Program Checksheet

Includes:

- Major Courses and General Education Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Pre-Dentistry?

The Pre-Dentistry program at Ferris emphasizes natural science courses including biology, organic and inorganic chemistry, biochemistry, microbiology, human physiology, anatomy and physics. This program is designed to prepare you for qualifying exams (DAT) and for professional schools.

Get Accepted to Dental School

A letter of acceptance from a dental school doesn't come easily. It requires effort, time and careful preparation. Professors and advisors with knowledge and expertise in this field are essential, and students get a helping hand into dental school from the professionals at Ferris.

In fact, professional training in the health fields has been a specialty at Ferris for more than 100 years. Graduates of the Pre Dentistry program at Ferris benefit from this rich history and take with them important hands-on skills as they pursue a position in dental school. Students must be aware that admission to dental schools is highly selective and the student must achieve a very high grade average and DAT score to be competitive. FSU graduates with this type of academic accomplishment experience a high rate of acceptance into dental schools.

More Information

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Department of Biological Sciences
Ferris State University
Biology/Pre-Medicine

Program Requirements
Biology/Pre-Medicine, BS Program Checksheet

Includes:
- Major Courses and General Education Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Pre-Medicine? - Program Spotlight
The Pre-Medicine program provides a quality bachelor's degree in biology. Completion of this degree with the recommended courses enhances a student's application to medical school. Students who don't wish to enter medical school can consult with their advisor for alternate career paths.

Get Accepted to Medical School
Being accepted to medical school doesn't come easily. It requires effort, time and careful preparation. To ensure success for our students, Ferris offers a helping hand into medical school. To help students make the best choices for their professional goals, advisors from the Ferris Pre-Medicine advisory committee work closely with students throughout their four years of study. They help with course selection and development of social, personal and professional maturity. They also work with students to match abilities with interests to find the student's most appropriate health-related career path. Furthermore, the low student-faculty ratio at Ferris means that most basic science labs are taught by the science professors themselves.

More Information
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EMAIL: ChristopherDeFraia@ferris.edu

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Department of Biological Sciences
Ferris State University
820 Campus Drive/ASC 2004
Big Rapids, MI 49307
Biology/Pre-Optometry

Program Requirements

Biology/Pre-Optometry, BS Program Checksheet

Includes:

- Major Courses and General Education Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Pre-Optometry? - Program Spotlight

The Pre-Optometry program stresses a foundation of chemistry, biology, physics and mathematics to meet the requirements of the Michigan College of Optometry at Ferris State University and most other optometry schools. In addition to completing coursework, students can serve as practice patients in the University's optometry clinic and can join the Pre-Optometry Club, a supportive network of students with common goals and interests. Superior academic preparation and awareness of optometry as a profession are very important factors in a candidate's preparation.

The Michigan College of Optometry (MCO) prefers to accept applicants who have completed a bachelor degree. However, MCO will continue to accept applications from candidates who have completed a minimum of three years (90 semester hours) of specified course work at a college or university. The listing of courses presented in this program sheet fulfills the minimum specified course work to be contained in the initial 90 credits as well as the additional course work necessary to complete the Bachelor's Degree in Biology. An application to the Michigan College of Optometry may be submitted while the minimum requirements are being completed. The Michigan College of Optometry website at www.Ferris.edu/mco will provide additional information on application issues.

The coursework also prepares students to take the Optometry Admission Test. This test should be initially taken in early summer of the year prior to the year of entry to MCO. This test may be retaken without penalty ninety days after the initial test.

Career Opportunities

Pursuing a career in optometry can be demanding, but graduates find the career both financially and personally rewarding. Students who are interested in becoming optometrists and who are enrolled in the Pre-Optometry program are assured of programming that meets the specific requirements of the Michigan College of Optometry.
Students have the opportunity to interact with fellow students and faculty of the Michigan College of Optometry and to explore the program and facilities firsthand.

Generally, admission to a college of optometry requires at least three years of undergraduate preparation. The doctor of optometry degree offered by Ferris requires a minimum of three years of pre-professional study followed by four years of study in the Optometry curriculum.

More Information

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PROFESSIONAL ADVISOR: Jenice Winowiecki
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EMAIL: JeniceWinowiecki@ferris.edu

Department of Biological Sciences
Ferris State University
820 Campus Drive/ASC 2004
Big Rapids, MI 49307
Phone: 231-591-2550
Biology/Pre-Pharmacy

Program Requirements

Biology/Pre-Pharmacy, BS Program Checksheet

Includes:

- Major Courses and General Education Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Pre-Pharmacy?

The Pre-Pharmacy program provides a quality bachelor's degree in biology. Completion of this degree with the recommended courses enhances a student's application to pharmacy school. Students who don't wish to enter pharmacy school can consult with their advisor for alternate career paths.

Get Accepted to Pharmacy School

Being accepted to pharmacy school doesn't come easily. It requires effort, time and careful preparation. To ensure success for our students Ferris offers a helping hand into pharmacy school. To help students make the best choices for their professional goals, advisors from the Ferris Pre-Pharmacy advisory committee work closely with students throughout their four years of study. They help with course selection and development of social, personal and professional maturity. They also work with students to match abilities with interests to find the student's most appropriate health-related career path. Furthermore, the low student-faculty ratio at Ferris means that most basic science labs are taught by the science professors themselves.

More Information

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Ferris State University
820 Campus Drive/ASC 2004
Big Rapids, MI 49307
Phone: 231-591-2550
Why Choose Pre-Physical Therapy? - Program Spotlight

The Pre-Physical Therapy program has been developed to prepare students for admission to the six professional Physical Therapy programs in Michigan. These programs are generally three years long and award a bachelor's degree after one year and a master's degree after three years. The successful candidate not only has excellent grades in preparatory course work, but also has several hundred hours of documented observational or work experience in a physical therapy setting.

The Pre-Physical Therapy program takes about three years to complete and can lead to an associate in science degree. Proper course selection during the optional fourth year can lead to a Bachelor of Science degree in Biology.

Career Opportunities

Physical therapists are in high demand and play a key role in helping patients gain mobility and strength after surgery or accident trauma. The future for physical therapists is very bright. With people living longer, joint replacement surgery has become very common and with it the need for compassionate and well-trained physical therapists.

More Information

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Department of Biological Sciences
Ferris State University
Biology/Pre-Physician Assistant

Program Requirements

Biology/Pre-Physician Assistant, BS Checksheet

Includes:

- Major Courses and General Education Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Pre-Physician Assistant?

The Pre-Physician’s Assistant Studies program provides a quality Bachelor of Science degree and emphasizes a strong foundation of courses in biology, chemistry, biochemistry, microbiology, and human physiology and anatomy. Completion of this degree with the recommended courses enhances a student’s application to Physician's Assistant Programs. Students who don’t wish to enter Physician’s Assistant Studies can consult with their advisor for alternate career paths.

Career Opportunities

The Pre-Physician’s Assistant Studies program at Ferris State University provides students with a strong foundation of knowledge to meet the academic requirements to apply to schools that offer programs in Master of Science in Physician’s Assistant Studies.

Being accepted to a Master’s program in Physician’s Assistant Studies is not easy. It requires a lot of time, effort and careful preparation. Ferris provides students with clear advising and coursework needed to ensure success. Graduates from the Pre-Physician’s Assistant Studies program receive important skills as they pursue a position in a MS program. Admission to Masters Programs in Pre-Physician’s Assistant Studies are highly selective. FSU graduates with strong academic accomplishments experience a high rate of acceptance into Physician’s assistant Studies programs.

More Information

LEAD ADVISOR: Dr. Anne Spain
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PROFESSIONAL ADVISOR: Jenice Winowiecki
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Biology/Pre-Veterinary Medicine

Program Requirements

Biology/Pre-Veterinary Medicine, BS Program Checksheet

Includes:

- Major Courses and General Education Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Pre-Veterinary Medicine? - Program Spotlight

The Pre-Veterinary Medicine program provides a quality bachelor's degree in biology. Completion of this degree enhances your application to a veterinary college. Students who don't wish to enter a college of veterinary medicine can consult with their advisor for alternate career paths.

Successful completion of the first three years of this program and a minimum of 240 clock hours of veterinary experience under the direction of your local veterinarian will satisfy the course prerequisites for admission to the College of Veterinary Medicine at Michigan State University.

Career Opportunities

The Pre-Veterinary Medicine program at Ferris is designed to prepare students for admission to the School of Veterinary Medicine at Michigan State University.

Doctors of veterinary medicine may pursue a variety of career paths, such as ensuring public health, caring for companion animals, controlling animal diseases and providing veterinary medical education.

The future for doctors of veterinary medicine is bright. With an increasing population of companion animals, there is more need than ever for well-trained, compassionate professionals to enter the field of veterinary medicine.

More Information

LEAD ADVISOR: Dr. James Scott
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PROFESSIONAL ADVISOR: Jenice Winowiecki
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Biotechnology

Program Requirements

Biotechnology, BS Program Checksheet

Includes:

- Major Courses and General Education Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Biotechnology? - Program Spotlight

The Biotechnology program is designed to prepare students for positions in biological, medical or agricultural research laboratories, for graduate school or for professional school. The program is built on five aspects of modern laboratory science: recombinant DNA, cell culture, immunology, laboratory animal care, and advanced protein isolation techniques.

The first two years of the Biotechnology program are preparatory, structured to complete the biotechnology foundations course work. The professional sequence of biotechnology course work typically begins with the student's junior year. Admission to the professional biotechnology sequence is competitive and based on the foundation coursework. Internships and independent research projects are available to biotechnology students and enable them to gain experience in a laboratory setting.

Career Opportunities

The Ferris Biotechnology program is designed for those who want to enter the workforce in a biotechnology laboratory, or pursue study in a graduate or professional school. Biotechnology is responsible for many of the medical, agricultural and environmental advances that are part of modern society. With a career in biotechnology, you will be able to better understand these advances and apply this knowledge towards the improvement of our world.

Job opportunities exist in most industries that conduct research and development programs. Biotechnology graduates are especially marketable, since the hands-on experiments conducted at Ferris give students real-world experience in a controlled laboratory setting. In fact, over 90 percent of graduates have jobs in the industry or are enrolled in graduate or professional schools.

More Information

LEAD ADVISOR: Dr. Brad Isler
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Building Construction Technology

Program Requirements

Building Construction Technology, AAS Program Checksheet

Includes:

• Major Courses and General Education Courses
• Admission and Transfer Requirements
• Graduation Requirements

Why Choose Building Construction Technology?

This program prepares students for entry-level positions in the construction industry, working on commercial, industrial, or residential structures. Coursework emphasizes small hands-on laboratory courses. Construction technicians need a background in mathematics and physical science as well as a thorough knowledge of construction materials, methods, and equipment.

The program includes general education courses in English, mathematics, physics, and program-specific courses in plans and specifications interpretation; materials testing; quantity estimating; computer applications including three-dimensional modeling; virtual design and construction; framing; mechanical and electrical systems; soils; surveying, administration; and construction means and methods.

Graduates of the Associate's degree program may choose employment in the construction industry or may continue their education and obtain a Bachelor of Science in Construction Management through our American Council for Construction Education Accreditation (ACCE).

Career Opportunities

The construction industry is the second largest contributor to the gross domestic product in the United States and it offers job opportunities in the commercial, industrial, heavy civil, and residential sectors. The construction of a modern building is a complex endeavor requiring the efforts of a wide range of professional, technical and skilled personnel.

Technicians know how to layout a building, read blueprints and specifications, formulate material orders, coordinate project quantity estimates, coordinate project documents, and the subcontractors, as well as extract information from multi-dimensional models.

Graduates of the Building Construction Technology program have the necessary skills to serve as an integral part of the construction management team. Positions are also available in related fields such as materials sales, insurance adjustment, building inspection, and equipment sales/rental. Employment opportunities in the construction industry are strong and steady with projected growth exceeding the average for all occupations and continuing.
More Information

School of Built Environment
Construction Technology & Management Programs
605 S. Warren Avenue, GRN 227
Big Rapids, MI 49307-2280
Phone: (231) 591-3773
Email: consprog@ferris.edu
https://www.ferris.edu/CET/built-env/ctmg/construction-mgt-program-AAS.htm

Ferris State University
College of Engineering Technology
1009 Campus Drive, JOH 200
Big Rapids, MI 49307-2280
Phone: 231-591-2890
Email: technology@ferris.edu
www.ferris.edu/technology
Business Administration

Program Requirements

Business Administration, BS Program Checksheet

Includes

- Major Courses, General Education Courses, Business Core Courses and Concentration/Minor/Certificate Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Business Administration?

The Business Administration degree provides considerable flexibility and a broad-based education in business that is intended to significantly extend your career options. The program offers considerable flexibility in terms of the concentrations you may choose to complete your degree. As a key part of this degree, the College of Business offers a wide array of business-related concentrations:

- Economics
  - Fleet Management
  - Human Resource Management
  - International Business
  - Lean Systems
  - Leadership and Project Management
  - Legal Studies
  - Operations and Supply Management
  - Risk Management and Insurance
  - Small Business & Entrepreneurship

There are also a variety of unique certificates, minors or course combinations that can be used to complete your degree. We encourage you to visit: http://www.ferris.edu/business/degrees for details and information about available minor options.

This program’s goals include:

- Providing a broad-based business education that will widen the field of start-up positions open to them upon graduation,
- Delivering a solid undergraduate curriculum for those who intend to go to graduate school, and, finally,
- Establishing a foundation for long-term career flexibility in a fast-paced and ever-changing competitive world.
To achieve these ends, the Business Administration Degree Program incorporates a combination of core business courses, application-oriented courses, internship opportunities, and active student engagement opportunities. It also includes focused concentrations that allow students to pursue specific areas of interest.

Our faculty combine corporate, consulting, and academic experience to deliver the course content in practical and applied ways that effectively prepare students for their future careers in business. Courses on topics such as Management Metrics and Decision Making, Human Resource Management, Business Ethics, and Cases on Strategy give students critical thinking and business skills that are invaluable in the workplace.

Students are strongly encouraged to be involved in professional development activities relevant to their chosen fields. There are a number of registered student organizations affiliated with national and regional professional associations. Students get opportunities to debate current issues, network with professionals, and engage in other career-enhancing activities that complement their in-class learning.

**Career Opportunities**

When combined with a minor or specialized concentration, the Business Administration major provides an avenue for immediate employment and career advancement.

Employers seek graduates for positions ranging from business manager and sales representative to production supervisor and project planner. Graduates of the program with specialized concentrations obtain positions in manufacturing, retailing, construction, financial institutions, government and a host of other fields. Students also find this major to be of value in preparation for graduate or law school.

**More Information**

Management Department  
119 South Street/BUS 212  
Big Rapids, MI 49307-2284  
Phone: (231) 591-2427  
Email: MGMT@ferris.edu

The College of Business is accredited by the Accreditation Council for Business Schools and Programs (ACBSP.)

http://www.acbsp.org
Business Administration

Program Requirements

Business Administration, MBA Program Checksheet

Includes:

- Major Courses and Concentration Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose the Master of Business Administration?

An MBA provides a graduate with a comprehensive perspective on management and the business environment and tools and methods to approach and successfully solve complex business challenges in the global marketplace. The Ferris MBA combines a strong core curriculum focused on key business competencies with deeper learning in a specialty the student chooses.

While MBA courses cannot replace the value of work experience, courses designed specifically with a focus on a management perspective-- managerial accounting, managerial finance, strategic management-- provide students with experience in problem solving, interpretation, case analysis, and policy development in many different business contexts. This structured learning ensures that students can apply these lessons in their work environment, maximizing the effect of education and experience.

Career Opportunities

Students prepare for careers or advancement in many fields, including health care, manufacturing, sales, and more. The core courses develop team and management skills to improve organizational performance in accounting, finance, leadership, strategy, economics, statistics, marketing, legal, the global environment, information systems, and operations.

Some foundation competencies are required however our 39-credit MBA program does not require prerequisite courses which allows us to offer a much more robust core, including Lean Systems and Data Analytics, rarely found in other MBA programs.

Students must complete one of the Concentrations or Advanced Studies Certificates as their MBA specialization:

**Diversified Concentration** – Students with various interests will select Business Graduate Electives which provides the opportunity to explore areas of business they may apply in their future careers.
**Professional Concentration** – Students who have specific career interests may work with an advisor to select a combination of existing graduate courses and/or propose independent research to customize a concentration in nearly any field of study.

**Nursing Concentration** - MBA students who hold a RN license may select a 9-credit concentration from the Ferris Master of Nursing (MSN) curriculum.

**Pharmacy Concentration** - Students currently enrolled in the FSU Doctor of Pharmacy Program can pursue the Ferris MBA with a 9-credit Pharmacy Concentration that consists of one pharmacy management course and a 6-credit clerkship in their choice of: Corporate Pharmacy Management, Pharmaceutical Industry, or Health Systems Pharmacy.

The **Advanced Studies Certificate in Accounting** will enable students to advance their knowledge and skills necessary for success in any business-related profession. The certificate provides students a comprehensive understanding of business in a global environment, research methodologies for various topics encountered in business, and reinforces the requirement to maintain ethical standards in all business relationships.

The **Advanced Studies Certificate in Business Intelligence** is designed to prepare individuals with both theoretical and practical experience in designing, developing and utilizing database and informatics systems. Students will utilize tools and techniques including predictive, geographic, and link/visual analysis in a big data/data analytics environment.

The **Advanced Studies Certificate in Design and Innovation Management** prepares graduates for leadership positions in design-centered businesses. The program provides students a comprehensive understanding of the ways in which the method, measure, and language of design drive the practice of business and the process of innovation and teaches them how to cultivate and build a culture of innovation within their organization. The **ASDI certificate is offered at Kendall College of Art & Design in Grand Rapids**.

The **Advanced Studies Certificate in Incident Response** is designed to prepare individuals to secure computers, networks, and systems against intrusions and unauthorized access, test and assess security measures, and forensically analyze the environment to determine events and situations that may have occurred in a digital environment.

The **Advanced Studies Certificate in Lean Systems and Leadership** delivers a comprehensive education for applying lean concepts to various industries: e.g. banks, nonprofits, offices, hospitals, restaurants, manufacturing. The classes prepare individuals to lead, manage, and evaluate a continuous improvement system in a complex work environment. This cutting edge approach will provide graduates with highly sought-after capabilities to improve operational & financial performance and monitor growth within any type of organization.

The **Advanced Studies Certificate in Performance Metrics** is designed to educate students in how to appropriately measure various strategies, projects and activities with respect to effectiveness, quality and efficiency.

The **Advanced Studies Certificate in Project Management** is designed to prepare individuals for careers as program, project, and portfolio managers consistent with the Project Management Institute’s Project Management Body of Knowledge and other industry standards. Students will study the entire project life cycle and supporting tools and technologies.
The **Advanced Studies Certificate in Supply Chain Management and Lean Logistics** curriculum is designed to prepare students to analyze and provide solutions for situations involving the integrated supply chain (manufacturing, purchasing, logistics and transportation, business development and operations, et al). The courses provide students with an ever increasing base of knowledge on how to create value added strategies. This knowledge is exercised through the optimal application of logistics and supply chain coordination. Future managers and executives will use this knowledge the rest of their careers.

**More Information**

College of Business Graduate Programs  
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Big Rapids, MI 49307  
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Web: https://ferris.edu/MBA
Business Administration - Professional Track

Program Requirements

Business Administration Professional Track, BS Program Checksheet

Includes:

- General Education Courses, Business Core Courses and Major Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Business Administration with Professional Track?

This program is uniquely designed to facilitate transfer from unrelated AAS programs (whether at Ferris or other institutions) with maximum credit for prior academic work. In this, it is often seamless, and is far more successful than competing programs at minimizing the total credits ultimately required for graduation, without compromising the integrity of the business degree. For the student who wishes to combine an intensive course of study in a non-business field with a sound business foundation, this is the ideal solution.

You will study under highly qualified faculty members who have combined their academic credentials with extensive work experience. You also may supplement classroom instruction with the chance to earn University credit while gaining work experience through an internship program.

Career Opportunities

A Business Administration major provides an avenue for immediate employment and for advancement to upper levels of management. Employers seek graduates for positions ranging from business manager, supervisor, and sales representative to production supervisor and project planner. Graduates of the program obtain positions in retailing, food service, construction, manufacturing, government and a host of other fields. Students find this major to be of value in preparation for law school where you can specialize in law related to your career specialty knowledge. It is also great preparation for graduate degrees.

More Information

Management Department
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Email: MGMT@ferris.edu

The College of Business is accredited by the Accreditation Council for Business Schools and
Business Data Analytics

Program Requirements

Business Data Analytics, BS Program Checksheet

Includes:

- General Education Courses, Business Core Courses and Major Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Business Data Analytics? - Program Spotlight

Our Business Data Analytics (BDA) program was created in response to the critical need in today's workplace for employees who are capable of drawing meaningful insight from vast quantities of data. It is the only undergraduate program of its type in the state.

Data analytics is a growing field that uses data to gather intelligence in business, marketing, finance, accounting, human resources, insurance, homeland security, criminal justice, education, government, healthcare, and manufacturing. Data mining turns raw data into information. This information creates knowledge used by leaders and managers to establish and achieve organizational goals and sustain a competitive advantage. For example, it assists businesses in spotting customer trends, creating customer loyalty, enhancing supplier relationships, reducing financial risk and uncovering new sales opportunities.

Organizations today face tough competitive challenges. Some challenges can be met with the competitive advantage of better knowledge. Your future employer may assign you to help create that knowledge by using sound research methods to discover information hidden within vast databases. For example, you may be asked to help a team discover customer buying patterns that signal new niche markets. Or discover a pattern of credit card use that points to fraud. Or you may help discover patterns of cell growth helpful in diagnosing cancer. Or you may assist a team searching for patterns of terrorist activities. Or you may help discover changing patterns of habitat growth impacting endangered species. Do you see yourself in a team working with research tools to explore vast amounts of data and information to uncover important patterns? If so, Business Data Analytics will prepare you to work in a team setting to help fulfill the information needs of your employer through the application of data mining methods.

- You will learn from statisticians and information Security and Intelligence experts who will teach you through practical, hands-on projects using worldwide known software.
- You will find the statistics faculty willing and readily available to help you outside of the classroom.
- Our classrooms provide opportunities for collaborative state-of-the-art learning.
Career Opportunities

Employers like to hire Ferris graduates because of their practical skills, receptive attitudes, and abilities to do the job from day one. The Data Analytics job market is exploding in a range of fields including business, education, manufacturing, healthcare, criminal justice, government, science, and others. Some BDA career options: data scientist, business data analyst, market research analyst, data analyst/data architect, business and systems analyst, analytic software sales representative, business systems consultant, research analyst or data analyst consultant.

More Information

Marketing Department
119 South Street/BUS 212
Big Rapids, MI 49307-2284
Phone: 231-591-2426
E-mail: MKTG@ferris.edu
Business Education - Marketing

Program Requirements

Business Education Marketing, BS Program Checksheet
Includes:

- General Education Courses, Major Courses, and Secondary Education Minor Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Business Education - Marketing?

*We are no longer admitting students to this program as it has been discontinued by the MDE.*

Rapid technological advances have generated growing demand for marketing education teachers. Graduates can expect excellent career opportunities in secondary and vocational education as well as in the multifaceted world of government, business and industry.

The Marketing Education program offers a balanced educational background including business professional education and general education courses combined with field and directed teaching experiences.

Career Opportunities

The Marketing Education program prepares students to teach marketing subjects at the secondary level. The Marketing Education teacher:

- Recognizes/recalls the existence of different aspects of marketing in a variety of settings.
- Applies broad, in-depth knowledge of the different aspects of marketing and related instructional and assessment strategies.
- Articulates knowledge about marketing and related instructional and assessment strategies.
- Demonstrates proficiency in using the knowledge at a fundamental level of competence acceptable for teaching.

Teacher Certification Requirements

A Marketing Education endorsement (GM) prepares a teacher to teach marketing education at the secondary level in courses aligned with the Michigan Career Pathways. Candidates completing the academic requirements of the Marketing Education program may be recommended for the certificate endorsement after passing the Michigan Test for Teacher Certification marketing education test.
As required by the State of Michigan to receive teacher certification, all teacher candidates must: (1) pass the Michigan Basic Skills Exam, (2) pass the pedagogy tests in their subject area majors and minors, and (3) have a 2.50 minimum GPA to receive teacher certification in Michigan. These state requirements are in addition to the FSU graduation requirements of your individual program.

More Information

School of Arts and Science
Bishop Hall Room 421
Ferris State University
1349 Cramer Circle
Big Rapids, MI 49307-2737
Telephone: (231) 591-5361
Business, Management, Marketing, and Technology Education

Program Requirement

Business Management Marketing and Technology Education, BS Program Checksheet

Includes:

- General Education Courses, Major Courses and Secondary Education Minor Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Business, Management, Marketing, and Technical Education?

The Business, Management, Marketing, and Technology (BMMT) program prepares students to teach subjects at the secondary and vocational level. The BMMT teacher:

- Recognizes/recalls the existence of different aspects of business, management, marketing, and technology and related teaching strategies.
- Articulates knowledge about business, management, marketing, and technology and related instructional and assessment strategies.
- Demonstrates proficiency in using the knowledge at a fundamental level of competence acceptable for teaching.
- Applies broad, in-depth knowledge of the different aspects of business, management, marketing, and technology in a variety of settings.
- Offers a balanced educational background including business professional education and general education courses, field and directed teaching experiences.

Career Opportunities

The Business, Management, Marketing and Technology education program prepares students to teach business subjects at the secondary and vocational level, as well as the multifaceted world of government, business, and industry.

Teacher Certification Requirements

As required by the State of Michigan to receive teacher certification, all teacher candidates must: (1) meet the MDE (CAEP) cohort requirement, (2) pass the pedagogy tests in their subject area majors, (3) must have 4000 hours of documented work experience in the field, and (4) have a 2.75 minimum GPA to receive teacher certification in Michigan. These state requirements are in addition to the FSU graduation requirements of your individual program.

More Information
Business-to-Business Marketing

Program Requirements

Business-to-Business Marketing, Certificate Program Checksheet

Includes:

- Certificate Courses
- Admission Requirements
- Graduation Requirements

Why Choose a Business-to-Business Marketing Certificate?

If you choose the business-to-business marketing certificate, you will be exposed to current theory and practice in the marketing of products and services from one business to another, including:

- Integration of the principles of general marketing and professional selling with proven business-to-business marketing methods
- Understanding and application of concepts related to industrial marketing, business-to-business advertising, and digital marketing
- Demonstration of mastery of class concepts through real-world projects with business-to-business clients

Career Opportunities

Business-to-Business marketers work in advertising, marketing and digital marketing positions for industrial companies of all sizes. They also work in dynamic fields such as office furniture, software, and technology. Ferris State University is unique in its emphasis on Business-to-Business Marketing – certificate holders will find that their skills are much in demand.

More information

Marketing Department
119 South Street/BUS 212
Big Rapids, MI 49307-2284
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E-mail: MKTG@ferris.edu
Cancer Information Management

Program Requirements
Cancer Information Management, Certificate Program Checksheet

Includes:

- Certificate Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Cancer Information Management?

This certificate is designed to provide individuals with the knowledge and skills necessary to maintain a cancer data collection system that meets the requirements of local, state and national registries. Cancer registrars are data management experts who are responsible for collection, analysis and dissemination of cancer data.

Career Opportunities

This certificate provides individuals with the opportunity to work within a cancer registry in many different settings. Cancer registrars may work in a hospital or central cancer registry. They may work on site or remotely. There are a variety of different functions/positions performed by cancer registrars including abstracting health data, quality auditing, research, follow-up, cancer conference and tumor board documentation/membership. Annual earnings of cancer registrars range from $30,000-$75,000.

More Information

Department of Clinical Laboratory Science, Respiratory Care & Health Care System Administration
College of Health Professions
Ferris State University
200 Ferris Drive
Big Rapids, MI 49307
Phone: 231-591-2266
chp@ferris.edu
Career and Technical Education/Instructor Concentration

Program Requirements

Career and Technical Education Instructor Concentration, MTE Program Checksheet

Includes:

- Major Courses and General Electives
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Career and Technical Education Instructor Concentration?

Improved career and technical education competency and refined instructional or administrative skills are the goals of Ferris State University's Master of Science degree program in career and technical education.

Students eligible for admission to the graduate program must hold a bachelor's degree from an accredited college or university. When required, candidates should hold or be eligible for professional licensure, registration or certification to practice in the occupational specialty. Previous teaching experience is not a requirement. An admissions committee will review all application materials and recommend appropriate action. Upon admission to the graduate program, each student will be assigned a graduate advisor.

Career Opportunities

The program enables career and technical instructors in allied health, business, home economics and technical education at secondary and post-secondary levels, as well as industrial training and development personnel, to attain an advanced education by building on previous training and occupational experience.

More Information

School of Education
Bishop Hall Room 421
Ferris State University
1349 Cramer Circle
Big Rapids, MI 49307-2737
Telephone: (231) 591-5361
Career and Technical Education/Postsecondary Administration Concentration

Program Requirements

Career and Technical Education/Post-Secondary Administration Concentration, MTE Program Checksheet

Includes:

- Major Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Career and Technical Education Postsecondary Administration Concentration?

Improved career and technical education competency and refined instructional or administrative skills are the goals of the Master of Science degree program in career and technical education at Ferris State University.

Students eligible for admission to the graduate program must hold a bachelor's degree from an accredited college or university. When required, candidates should hold or be eligible for professional licensure, registration or certification to practice in the occupational specialty. Previous teaching experience is not a requirement. An admissions committee will review all application materials and recommend appropriate action. Upon admission to the graduate program, each student will be assigned a graduate advisor.

Career Opportunities

The program enables students to seek careers at the post-secondary education level, such as community colleges and Universities, in the area of administration. Typical positions that graduates are hired in are areas such as admissions counselors, financial aid officers, etc.

Advanced Educational Opportunities

Graduate students, who successfully complete the Master of Science in Career and Technical Education, are eligible to pursue their doctorate in education through a collaborative partnership between Ferris State University and Western Michigan University. [https://www.wmich.edu/leadership/academics/ed-leadership/doctor/wed](https://www.wmich.edu/leadership/academics/ed-leadership/doctor/wed)

More Information

School of Education
Career and Technical Education/Training and Development Concentration

Program Requirements

Career and Technical Education Training and Development Concentration, MTE Program Checksheet

Includes:

- Major Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Career and Technical Education Training and Development Concentration?

Improved career and technical education competency and refined instructional or administrative skills are the goals of Ferris State University’s Master of Science degree program in career and technical education.

Students eligible for admission to the graduate program must hold a bachelor's degree from an accredited college or university. When required, candidates should hold or be eligible for professional licensure, registration or certification to practice in the occupational specialty. Previous teaching experience is not a requirement. An admissions committee will review all application materials and recommend appropriate action. Upon admission to the graduate program, each student will be assigned a graduate advisor.

Career Opportunities

The program enables career and technical instructors in allied health, business, home economics and technical education at secondary and post-secondary levels, as well as industrial training and development personnel, to attain an advanced education by building on previous training and occupational experience.

Advanced Educational Opportunities

Graduate students, who successfully complete the Master of Science in Career and Technical Education, are eligible to pursue their doctorate in education through a collaborative partnership between Ferris State University and Western Michigan University. https://www.wmich.edu/leadership/academics/ed-leadership/doctor/wed

More Information

Ferris State University 96 2020-2021 FSU Catalog
Cell and Molecular Biology

Program Requirements

Cell and Molecular Biology, Minor Program Checksheet

Includes:

- Minor Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose the Cell and Molecular Biology Minor?

This minor is designed for students who desire to expand their understanding of biology in the rapidly developing field of cell and molecular biology. It is also suitable for students who have completed substantial courses in a pre-professional degree, but who have not yet been accepted into their chosen professional school. Cell and Molecular Biology is also suitable for students who may choose to pursue a bachelor's degree in chemistry, especially one with an emphasis in biochemistry.

More Information

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Ferris State University
820 Campus Drive, ASC 2004
Big Rapids, MI 49307
Phone: 231-591-2550
Chemistry

Program Requirements

Chemistry, BA Program Checksheet

Includes:

- Major Courses and General Education Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Chemistry? - Program Spotlight

Chemistry is the central science and thus provides the framework for our understanding of a wide variety of natural phenomena, societal issues, and advances in technology. Students with good math backgrounds and with interest in scientific thought and reasoning will find the Chemistry BA to be a satisfying and challenging degree. Chemistry students build skills in critical thinking, problem solving, communication, and teamwork, making them marketable in a wide variety of fields. Students complete a curriculum of 34 hours of chemistry courses, including some courses chosen based on their interest. Depending on their interests and career goals, chemistry majors select a wide variety of minors including marketing/sales, English/professional writing, biology, and forensic science. Chemistry students often participate in undergraduate research projects as well.

Career Opportunities

The Chemistry major provides an excellent background for a wide variety of careers in science or in science-related fields, some involving further education. These include but are not limited to careers in chemistry, medicine, dentistry, education, environmental science, forensic science, pharmaceutical sales, and scientific writing.

More Information

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Ferris State University
820 Campus Drive/ASC 3021
Big Rapids, MI 49307-2225
Phone: 231-591-2580
Chemistry Education Secondary

Program Requirements

Chemistry Education Secondary, BS Program Checksheet

Includes:

- Major Courses, General Education Courses and Minor Declaration Options
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Chemistry Education?

Chemistry teachers guide students in discovering the marvelous logic, efficient simplicity and design behind a myriad of complex events in nature. The technological revolution has added an infectious new excitement to the lessons of chemistry. Chemistry education today provides access to new knowledge, helping people understand how things happen in the natural and physical environment.

The employment outlook for chemistry education students is excellent. Graduates are prepared to teach in high schools and also have the necessary basic preparation to enter a career in industry or pursue an advanced degree in science. One semester of directed teaching at the secondary level is required. A teaching minor is also required.

Career Opportunities

Chemistry education is a four-year curriculum that may be selected as a major. A teaching minor is also required. You cannot have a chemistry teaching minor with this teaching major. Successful completion of the program leads to recommendation for a Michigan Secondary Provisional Certificate. The program is designed to take full advantage of the unusual, hands-on Ferris instructional capabilities in developing both teaching and subject matter competency. Students receive the broad background in classroom, laboratory and field training essential to be effective teachers.

Teacher Certification Requirements

As required by the State of Michigan to receive teacher certification, all teacher candidates must: (1) meet the MDE (CAEP) cohort requirements, (2) pass the Michigan Test for Teacher Certification content tests in their subject area majors, and (3) have a 2.75 minimum GPA to receive teacher certification in Michigan. These state requirements are in addition to the FSU graduation requirements of your individual program.
Chemistry Teaching for Secondary Education

Program Requirements

Chemistry Teaching for Secondary Education, Secondary Education Minor Program Checksheet

Includes:

- Minor Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Teaching Minors for Secondary Education Majors

The Secondary Education program highly recommends the completion of a teaching minor.

More Information

School of Education
Bishop Hall Room 421
Ferris State University
1349 Cramer Circle
Big Rapids, MI 49307-2737
Telephone: (231) 591-5361
Civil Engineering Technology - Highway Emphasis

Program Requirements

Civil Engineering Technology/Highway Emphasis, AAS Program Checksheet

Includes:

- Major Courses and General Education Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Civil Engineering Technology with Highway Emphasis?

Students interested in Civil Engineering Technology are often very interested in construction equipment including cranes, excavators, off-road vehicles, etc. The Civil Engineering Technology program at Ferris incorporates small hands-on laboratory courses to provide instruction in soil and material testing, construction equipment and operations, highway technology and design, and the construction process. A civil technician requires a background in mathematics and physical science plus a thorough knowledge of construction materials, methods, and equipment.

The program includes general education courses in English, mathematics, physics, and program-specific courses in plans and specifications interpretation, material testing, quantity estimating, computer applications including three-dimensional modeling, hydrology, highway design, equipment production, soils, surveying, administration, and construction means and methods.

Graduates of the Associate's degree program may choose employment in the heavy civil construction sector or may continue their education and obtain a Bachelor of Science degree in Construction Management through our American Council for Construction Education (ACCE) accredited program.

Career Opportunities

As part of a construction team, the civil engineering technician may assist the engineer in project layout, soil and material testing, cost estimating, supervision, and inspection of heavy construction projects. Precision, accuracy, and clarity are important qualities for the technician as civil engineering technology jobs require familiarity with materials and soils, knowledge of surveying principles, hydrology, engineering design, and the construction process.

Job opportunities for civil engineering technicians exist with consulting engineers, material testing firms, general contractors, and governmental agencies. Increased funding for infrastructure at both the state and federal levels is expected to provide significant employment opportunities in the industry.
More Information

School of Built Environment
Construction Technology & Management Programs
605 S. Warren Avenue, GRN 227
Big Rapids, MI 49307-2280
Phone: 231-591-3773
Email: consprog@ferris.edu
https://www.ferris.edu/CET/built-env/ctmg/index.html

Ferris State University
College of Engineering Technology
1009 Campus Drive, JOH 200
Big Rapids, MI 49307-2280
Phone: 231-591-2890
Email: technology@ferris.edu
www.ferris.edu/technology
Cloud Computing

Program Requirements

Cloud Computing, Certificate Program Checksheet

Includes:

- Major Courses and General Education Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose the Cloud Computing Certificate?

Ferris State University’s Information Security and Intelligence (ISIN) program is nationally recognized for preparing students for successful careers in the cybersecurity industry. The Information Security and Intelligence program is the only Cyber Security program in Michigan that is ABET accredited in cybersecurity, and is currently the only Cyber Security program in the United States that is ABET accredited to be delivered online.

The ISIN program is in a unique position to offer cloud computing courses by leveraging their AWS Academy partnership and designation as well as faculty accreditation and certifications in cloud computing and cybersecurity. The Cloud Computing certificate can be completed independent of the ISIN program or as part of the ISIN Bachelor of Science degree. The Cloud Computing certificate is a foundational certificate with 100 and 200 level courses in cybersecurity, networking, and cloud computing. The certificate is designed for traditional college students, non-traditional college students, and high school dual enrollment students.

The Cloud Computing certificate is designed to prepare students for upper level course work in cybersecurity, a transition to cybersecurity and cloud computing job responsibilities, or perhaps an entry-level position.

Career Opportunities

The demand for cloud computing and cybersecurity skills continues to be very high. Forbes magazine ranked cloud computer skills 4 out of the top 5 and cybersecurity 3 out of the top 13 (Columbus, 2018). The Bureau of Labor Statistics projects a 28% faster than average job outlook through 2026 for Information Security Analysts (Information Security Analyst, 2018). In another article, Forbes quotes the IDC that “almost half of IT spending will be cloud-based in 2018, reaching 60% of all IT infrastructure and 60-70% of all software, services and technology spending by 2020.” (Ashok, 2018). Organizations, both public and private sector, seek movement to the cloud to decrease their infrastructure expense while leveraging other benefits such as improved reliability and flexibility that cloud computing can offer.
References


For More Information

Accountancy, Finance, & Info Systems
119 South Street, BUS 212
Big Rapids, MI 49307-2284
231-591-2434
AFIS@ferris.edu

The College of Business is accredited by the Accreditation Council for Business Schools and Programs (ACBSP). The next accreditation review is February 2028.

http://www.acbsp.org
Club Management

Program Requirements

Club Management, Certificate Program Checksheet

Includes:

- Certificate Courses
- Admission Requirements
- Graduation Requirements

Why Choose the Club Management Certificate?

The Club Management certificate provides students with background knowledge in the world of private and semi-private clubs such as yacht, city, athletic, tennis, and country clubs. Students learn about the unique nature of private clubs including topics such as membership categories, board structure, dues, assessments, minimums, rules, and by-laws. Other topics covered include food & beverage operations, facilities management, leisure activities, and financial management. Throughout their studies students will have the opportunity to earn nationally recognized certifications, such as AHLEI Contemporary Club Management and TIPS, as part of their required courses.

More Information

Hospitality Management Program
West Commons 106
1319 Cramer Circle
Big Rapids, MI 49307
Phone: 231-591-2382
Email: hospitality@ferris.edu
Communication

Program Requirements

Communication, Minor Program Checksheet

Includes:

- Minor Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose a Communication Minor?

A GMAC recruiter’s survey, asked employers to identify among five broad skill sets which they consider to be most important when hiring. Communication skills came out on top, followed in order by teamwork skills, technical skills, leadership skills, and managerial skills.

Look at any job posting and one of the key qualifications will be strong communication skills. With a minor in communication, you will stand above the average applicant for any job. Strong public speaking skills, great teamwork ability, and excellent interpersonal communication are only the beginning in this minor! From that start, you can focus on leadership, interviewing, and intercultural communication for a business focus. If you want to go for a more humanistic approach focus on gender, nonverbal, family, and human relations. Apply some of these skills with our persuasion and public advocacy courses and be a force in the world today. Last but not least, the workplace is ever-adapting to new technology and our social media and digital communication classes will help you be at the forefront.

Students take a core of interpersonal, presentation, and group dynamic courses, then build on this foundation by electing 9 credits of 300 level courses that are relevant to their interests or career goals. This flexibility allows students to design a minor which enhances their marketability while improving their personal communication skills in ways that can lead to greater satisfaction in their private lives. Great communicators require knowledge and skill and that is what you gain in the communication minor at Ferris State University.

More Information

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Department of Humanities
Ferris State University
Communication Studies

Program Requirements

Communication Studies, BS Program Checksheet

Includes:

- Major Courses and General Education Courses
- Admission and Transfer Requirements
- Graduation Requirements

What Will I Study?

Want to have a more productive online presence?

Need to persuade your boss to give you a raise?

Having conflict in your relationship and not sure how to resolve it?

Communication is at the heart of everything we do. This program helps you get at both the *why* that is and the *how* of doing it well. This discipline dates back to the Ancient Greeks drawing upon the study of persuasion as well as some anthropology, psychology and sociology—updating and applying those theories of human communication behavior to our personal and professional lives.

Students take foundational courses in public presentation, group dynamics and interpersonal communication. Additional coursework includes studies in social media and digital communication, intercultural communication, organizational communication, communication ethics, communication theory and research methods, not to mention a whole host of practical electives. One unique feature of the Communication program is that students must complete a Practicum (career internship or research project) including a minimum of 240 hours of contact in a workplace setting or research work (80 hours = 1 credit earned). Students have the option of distributing these credits across multiple placements or projects and can take additional Practicum credits for elective hours. This feature prepares students for life after graduation, adding valuable experience to their resume.

Speech communication is an interdisciplinary field of study that draws upon its historic roots in rhetoric as well as theory and research in anthropology, psychology and sociology. Students take foundational courses in public presentation, group dynamics and interpersonal communication. Additional coursework includes studies in intercultural communication, organizational communication, communication ethics, and communication theory and research.

One unique feature of the Applied Speech Communication program is the option to choose an
existing FSU minor OR "Application to the Workplace" which requires students to take at least six courses in their chosen career area. Additionally, students must also complete an internship for the purpose of gaining real-world experience that employers value.

**Why Choose This Major?**

A LinkedIn report covered by *MarketWatch* sought to determine the majors that help graduates secure the widest variety of jobs. Communication was ranked in the top ten of most versatile majors. Surveys of employers continually reveal that among the most desirable qualities of job applicants are communication skills and the ability to work effectively with a diverse population. The Communication program provides its graduates with a solid foundation in communication, which will enhance their marketability in today's competitive workplace.

**What are Communication Graduates Doing Now?**

PayScale releases its *College Salary Report* regularly to help students research careers based on salary and potential. Surveying 3.2 million communication alumni found that the most common jobs for communication majors include Social Media Specialist, Media Supervisor, and Communication Content Manager, just to name a few. The report listed the salary median of this mid-career snapshot as $73,000.

**More Information**

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Phone: 231-591-3675
Communication Studies

Program Requirements

Communication Studies, AA Program Checksheet

Includes:

- Major Courses and General Education Courses
- Admission and Transfer Requirements
- Graduation Requirements

What Will I Study?

Want to have a more productive online presence?

Need to persuade your boss to give you a raise?

Having conflict in your relationship and not sure how to resolve it?

Communication is at the heart of everything we do. This program helps you get at both the why that is and the how of doing it well. This discipline dates back to the Ancient Greeks drawing upon the study of persuasion as well as some anthropology, psychology and sociology—applying those theories of human communication behavior to our personal and professional lives. Students take foundational courses in public presentation, group dynamics, interpersonal communication and communication theory. Once they have completed these core courses, students may then choose nine hours of electives suited to their own interests. Additional coursework includes social media and digital communication, intercultural communication, organizational communication, communication ethics, and leadership, just to name a few.

Why Choose This Major?

A LinkedIn report covered by MarketWatch sought to determine the majors that help graduates secure the widest variety of jobs. Communication was ranked in the top ten of most versatile majors. Surveys of employers continually reveal that among the most desirable qualities of a job applicant are communication skills and the ability to work effectively with a diverse population. The Communication program provides its graduates with a solid foundation in communication, which will enhance their marketability in today’s competitive workplace.

What are Communication Graduates Doing Now?

Communication graduates with an AA degree work in human relations, communication planning and digital communication strategizing among others. The Associate Degree in Communication Studies is also excellent for working professionals, adult learners, and other students who want specific, accelerated training in communication.
More Information

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Communication Studies with Public Advocacy Concentration

Program Requirements

Communication Studies with Public Advocacy Concentration, BS Program Checksheet

Includes:

- Major Courses and General Education Courses
- Admission and Transfer Requirements
- Graduation Requirements

What Will I Study?

In the workplace or in the community, we face issues that require taking a position, finding solutions and/or advocating for better conditions. Advocacy is a key communication skill for all careers, but especially for careers in law, government, healthcare, nonprofit organizations, and social services. The ability to advocate appropriately and effectively for personal needs contributes to life satisfaction. In addition to a core of communication classes in persuasion, presentation, group dynamics, and interpersonal skills, students select elective courses from other programs to build the knowledge and skill base needed to effectively advocate in a multitude of circumstances.

One unique feature of the Communication program is that students must complete a Practicum (career internship or research project) including a minimum of 240 hours of contact in a workplace setting or research work (80 hours = 1 credit earned). Students have the option of distributing these credits across multiple placements or projects and can take additional Practicum credits for elective hours. This feature prepares students for life after graduation, adding valuable experience to their resume.

Why Choose This Major?

A LinkedIn report covered by MarketWatch sought to determine the majors that help graduates secure the widest variety of jobs. Communication was ranked in the top ten of most versatile majors. Surveys of employers continually reveal that among the most desirable qualities of a job applicant are communication skills and the ability to work effectively with a diverse population.

More Information

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Computer Information Systems

Program Requirements

Computer Information Systems, BS Program Checksheet

Includes:

- Major Courses, General Education Courses, and Business Track Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Computer Information Systems?

The Bachelor of Science degree offered through the College of Business at Ferris prepares students to be team leaders in the development and maintenance of Business Information Systems. Starting positions include application programmer/analyst, business analyst, systems analyst, networking administrators, consultants, software developers, computer support specialist, systems administrators, project leaders and web developers.

To assure relevance and enduring value, our Computer Information Systems (CIS) program has been designed to align with the national standard (IS2002) established by computing professionals. In addition, we have drawn upon our tight linkages with industry to assure that our labs and our required internships provide the level of hands-on experience that ensures our students are sought after by employers who recognize Ferris as a source of skilled, knowledgeable IS/IT graduates that can hit the ground running and grow from there.

Computers and Information Systems have become essential to all aspects of business and life. Professionals are needed to relate the problem-solving abilities of a computer system to an individual business department, corporation, or multi-national enterprise.

This program has close relationships with the IT industry through a program advisory board, and requires internships as a practical hands-on experience. The hands-on approach in the bachelor degree gives graduates a real-world look at their professional field.

Career Opportunities

The need for computing professionals and executives in the country is growing as companies become more global. Almost every major challenge facing our world is turning to computing for a solution, from conquering disease to eliminating hunger, from improving education to protecting the environment.

According to the United States Department of Labor, employment of computer and information
technology occupations is projected to grow 12 percent from 2014 to 2024, faster than the average for all occupations. These occupations are expected to add about 488,500 new jobs, from about 3.9 million jobs to about 4.4 million jobs from 2014 to 2024. In part, the growth is due to a greater emphasis on cloud computing, the collection and storage of big data. More everyday items are becoming connected to the Internet in what is commonly referred to as the “Internet of things”, and the continued demand for mobile computing.

The median annual wage for computer and information technology occupations was $81,430 in May 2015, which was higher than the median annual wage of $36,200 for all occupations.

More precisely, the US-BLS predicts that each year between now and 2024, there will be nearly 20,000 new software development jobs, nearly 12,000 new systems analysts jobs, over 8,000 new computing support jobs, and over 4,000 network/system administration jobs. No other STEM area is expected to generate even 4,000 New Jobs per year.

Do you enjoy finding better ways to get things done using computers? Are you interested in understanding how information systems can improve business processes and make organizations work better? Information Systems (IS) professionals analyze, design, implement, and manage innovative technology-based solutions. They help modern enterprises in virtually any industry create value using information technology.

IS professionals integrate their computing and business skills to radically improve the ways in which all organizations collect, manage, and use data to achieve their goals. They also facilitate communication between technical and business specialists in order to identify optimal IT solutions.

**Curriculum**

The CIS program provides maximum flexibility for students, and easily changes with the market place. The curriculum core is aligned to a national standard (IS 2002) which was produced by the ACM, AITP, and AIS professional societies. This core was created from skills and attributes listed in thousands of job advertisements for Information Systems positions.

The CIS curriculum provides students with a broad understanding of core business functions, competency in computer programming, knowledge of information technology infrastructure, and a sound foundation in web-based systems analysis and design. Furthermore, this curriculum provides the necessary related business skills for immediate employment in Information Systems and for advancement to management positions.

**More Information**

Accountancy, Finance & Info Systems  
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231-591-2434  
AFIS@ferris.edu

The College of Business is accredited by the Accreditation Council for Business Schools and Programs (ACBSP.) Next Accreditation Review is February 2028.
Computer Information Systems

Program Requirements

Computer Information Systems, AAS Program Checksheet

Includes:

- Major Courses, General Education Courses, and Professional Track Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Computer Information Systems?

The Associate in Applied Science degree, offered through the College of Business at Ferris, prepares students to support computing systems by providing programming, systems analysis, network administration, and some database management skills.

Entry-level positions include jobs such as programmer/analyst, network administrator, systems analyst, computer support specialist, and other related positions in the field.

This program has close relationships with industry through a program advisory board and requires internships as a practical hands-on experience. The hands-on approach gives graduates a real-world look at their professional field.

Career Opportunities

With an AAS in CIS, typical positions include Web-based jobs such as:

- **Web architects or programmers** are responsible for the overall technical construction of the website. They create the basic framework of the site and ensure that it works as expected. Web architects also establish procedures for allowing others to add new pages to the website and meet with management to discuss major changes to the site.

- **Web designers** are responsible for how a website looks. They create the site’s layout, integrate graphics, implement applications (such as retail checkout tools), and manage the content of the site. They also write web-design programs in a variety of computer languages, such as HTML or JavaScript.

- **Webmasters** maintain websites and keep them updated. They ensure that websites operate correctly and test for errors such as broken links. Many webmasters respond to user comments as well.

- **Web developers** design and create websites. They are responsible for the look of the site. They are also responsible for the site’s technical aspects, such as performance and capacity, which are measures of a website’s speed and how much traffic the site can
handle. They also may create content for the site.

The AAS in CIS helps professionals integrate their computing and business skills to radically improve the ways in which all organizations collect, manage, and use data to achieve their goals. They also facilitate communication between technical and business specialists in order to identify optimal computing solutions.

Curriculum

The CIS program provides maximum flexibility for students, and easily changes with the marketplace. The curriculum core is aligned to a national standard (IS 2002) produced by the ACM, AITP, and AIS professional societies. This core was created from skills and attributes listed in thousands of job advertisements for IS positions.

The Associate in Applied Science degree is aligned to easily flow into the four-year bachelor degree in CIS.

More Information

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http://www.acbsp.org
Computer Information Systems

Program Requirements

Computer Information Systems, Minor Program Checksheet

Includes:

- Minor Courses and Elective Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Computer Information Systems?

A CIS Minor can significantly increase the marketability of any Bachelor's degree. Proficient usage of computers in day-to-day business functions is now critical for success in any work environment. Having a CIS Minor adds skills and abilities beyond your major that employers need, and it will differentiate you from those without it.

Career Opportunities

Computers and Information Systems have become essential to all aspects of business. All professionals, regardless of their major, are needed to understand and relate the problem-solving abilities of a computer system to an individual business department, company, or a multinational enterprise.

A CIS Minor will give you an advantage over other majors who do not have these critical skills.

More Information

Accountancy, Finance & Info Systems
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Computer Information Technology

Program Requirements
Computer Information Technology, BS Program Checksheet
Includes:

- Major Courses, General Education Courses, and Business Core Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Computer Information Technology?
To assure relevance and enduring value, our Computer Information Technology (CIT) program has been designed to align with industry standards established by computing professionals. In addition, we have drawn upon our tight linkages with industry to assure that our labs and our required internships provide the level of hands-on experience that ensures our students are sought after by employers, who recognize Ferris as a source of skilled, knowledgeable IS/IT graduates who can hit the ground running and grow from there. The CIT degree includes the expectation that students will earn several industry certifications as well, providing an additional specialized skill set to enhance the graduate's value.

The Computer Information Technology program is for students who want to work in the business world and give technical assistance to computer systems end users in businesses and organizations. Individual business departments, corporations, and multi-national enterprises need professionals who can apply their technical skills to problem-solve computer systems issues within the business environment. The CIT curriculum provides students with a broad understanding of core business functions, and provides the skill sets required for computer support specialists, help-desk support, network and computer systems administration, and computer security. This curriculum prepares you for industry certifications such as CompTIA's A+, Network+, Linux+, and Security+ in addition to Microsoft's MCSA or MCTS. The hands-on approach in the bachelor degree gives students a real-world look at their professional field.

Career Opportunities
The need for computing professionals and executives in the country is growing as companies become more global. Job growth rates for computing professions from the United States Bureau of Labor Statistics (US-BLS) can be summarized with one word: BIG. Today’s market has big demand with big salaries for qualified professionals. Computing occupations are estimated to grow rapidly over the next decade – many between 21% and 54% (US-BLS), far outpacing overall job growth in the United States.
Employment of computer support specialists is projected to grow 17% by 2022, which is faster than the average for all occupations. More support services will be needed as organizations upgrade their computer equipment and software. Computer support staff will be needed to respond to the installation and repair requirements of increasingly complex computer equipment and software. Employment of support specialists in computer systems design and related firms is projected to grow 49 percent by 2022.

**Computer network support specialists** typically do the following:

- Test and evaluate existing network systems
- Perform regular maintenance to ensure that networks operate correctly
- Troubleshoot local area networks (LANs), wide area networks (WANs), and Internet systems

Computer network support specialists, also called technical support specialists, usually work in their organization’s IT department. They help IT staff analyze, troubleshoot, and evaluate computer network problems. They play an important role in the daily upkeep of their organization’s networks by finding solutions to problems as they occur. Solving an IT problem in a timely manner is important because organizations depend on their computer systems. Technical support specialists may provide assistance to the organization’s computer users through phone, email, or in-person visits.

**Computer user support specialists** typically do the following:

- Pay attention to customers when they describe their computer problems
- Ask customers questions to properly diagnose the problem
- Walk customers through the recommended problem-solving steps
- Set up or repair computer equipment and related devices
- Train users to work with new computer hardware or software, such as printers, word-processing software, and email
- Assist users in installing software
- Provide others in the organization with information about what gives customers the most trouble and about other concerns customers have

IT professionals engage in procuring, securing, supporting, troubleshooting, and designing elements of the IT infrastructure. Their work covers a variety of contexts, from websites to databases and network applications, in organizations ranging from business and government to schools, health care, and more.

IT professionals possess the ideal combination of knowledge and practical, hands-on expertise to support both an organization’s technology infrastructure and the people who use it. They’re responsible for selecting hardware and software products appropriate for an organization. IT professionals create and manage websites and networks to provide a secure, efficient, and productive environment for everyone.

**More Information**

Accountancy, Finance & Info Systems
119 South Street, BUS 212
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http://acbsp.org
Computer Information Technology

Program Requirements

Computer Information Technology, Minor Program Checksheet

Includes:

- Minor Courses and Elective Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Computer Information Technology?

A CIT Minor can significantly increase the marketability of any bachelor’s degree. The use of computer technology in day to day operations is important to all career fields. This minor provides the tools needed to successfully integrate hardware and software into a business’s or organization’s environment. You’ll gain a broad understanding and the basic skills required for jobs such as computer support specialist, help-desk support personnel, networking administrator, system administrator, and security specialist. This minor also prepares you for industry certifications such as CompTIA’s A+ and Network+. Linux+, Project+, and Microsoft’s MCTS certifications are additional options you may choose to pursue. All courses take a hands-on approach that will assist you with successful completion of these industry certifications.

Career Opportunities

System support is essential to all fields of industry. All professionals, regardless of their major, must be able to understand and relate to the problem-solving abilities of a company’s or organization’s computer systems. Understanding computer systems will give you an advantage over other majors that may lack these critical skills.

More Information

Accountancy, Finance & Info Systems
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Computer Networking

Program Requirements

Computer Networking, Certificate Program Checksheet

Includes:

- Certificate Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose the CNS Certificate?

This certificate prepares for the Cisco Certified Network Administrator – Routing & Switching (CCNA) exam. Those students looking to advance in their current position by gaining the CCNA certification will benefit from this program. The courses need to be taken in order from Networks 1 through Networks 4.

More Information

School of Engineering and Computing Technology
Computer Networks & Systems Programs
915 Campus Drive, SWN 405
Big Rapids, MI 49307
Phone: 231-591-2388
Email: eecn@ferris.edu
https://www.ferris.edu/CET/ceems/cns/homepage.htm

Ferris State University
College of Engineering Technology
1009 Campus Drive, JOH 200
Big Rapids, MI 49307-2280
Phone: 231-591-2890
Email: technology@ferris.edu
www.ferris.edu/technology
Computer Networking

Program Requirements

Computer Networking, Minor Program Checksheet

Includes:

- Minor Courses and Elective Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose a Minor in Computer Networking?

If you are a business, health, science, or math major, the Computer Networking Minor may help expand your career opportunities. With the mix of these courses, you will understand the fundamentals of computer networking along with implementing these networks. Because of the widespread use of networks in many careers, your major course of study coupled with this minor will open doors in a broad range of industries.

More Information

School of Engineering and Computing Technology

Computer Networks & Systems Programs
915 Campus Drive, SWN 405
Big Rapids, MI 49307
Phone: 231-591-2388
Email: eecn@ferris.edu
https://www.ferris.edu/CET/ceems/cns/homepage.htm

Ferris State University

College of Engineering Technology
1009 Campus Drive, JOH 200
Big Rapids, MI 49307-2280
Phone: 231-591-2890
Email: technology@ferris.edu
www.ferris.edu/technology
Computer Networks and Systems

Program Requirements

Computer Networks Systems, BS Program Checksheet

Includes:

- General Education Courses and Major Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Computer Networks and Systems?

Advancements in computers, networks, and the evolution of the Internet of Things continue to create a demand for graduates proficient in network communications, computer hardware, embedded systems, and software development. Employers value professionals capable of designing, programming, deploying, securing, and managing these technologies. The ideal employee has both hands-on and theoretical knowledge of networking, digital communications, microprocessor systems, real-time systems, high-level programming, network security, and project management.

Computer Networks and Systems is a dynamic Bachelor of Science program targeted at these exciting digital careers. Its strong technical emphasis meets the employer's needs and allows graduates an excellent foundation to enter multiple high-paying career paths. This unique curriculum balances theory with extensive hands-on experience.

Career Opportunities

Networking is emphasized throughout. CNS students gain extensive knowledge and experience in designing, constructing, analyzing, and securing networks. Topics in electronics, microprocessors, network/computer hardware, operating systems, signaling, and software are presented throughout the program.

To ensure that graduates are optimally prepared, courses extend into the most current and specialized technologies. CNS also offers opportunities to gain valuable experience through summer internship and senior projects. Since CNS is a Cisco Networking Academy member, advanced placement is available for students in the Cisco Networking Academy or who have CCNA certification!

More Information

School of Engineering and Computing Technology
Computer Science

Program Requirements

Computer Science, Certificate Program Checksheet

Includes:

- Certificate Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose a Computer Science Certificate?

A certificate in Computer Science will significantly enhance the employability of a graduate from any program at Ferris. Computer skills are among the most important skills an employer is looking for in employees today. It can serve to enhance the expertise of the student in their major field and also serve as an excellent preparation for entry-level positions in the computing field.

More Information

ADVISOR: Dr. James Nystrom
PHONE: 231-591-5864
EMAIL: JamesNystrom@ferris.edu

Department of Mathematics
Ferris State University
820 Campus Drive/ASC 2021
Big Rapids, MI 49307-2225
Phone: 231-591-2565
Computer Science

Program Requirements

Computer Science, Minor Program Checksheet

Includes:

- Minor Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose the Computer Science Minor?

A minor in Computer Science will significantly enhance the employability of a graduate from any program at Ferris. Computer skills are among the most important skills an employer is looking for in employees today. It can serve to enhance the expertise of the student in their major field and also serve as an excellent preparation for entry-level positions in the computing field.

Through the course work of the Computer Science minor, students will be provided the opportunity to learn computer science applications such as programming language, computer architecture, microprocessor-controlled equipment and local area networks.

More Information

ADVISOR: Dr. James Nystrom
PHONE: 231-591-5864
E-MAIL: MathDepartment@ferris.edu

Mathematics Department
Ferris State University
820 Campus Drive, ASC 2021
Big Rapids, MI 49307
Phone: 231-591-2565
Computerized Business Applications

Program Requirements

Computerized Business Applications, Certificate Program Checksheet

Includes:

- Certificate Programs
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose the Computerized Business Applications Certificate?

A certificate in Computerized Business Applications significantly enhances the employability of a student. Computer software skills are among the most important skills identified by employers. This certificate provides practical, hands on preparation for students interested in setting themselves apart from their peers and is designed to complement any Ferris major program.

This certificate includes training in several major software packages used in the industry today including word processing, spreadsheets, bookkeeping, and Enterprise Resources Planning (ERP). Students learn how to use these software tools to manage a business as well as provide information needed to make business decisions.

More Information

Accountancy, Finance & Info Systems
119 South Street, BUS 212
Big Rapids, MI 49307-2284
Phone: 231-591-2434
Email: AFIS@ferris.edu
Construction Administration

Program Requirements

Construction Administration, Certificate Program Checksheet

Includes:

- Certificate Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Construction Administration?

Construction Administration includes such classes as construction quantity estimating, construction administration, construction cost estimating, advanced construction scheduling. It prepares students for positions related to construction operations. It is often pursued by individuals working in the construction industry who do not have a degree in Construction Management or a closely-related field.

It is possible to enroll in individual courses without committing to completing the entire program. However, since class size is limited, enrollment preference will be given to those students who intend to finish all courses and earn the certificate. Also, some earlier certificate courses are prerequisites to later courses.

Certificate offered at the main campus in Big Rapids, MI and at Ferris Statewide - Grand Rapids.

More Information

School of Built Environment
Construction Technology & Management Programs
605 S. Warren Avenue, GRN 227
Big Rapids, MI 49307-2280
Phone: 231-591-3773
Email: consprog@ferris.edu
https://www.ferris.edu/CET/built-env/ctmg/index.html

Construction Administration Certificate @ Ferris Statewide, Grand Rapids
151 Fountain Street, NE
Grand Rapids, MI 49503
Phone: 616-451-4777 or 800-998-3425
Email: ferrisgr@ferris.edu
https://www.ferris.edu/HTMLS/statewide/constructionadministration_cert.htm
Construction Management

Program Requirements

Construction Management, BS Program Checksheet

Includes:

- Major Courses and General Education Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Construction Management?

The Bachelor of Science in Construction Management produces graduates who are prepared to manage the entire construction process. This industry-driven degree blends technical instruction in construction and engineering with strong business education. It builds on a foundation strong in basic construction technology, mathematics, science and general education with program courses covering project costs, estimating, economics, scheduling, contracts, safety, engineering fundamentals, technical communication, advanced computer software and technology, and business management.

Program is offered full-time at the main campus in Big Rapids, MI and a part-time three-year rotation cohort is available at Ferris Statewide Grand Rapids, MI.

Career Opportunities

The construction industry has more than 650,000 employers with over 6 million employees and creates nearly $1 trillion worth of structure each year. It accounts for 4% of the US GDP. The United States is the second-largest construction market in the world.

Accredited by the American Council for Construction Education (ACCE), the Construction Management program at Ferris fills a vital need for time, cost, and quality control in construction projects through the application of proper management tools in the many construction industry sectors - commercial, industrial, civil, and residential.

With proper education and training, Construction Management graduates can anticipate obtaining leadership positions in general contracting, construction management, project coordination, field supervision, quality assurance/control, safety, development, field inspection, and subcontracting. There are also opportunities as estimators, schedulers, developers, and owner's representatives.

More Information

School of Built Environment
Construction Technology & Management Programs
605 S. Warren Avenue, GRN 227
Big Rapids, MI 49307-2280
Phone: 231-591-3773
Email: consprog@ferris.edu
https://www.ferris.edu/CET/built-env/ctmg/construction-mgt-program-BS.htm

Construction Technology & Management Part-Time @ Ferris Statewide Grand Rapids
151 Fountain Street, NE
Grand Rapids MI 49503
Phone: 616-457-4777 or 800-998-3425
Email: ferrisgr@ferris.edu
https://www.ferris.edu/HTMLS/statewide/construction-management.htm

Ferris State University
College of Engineering Technology
1009 Campus Drive, JOH 200
Big Rapids, MI 49307-2280
Phone: 231-591-2890
Email: technology@ferris.edu
www.ferris.edu/technology

The College of Engineering Technology Construction Management Bachelor Degree program is accredited by the American Council for Construction Education (ACCE). The next accreditation review is scheduled for 2024.
Creative Writing

Program Requirements

Creative Writing, Minor Program Checksheet

Includes:

- Minor Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose the Creative Writing Minor?

With its dual emphasis on writing and reading creative works, the Creative Writing Minor encourages students to improve communicative and language skills while developing creative and critical texts; allows students to develop analytical skills and problem-solving skills; fosters an appreciation for language as both an expressive and a communicative medium; and encourages students to develop a deeper understanding of human nature, contemporary society, and the role of the individual in today's world.

More Information

ADVISOR: Dr. Deirdre Fagan
PHONE: 231-591-3031
EMAIL: DeirdreFagan@ferris.edu

Department of English, Literature, and World Languages
Ferris State University
820 Campus Drive/ASC 3080
Big Rapids, MI 49307-2225
Phone: 231-591-3988
Creative Writing

Program Requirements

Creative Writing, Certificate Program Checksheet

Includes:

- Certificate Courses and Elective Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose the Creative Writing Certificate?

With its dual emphasis on writing and reading creative works, a Creative Writing certificate encourages students to improve communicative and language skills while developing creative and critical faculties. Producing, as well as reading and responding to creative texts, allows students to develop analytical skills and problem-solving skills; fosters an appreciation for language as both an expressive and a communicative medium; and encourages students to develop a deeper understanding of human nature, contemporary society, and the role of the individual in today's world.

More Information

Advisor: Dr. Deirdre Fagan
Phone: 231-591-3031
email: DeirdreFagan@ferris.edu

Department of English, Literature, and World Languages
Ferris State University
820 Campus Drive / ASC 3080
Big Rapids, MI 49307
Phone: 231-591-3988
Criminal Justice

Program Requirements

Criminal Justice, AA Program Checksheet

Includes:

- General Education Courses, Major Courses and Elective Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Criminal Justice?

All students must complete the associate degree in Criminal Justice and will receive an Associate in Arts degree. After students have completed the associate degree requirements, they will apply to the criminal justice B.S. degree program and choose from either the law enforcement concentration, corrections concentration or criminal justice generalist concentration. Admission into the B.S. degree program is granted on a competitive basis, as space permits.

More Information

Ferris State University
School of Criminal Justice
1349 Cramer Circle
Bishop Hall 509
Big Rapids, MI 49307-2737
Phone: 231-591-3652 or 231-591-5080
Criminal Justice

Program Requirements

Criminal Justice, Minor Program Checksheet

Includes:

- Minor Courses and Elective Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose the Criminal Justice Minor?

The Criminal Justice minor was designed to increase the options available for Ferris State University students looking to supplement their education in a field outside of their major. The minor will allow students to obtain either a general overview of the criminal justice system or to obtain a certification in corrections as required by the Michigan Department of Corrections for employment. There are many majors currently offered at Ferris State University that are employable in the field of criminal justice with an appropriate background in criminal justice. The minor is designed to provide this educational background.

More Information

Ferris State University
School of Criminal Justice
1349 Cramer Circle, BIS 509
Big Rapids, MI 49307-2737
Phone: 231-591-3652 or 231-591-5080
Criminal Justice - Corrections Option

Program Requirements

Criminal Justice Corrections Option, BS Program Checksheet

Includes:

- General Education Courses and Major Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose the Criminal Justice Corrections Option? - Program Spotlight

This option emphasizes areas of criminal justice other than law enforcement including adult institutions, probation, parole, and the prevention, treatment, and control of both youthful and adult offenders. Coursework is designed to introduce various components that make up the structure of institutional corrections, community corrections, and human service agencies working with deviant populations. Further emphasis is placed on interpersonal communication, crisis intervention, and working with special deviant populations.

This option includes certification of the minimum educational requirements for the position of state corrections officer as established by the Michigan Correctional Officers' Training Council. Similarly, the School of Criminal Justice offers a local Corrections Officer Training Academy that is designed to provide certification training for students wishing to work as a county jail corrections officer in Michigan.

Career Opportunities

The corrections track graduates are well positioned to work with the deviant populations at the federal, state, and local level. They are also prepared to work with juveniles and adults. Opportunities are available for detention/correctional officers; probation agents, parole agents, working within the court system, youth programs, residential treatment facilities, community corrections, and a wide array of human services agencies.

More Information

For further information, please contact the School of Criminal Justice.

1349 Cramer Circle, BIS 509
Big Rapids, MI  49307
231-591-5080 or 231-591-3652
Criminal Justice - Generalist Option

Program Requirements

Criminal Justice Generalist Option, BS Program Checksheet

Includes:

- General Education Courses and Major Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose the Criminal Justice Generalist Option?

The generalist option will help prepare students to be successful in law school and graduate school, specifically in the fields of criminal justice and criminology. This option will provide students with the knowledge and skills needed to succeed in an ever-changing field. Employment opportunities include probation officer, parole officer, asset protection, court reporter and crime analyst. Please note that graduate or law degrees, as well as academy certifications may be needed for some employment opportunities. Please see one of our advisors or professors for more details.

Career Opportunities

The criminal justice curriculum at Ferris State University is designed to familiarize students with the complex nature of the American criminal justice system. The study of criminal justice focuses on the structure and roles of law enforcement, the courts, and corrections. We strive to provide students with the invaluable ability to think critically and act independently in their career. The generalist option is designed to prepare students for a variety of career paths following graduation, including law school, graduate-level work in criminology and criminal justice, and for careers at the local, state, and federal levels in law enforcement, corrections, and court related agencies. This path will provide you with the knowledge and tools to be the next leaders in the criminal justice field.

More Information

Ferris State University
School of Criminal Justice
1349 Cramer Circle, BIS 509
Big Rapids, MI 49307-2737
Phone: 231-591-3652 or 231-591-5080
Criminal Justice Administration

Program Requirements

Criminal Justice Administration, MSCJ Program Checksheet

Includes:

- Program Core Courses, Administration Courses and Culminating Experience Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Criminal Justice Administration?

The Master of Science degree in Criminal Justice Administration is designed to offer post-baccalaureate education to criminal justice professionals, administrators and traditional students seeking criminal justice graduate education. The curriculum offers coursework and skills necessary for successful administration in police, corrections and court agencies, as well as private criminal justice agencies; such as residential treatment centers, halfway houses and private security firms. Students seeking admission to law school and doctoral studies in criminal justice will find this program appealing.

For full-time students, the degree will take one academic year (fall, winter and summer semesters). If the student elects to take two classes per semester, the degree can be completed in two years, or if the student attends one class per semester, the degree can be completed in four years.

Career Opportunities

The program is designed to prepare students for the demand of administrative or managerial positions within public or private criminal justice agencies. The degree emphasizes four core areas:

- Administrative and Leadership Skills
- Personnel and Budgeting Management
- Research and Evaluation
- Crime and Violence

More Information

Ferris State University
School of Criminal Justice
1349 Cramer Circle
Criminal Justice-Law Enforcement Specialist Option

Program Requirements

Criminal Justice Law Enforcement Specialist, BS Program Checksheet

Includes:

- General Education Courses and Major Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose the Law Enforcement Specialist Option?

The Law Enforcement option's main goal is to provide a quality education to students which will improve the students' analytical, cognitive skills, and to prepare them for a career as a law enforcement officer at all levels of government. This option strives to provide students with outstanding problem solving abilities, critical thinking and decision making skills, as well as strong communication capabilities. These skills are highly sought in the field of criminal justice. This option leads the student to our nationally recognized and state certified Law Enforcement Academy where the primary faculty use Problem-Based Learning methodologies as the foundation of all instruction. This enables the student to be best prepared for any entry-level position in the field of law enforcement.

A well rounded general education is required for students in the program. Besides the general education requirements, students are required to take additional upper level courses in multiple areas outside of their academic major. This is done to ensure a well-educated graduate who possesses cognitive skills and knowledge not only within their discipline, but also across a wide array of areas of life that they will frequently encounter. Academic and technical knowledge, skills and abilities are provided to students in the program. Students are provided analytical reasoning skills that will allow them to learn and excel in law enforcement.

Career Opportunities

The Law Enforcement education track provides technical education and training that provides students with marketable policing skills. The Law Enforcement Academy is scheduled as the last year of the student's bachelor degree program and is formally approved by the Michigan Commission on Law Enforcement Standards. Upon academy completion and graduation, the student is eligible for a license to be a Michigan police officer. This allows employment in any Michigan police agency. In addition, the Law Enforcement option provides for a solid educational foundation for any law enforcement positions within the United States, including the federal government. Our academy has reciprocity with 48 other states allowing movement to other regions of our country after graduation.
More Information

Ferris State University

School of Criminal Justice

1349 Cramer Circle, BIS 509

Big Rapids, MI  49307-2737

Phone:  231-591-3652 or 231-591-5080
Curriculum and Instruction/Special Education Concentration

Program Requirements

Curriculum and Instruction/Special Education Concentration, MED Program Checksheet

Includes:

- Major Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose the Master of Education in Curriculum and Instruction?

The Master of Education in Curriculum and Instruction gives professional educators the advanced professional development necessary to open several career options as well as providing a foundation to improve their instructional practice. The Special Education concentration prepares students to be certified in either Learning Disabilities, Cognitive Impairments, Emotional Impairments, and/or Autism Spectrum Disorders. Students eligible for admission to the graduate program must hold a bachelor's degree from an accredited college or university. Candidates should hold or be eligible for provisional or standard licensure or certification at the elementary or secondary education level. Previous teaching experience is not a requirement. An admissions committee will review all application materials and recommend appropriate action. Upon admission to the graduate program, each student will be assigned a graduate advisor.

Career Opportunities

The program enables secondary and elementary educators to advance in their district salary schedules and become certified in one or more area of special education.

Teacher Certification Requirements (for Certification Concentrations only)

As required by the State of Michigan to receive teacher certification, all teacher candidates must: (1) pass the pedagogy tests in their concentration area, and (3) have a 3.0 minimum GPA to receive teacher certification in Michigan. These state requirements are in addition to the FSU graduation requirements of your individual program.

More Information

School of Education
Bishop Hall Room 421
Ferris State University
1349 Cramer Circle
Curriculum and Instruction/Subject Area Concentration

Program Requirements

Curriculum and Instruction/Subject Area Concentration Checksheet

Includes:

- Major Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose the M.Ed. in Curriculum and Instruction?

The Master of Education in Curriculum and Instruction gives professional educators the advanced professional development necessary to open several career options as well as providing a foundation to improve their instructional practice. Students eligible for admission to the graduate program must hold a bachelor's degree from an accredited college or university. When required, candidates should hold or be eligible for professional licensure, registration or certification to practice in the occupational specialty. Previous teaching experience is not a requirement. An admissions committee will review all application materials and recommend appropriate action. Upon admission to the graduate program, each student will be assigned a graduate advisor.

Career Opportunities

The program enables secondary and elementary educators to advance in their district salary schedules and affords an opportunity to take courses at advanced levels in specific content areas or gain more knowledge in other areas of education.

More Information

School of Education
Bishop Hall Room 421
Ferris State University
1349 Cramer Circle
Big Rapids, MI 49307-2737
Telephone: (231) 591-5361
Cybersecurity

Program Requirements

Cybersecurity, Certificate Program Checksheet

Includes:

- Certificate Courses
- Admission Requirements
- Graduation Requirements

Why Choose the Cybersecurity Certificate?

Responding to industry demands for knowledgeable workers in Cybersecurity, the Cybersecurity Certificate was created to increase the options available for Ferris State University students and professionals seeking to supplement their education in Cybersecurity, Digital Forensics, and Incident Response. In addition to earning the certificate, students may earn industry certifications such as Cellebrite Mobile Forensics, AccessData ACE, EC Council's Certified Network Defender (CND), and CompTIA's Security+. By supplementing their education with the Cybersecurity Certificate, it is believed that Ferris State University students will increase their employment opportunities. Courses are taught by faculty in the Information Security and Intelligence program.

- The National Security Agency and the Department of Homeland Security have designated Ferris State University as a National Center of Academic Excellence in Cyber Defense Education.

- The Department of Defense Cyber Crime Center (DC3) and the Air Force Office of Special Investigations has named Ferris State University as the first university to obtain designation as a National Center of Digital Forensics Academic Excellence.

- Ferris State University is a host site for the Michigan Cyber Range. This provides students with a unique opportunity to develop skills in detecting, preventing, and responding to cyber-attacks in a controlled setting that approximates the real world. The Cyber Range allows for actual performance of cyber security techniques such as penetration testing, digital forensics, malware analysis, and other information technology pursuits in a logically isolated system that has connectivity potential nationwide.

Career Opportunities

This certificate prepares you for careers such as a Security Analyst, Digital Forensics Examiner, Network Security Analyst, and Incident Response. The certificate may complement and augment knowledge and skills in many other majors and careers such as Systems Administration,
Systems Analysis, and Criminal Justice. Opportunities exist in government, business, health care, insurance, finance, and education fields.

More Information

Accountancy, Finance & Info Systems
119 South Street, BUS 212
Big Rapids, MI 49307-2284
Phone: 231-591-2434
Email: AFIS@ferris.edu
Cybersecurity - Ethical Hacking

Program Requirements
Cybersecurity - Ethical Hacking, Certificate Program Checksheet

Includes:

- Certificate Courses
- Admission Requirements
- Graduation Requirements

Why Choose the Cybersecurity - Ethical Hacking Certificate?

Responding to industry demands for knowledgeable workers in Cybersecurity, the Cybersecurity - Ethical Hacking Certificate was created to increase the options available for Ferris State University students and professionals seeking to supplement their education with ethical hacking and penetration testing skills. In addition to earning the Cybersecurity - Ethical Hacking certificate, students may earn industry certifications such as EC Council's Certified Ethical Hacker (CI EH) and CompTIA's Security+. Students may also become proficient with Python. By supplementing their education with the Cybersecurity - Ethical Hacking Certificate, it is believed that Ferris State University students majoring in computing related majors will increase their employment opportunities. Courses are taught by faculty in the Information Security and Intelligence program.

- The National Security Agency and the Department of Homeland Security have designated Ferris State University as a National Center of Academic Excellence in Cyber Defense Education.

- The Department of Defense Cyber Crime Center (DC3) and the Air Force Office of Special Investigations has named Ferris State University as the first university to obtain designation as a National Center of Digital Forensics Academic Excellence.

- Ferris State University is a host site for the Michigan Cyber Range. This provides students with a unique opportunity to develop skills in detecting, preventing, and responding to cyber-attacks in a controlled setting that approximates the real world. The Cyber Range allows for actual performance of cyber security techniques such as penetration testing, digital forensics, malware analysis, and other information technology pursuits in a logically isolated system that has connectivity potential nationwide.

Career Opportunities

This certificate prepares you for careers such as a Security Analyst, Ethical Hacker, Red Team Member, and Penetration Tester. The certificate also augments knowledge and skills in careers...
such as Software Engineering, Software Development, Systems Administration, and Systems Analysis. Information Security, Data Security, Web Application Security, and Mobile Security are a few of the possible focus areas. Opportunities exist in government, business, health care, insurance, finance, and education fields.

**More Information**

Accountancy, Finance & Info Systems  
119 South Street, BUS 212  
Big Rapids, MI 49307-2284  
Phone: 231-591-2434  
Email: AFIS@ferris.edu
Data Analytics

Program Requirements

Data Analytics, Certificate Program Checksheet

Includes:

- Certificate Courses
- Graduation Requirements

Why Choose a Data Analytics Certificate?

Data Analytics is a growing field that uses data to gather intelligence in business, marketing, finance, accounting, human resources, insurance, homeland security, criminal justice, education, government, healthcare, and manufacturing. Data mining turns raw data into information. This information creates knowledge used by leaders and managers to establish and achieve organizational goals and sustain a competitive advantage. For example, it assists businesses in spotting customer trends, creating customer loyalty, enhancing supplier relationships, reducing financial risk and uncovering new sales opportunities.

Organizations today face tough competitive challenges. Some challenges can be met with the competitive advantage of better knowledge. Your future employer may assign you to help create that knowledge by using sound research methods to discover knowledge hidden within vast databases. For example, you may be asked to help a team discover customer buying patterns that signal new niche markets. Or you may help discover a pattern of credit card use that points to fraud. Or you may help discover patterns of cell growth helpful in diagnosing cancer. Or you may assist a team searching for patterns of terrorist activities. Or you may help discover changing patterns of habitat growth impacting endangered species. Do you see yourself in a team working with research tools to explore vast amounts of data and information to uncover important patterns? If so, a data mining certificate will prepare you to work in a team setting to help fulfill the information needs of your employer through the application of data mining methods.

Career Opportunities

Some career options for those who have a Data Analytics Certificate would be a predictive modeler, data analyst or a data scientist.

More Information

Marketing Department
119 South Street/BUS 212
Big Rapids, MI 49307-2284
Dental Hygiene

Program Requirements
Dental Hygiene, AAS Program Checksheet
Includes:

- General Education and Major Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Dental Hygiene?
The Dental Hygiene program has been at Ferris since 1967 and is the largest in the State of Michigan. The program enjoys a reputation of educational excellence, with expert faculty who are recognized at the state, national and international levels within the discipline of dental hygiene for the delivery of innovative academic and continuing education.

Dental hygiene is a practice area that continues to grow with the increased consumer awareness of the importance of good oral hygiene in the prevention and detection of systemic disease processes. Dental hygiene will continue to grow based on the increasing focus on preventive dental care needs of the public.

Completion of the three-year associate in applied science degree, and final written and clinical exams enables the graduate to sit for the state licensure exam. Student clinical experiences occur within the college as the students work with patients from the University, community, and local schools in the College’s on campus Dental Hygiene Clinic.

Career Opportunities
Dental hygienists are professionals, licensed by the state in which they practice, who complete extensive educational and clinical preparation in preventive oral health care. A dental hygienist is a clinician, oral health care educator, health promoter, consumer advocate, administrator, and researcher.

The responsibilities of a dental hygienist include the development, implementation, and evaluation of a dental hygiene plan of care that is based on the needs of the patient. Clinical services can include:

- the evaluation and monitoring of medical and dental health histories
- examining, assessing, and documenting oral conditions
- exposing, processing and interpreting x-rays
• removal of calculus and stain that form on the teeth
• application of caries-preventive agents such as fluorides and pit and fissure sealants
• delivery of dietary education and counseling
• design and implementation of community or school oral health programs
• delivery of local anesthesia and nitrous oxide

Accelerated employment growth is expected for several years in response to increasing demand for dental care. Earnings of dental hygienists are affected by geographic location, employment setting, education, and experience. The average hourly wage in Michigan is $26 - $30 per hour in private practice employment settings. Dental hygienists who work for school systems, public health agencies, the federal government, or state agencies often have substantial benefits.

More Information

College of Health Professions
Ferris State University
200 Ferris Drive
Big Rapids, MI 49307
Phone: 231-591-2270
email: chp@ferris.edu

For information about accredited programs and educational requirements contact:

Commission on Dental Accreditation
American Dental Association
211 E. Chicago Ave.
Suite 1814
Chicago, IL 60611
www.ada.org
Dental Hygiene AAS to BS Completion

Program Requirements

Dental Hygiene, AAS to BS Program Checksheet

Includes:

- General Education Courses and Major Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose the Dental Hygiene AAS to BS Completion Degree?

The baccalaureate program in dental hygiene is designed for dental hygienists with an associate degree in dental hygiene who want to earn a Bachelor of Science degree in Dental Hygiene in a student-centered learning environment. Students engage in self-directed learning activities, advance their knowledge in the areas of critical thinking, exhibit values for lifelong learning, synthesize evidence based information and develop leadership skills. Graduates from the program will be prepared with advanced research, communication, educational leadership, practice management and dental hygiene knowledge.

Career Opportunities

The degree will expand the knowledge of dental hygienists and prepare graduates for more extensive roles in the profession. This degree program will guide students in developing the knowledge, skills, attitudes and values necessary for positions of responsibility in a variety of healthcare, educational, research and community settings. The curriculum will consist of general education courses, research courses and specialized career courses for entry into government, education, public health or advanced dental hygiene practice.

According to the American Dental Hygienists’ Association (ADHA), the hygienist can work in a variety of settings which may include: health maintenance organization or long-term care facility, military base, school system, dental supply company, insurance company, university or research center, veterinary center, government agency or another country. There is a growing need for hygienists to fulfill the roles of educators, advocates, administrators, and behavioral scientists for the profession to continue to be successful. For dental hygienists, the baccalaureate degree is important for adapting and advancing professionally.

More Information

Department of Dental Hygiene and Medical Imaging
College of Health Professions
Ferris State University
Design

Program Requirements

Design, BS Program Checksheet

Includes:

- Major Courses and General Education Courses
- Admission and Transfer Requirements
- Graduation Requirements

Graduates from the Design program are creative problem solvers who apply a disciplined process, and master tools and technologies, to develop solutions to both social and business problems. Students harness strategic, conceptual, and technical skills to create user-centered experiences that inform, educate, and persuade.

The Design program (formerly Graphic Design) is focused on preparing our students for successful careers in the design field by instilling in them both the highest standards of academic excellence and design practice. We support our students in launching their careers by delivering a design industry savvy curriculum, where a practical application of theory is delivered by experienced design faculty within a collaborative, student-centered environment.

Why Choose Design? - Program Spotlight

Are you curious about the creation of the logos you see, apps you use, brands you wear, and messages you receive? If you are, this program might be for you. Due to increased recognition of design as a strategic business tool, the graphic design field offers graduates long-term career opportunities in a wide variety of industries.

What is Design?

Designers are creative problem solvers who apply a disciplined process, and master tools and technologies, to develop solutions to both social and business problems. Designers harness strategic, conceptual, and technical skills to create user-centered experiences that inform, educate, and persuade.

Career Opportunities

Graduates of the Design Bachelor degree program develop careers as Designers, Interaction Designers, User Experience (UX) Designers, User Interface (UI) Designers, Product Designers, Art Directors, Front-end Developers, Design Directors, Creative Directors, Freelance Designers, Corporate Designers, and Production designers and managers. Ferris Design graduates are
consistently in demand at leading design firms, corporations, and agencies in the country, including Herman Miller, Amazon, Square One Design, Carnevale Interactive, Gensler, Haworth, and Microsoft.

**More Information**

Graphic Design  
119 South Street/BUS 212  
Big Rapids, MI 49307-2284  
Phone: 231-591-2426  
Email: DSGN@ferris.edu
Diagnostic Medical Sonography

Program Requirements

Diagnostic Medical Sonography, AAS Program Checksheet

Includes:

- Major Courses and General Education Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Diagnostic Medical Sonography? - Program Spotlight

Diagnostic Medical Sonographers use high frequency sound waves to produce images and data that assist health care professionals diagnose various disease and disease processes. Sonographers are taught to work independently and to operate highly technical ultrasound equipment to acquire sonographic images. Physicians depend on the sonographer's assistance with interpretation of the images to evaluate many body parts and structures, especially of the abdomen and pelvis.

Students enter the professional sequence of the program in the fall semester and spend the first three semesters on the Big Rapids campus. Studies during this period include general education and technical courses. Laboratory periods provide an opportunity to apply the theory and principles learned in the lecture sessions. During the final three semesters students work with patients in an off-campus clinical center. These sites are located throughout the state in hospitals affiliated with the University to provide clinical experience and continued academic instruction.

Graduates of the program are eligible to write the American Registry of Diagnostic Medical Sonographers (ARDMS) Sonography Principles and Instrumentation Examination as well as the Abdomen, and Obstetrics and Gynecology specialty exams.

Career Opportunities

Diagnostic Medical Sonography is a newly designated occupational category by the US Bureau of Labor Statistics within the imaging sciences field as of 2001. Overall employment of diagnostic medical sonographers and cardiovascular technologists and technicians is projected to grow 14 percent from 2018 to 2028, much faster than the average for all occupations. As the large baby-boom population ages, the need to diagnose medical conditions—such as blood clots and heart disease—will likely increase. Imaging technology is a tool used in making these diagnoses.
The median annual wage for diagnostic medical sonographers was $72,510 in May 2018. Bureau of Labor and Statistics, must faster than the general employment average.

Sonography, an ever-evolving profession, offers its practitioners many opportunities to enhance and advance careers. Sonographers can specialize in such diverse areas as the abdomen, obstetrics and gynecology, echocardiography, vascular technology, neurosonology and ophthalmology. They can work in clinics, hospitals, private practice, public health facilities, labs and other medical settings or branch out into education, administration, research or sales.

**More Information**

College of Health Professions
Ferris State University
200 Ferris Drive
Big Rapids, MI 49307-2270
231-591-2270 or 800.462.8553 ext. 2261
chp@ferris.edu

For Career information, enclose a stamped, self-addressed business size envelope with your request to:

ARDMS
1401 Rockville Pike, Suite 600
Rockville, MD 20852-1402
(301) 738-8401 or (800) 541-9754
FAX (301) 738-0312/0313

SDMS
12770 Coit Road
Suite 708, Dallas, TX 75251-1319
(972) 239-7367 or (800) 229-9506
FAX (972) 239-7378
www.sdms.org.

The Ferris State University Diagnostic Medical Sonography program is accredited by the Commission on Accreditation of Allied Health Education Programs (www.caahep.org) upon the recommendation of the Joint Review Committee on Education in Diagnostic Medical Sonography.

Commission on Accreditation of Allied Health Education Programs
25400 US Highway 19 North, Suite 158
Clearwater, FL 33763
Digital Animation and Game Design

Program Requirements

Digital Animation and Game Design, BAS Program Checksheet

Includes:

- Major Courses, General Education Courses, Concentration Courses and Elective Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Digital Animation & Game Design? - Program Spotlight

The Digital Animation and Game Design program is focused on educating students in the latest tools and technology used to create digital and interactive content. The required general education classes are targeted to future employees in digital technology as well as providing general knowledge and skills that will be useful in many aspects of life. The foundation courses provide in-depth knowledge applicable to any digital technology field with classes in design, business, 3D animation, and programming. The recommended electives allow students to further expand their knowledge in a particular area such as programming, 3D animation, and digital effects. Before graduating, all students will also complete an internship to give them the real-world experience and people connections necessary to succeed in their chosen profession.

Career Opportunities

The DAGD program offers students the opportunity to actively compete in many growing industries such as:

- Game Design and Asset Creation
- Product Design
- Virtual Reality
- Furniture / Vehicle Visualization
- Film
- Medical Visualization
- Architectural Flythrough
- Legal Simulation
- Web Development
- Educational Software
- Independent Game and Animation Development

More Information

School of Digital Media

Ferris State University

2020-2021 FSU Catalog
Digital Forensics/Cybersecurity

Program Requirements

Digital Forensics/Cybersecurity, Certificate Program Checksheet

Includes:

- Certificate Courses
- Admission Requirements
- Graduation Requirements

Why Choose the Digital Forensics/Cybersecurity (DFOR) Certificate?

Responding to industry trends, the Digital Forensics/Cybersecurity Certificate is a cooperative venture of the College of Business and the College of Education Criminal Justice Program. This certificate was created to increase the options available for Ferris State University students seeking to supplement their education in the field of digital forensics and cybersecurity. By supplementing their education with computer and mobile forensics and cybersecurity, it is believed that Ferris State University students majoring in all areas will increase their employment opportunities. The certificate consists of four security sources (one in information security, two in digital forensics, and one in fraud examination). The courses are designed specifically to make the student a more thorough investigator in cyber crime scenes and mobile device technologies.

More Information

Accountancy, Finance & Info Systems
119 South Street, BUS 212
Big Rapids, MI 49307-2284
Phone: 231-591-2434
Email: AFIS@ferris.edu
Digital Forensics/Cybersecurity

Program Requirements

Digital Forensics/Cybersecurity, Minor Program Checksheet

Includes:

- Minor Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose the Digital Forensics/Cybersecurity (DFOR) Minor?

The minor in Digital Forensics/Cybersecurity was created to increase the options available for Ferris State University students seeking to supplement their education in the field of security. By having a solid education in both the field of Criminal Justice and Digital Forensics, it is believed that all other Ferris State University students majoring in other areas will increase their employment opportunities. The minor is based upon combining two criminal justice courses with four courses in security, forensics, and fraud. The course is designed for students to explore the concepts of information security from both historical and emerging perspectives. Topics include the capabilities and threats of technology to information security, computer crime, computer and mobile device forensics, as well as legal, ethical and professional issues. Also, the history, nature and extent of computer crime and the roles and responsibilities of the legal system will be investigated.

More Information

Accountancy, Finance & Info Systems
119 South Street, BUS 212
Big Rapids, MI 49307-2284
Phone: 231-591-2434
AFIS@ferris.edu
Digital Marketing

Program Requirements

Digital Marketing, Certificate Program Checksheet

Includes:

- Certificate Courses
- Admission Requirements
- Graduation Requirements

Why Choose a Digital Marketing Certificate?

If you have a strong interest in Internet-based marketing activity, you'll find that Digital Marketing is the newest and most innovative marketing methodology used by business executives.

The Digital Marketing Certificate will enhance your skills in:

- Multi-channel marketing - integrating online and offline marketing with profitable results
- Selling online, and saving money and time for your company and your customers
- Managing databases in a digital world
- Mastering best practices in both business-to-customer and business-to-business digital marketing
- Creation and execution of Internet marketing/advertising and social media plans and campaigns

You will be provided with the latest cutting edge internet-based marketing skills that will help you, not only in digital marketing but in careers such as direct marketing, advertising, and professional selling.

This certificate is structured to complement the knowledge and career-readiness of students earning advertising, marketing, computer information systems, communication, and public relations degrees.

Career Opportunities

Students with a digital marketing background are in demand at advertising agencies, digital marketing agencies, and companies of all sizes. Entry-level job opportunities include positions in Search Engine Optimization (SEO), sponsored search (Google Ads), social media management, and content marketing.

More Information

Marketing Department
Ferris State University
Digital Marketing

Program Requirements

Digital Marketing, Minor Program Checksheet

Includes:

- Minor Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose a Digital Marketing Minor?

If you have a strong interest in Internet-based marketing activity and want to be able to hit the ground running in both Web marketing and Web design, the Digital Marketing Minor may be ideal for you. You will learn both the theory and practice of Digital Marketing, and the Digital Marketing Minor will enhance your skills in:

- Multi-channel marketing
- Integrating online and offline marketing with profitable results
- Selling online, and saving money and time for your company and your customers
- Managing databases in a digital world
- Mastering best practices in business-to-consumer digital marketing, business-to-business digital marketing, and direct marketing
- Creation and execution of Internet marketing/advertising and social media plans and campaigns including the basics of Web site design and implementation

You will be provided with the latest cutting edge Internet-based marketing skills that will help you, not only in Digital Marketing but also in careers such as direct marketing, advertising, and professional selling.

This minor is structured to complement the knowledge and career-readiness of students earning advertising/IMC, marketing, computer information systems, communications, and public relations degrees.

Career Opportunities

Digital Marketing is a field that is growing at astonishing speed, and it offers a great number and variety of specialized career opportunities. It encompasses all the facets of online marketing, including digital marketing sales, social media, online advertising, business-to-business digital marketing, web design, and more. You will find yourself in a very competitive, challenging and rewarding career in this field such as search engine marketer, digital marketing marketer, online advertising manager, social media manager, online media planner or buyer, salesperson or
marketing/advertising manager with digital marketing responsibilities. Your career ladder will often lead to high-paying senior management, executive and/or leadership positions.

More Information

Marketing Department
119 South Street, BUS 212
Big Rapids, MI 49307-2284
Phone: 231-592-2426
E-mail: MKTG@ferris.edu
Digital Media

Program Requirements

Digital Media, AS Program Checksheet

Includes:

- Major Courses, General Education Courses and Elective Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Digital Media?

With the expansion of digital technology, there are ever increasing career opportunities in this exciting field. This Associate degree combines existing courses within the Digital Animation and Game Design (DAGD), Digital Media Software Engineering (DMSE), and Television and Digital Media Production (TDMP) programs into an introductory and exploratory degree within the School of Digital Media at Ferris. It allows students to complete their general education requirements, while enrolling in courses from across the digital media curriculum. A portfolio of previous work is not required for acceptance into the program. Students will also have the opportunity to use state of the art digital equipment and software, that are used by professional production facilities in the industry today. By gaining practical experience and a foundation to a variety of media, students will be better prepared to choose the path that serves their individual needs and goals.

Career Opportunities

This degree can be used as the foundation for bachelor's degrees in DAGD, DMSE, and TDMP. Graduates with the Digital Media associate degree will be qualified for design assistant and technical support positions in staging, professional conferences, and some sporting and entertainment venues.

More Information

Ferris State University
School of Digital Media
1349 Cramer Circle
Bishop 303
Big Rapids, MI 49307-2748
Phone: 231-591-2712

http://www.ferris.edu/predm/
Digital Media Software Engineering

Program Requirements

Digital Media Software Engineering, BS Program Checksheet

Includes:

- Major Courses, General Education Courses and Elective Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Digital Media Software Engineering? - Program Spotlight

If you have the passion to create, and enjoy employing next-generation technology, consider software engineering. The Digital Media and Software Engineering (DMSE) bachelor's program at Ferris teaches software engineering from design to delivery. Graduates have a mastery of the entire software engineering process. Ferris is committed to innovation and relevance, while covering traditional Software Engineering and Emerging technologies

Graduates will have experience successfully designing, developing, and delivering quality software applications. Critically important topics such as: requirements management, configuration management, testing, and quality assurance are covered in depth.

This approach to software engineering is designed to allow graduates to seamlessly transition into the workforce, integrating and employing their knowledge.

Career Opportunities

The Digital Media Software Engineering program offers students the opportunity to actively compete in many growing industries such as:

- Health Care
- Government Applications
- Video Game Development
- Business Applications
- Automotive Industry
- Information Technologies
- Consulting/Contracting
- Research and Development
- Information Security
- Finance/Banking
- Entertainment Industry
More Information

School of Digital Media
Ferris State University
1349 Cramer Circle, Bishop Hall 303
Big Rapids, MI 49307
ph: 231-591-2712
fax: 231-591-2060

http://www.ferris.edu/dmse/
Direct Marketing

Program Requirements

Direct Marketing, Certificate Program Checksheet

Includes:

- Certificate Courses
- Admission Requirements
- Graduation Requirements

Why Choose a Direct Marketing Certificate?

If you choose the direct marketing certificate, you will learn the concept and application of database-driven marketing methods including the following areas:

- Direct marketing as an overall business model and as an element of Integrated Marketing Communications
- Direct marketing planning, merchandising, promotion, fulfillment and customer service as executed in a wide range of integrated media
- Direct marketing creative strategy and execution
- Hands-on direct marketing techniques

You will learn about one of the fastest-growing career fields in the nation and the world and will build your abilities for application in advertising agencies and companies in the business-to-consumer and business-to-business realms.

Career Opportunities

Students with a direct marketing background are in demand at advertising agencies, marketing agencies, and companies of all sizes. Entry-level job opportunities include positions in creative, media placement, direct and interactive marketing, project management, and account work.

More Information

Marketing Department
119 South Street/BUS 212
Big Rapids, MI 49307-2284
Phone: 231-591-2426
Email: MKTG@ferris.edu
Doctorate in Community College Leadership

Program Requirements

Doctorate in Community College Leadership, EDD Program Checksheet

Includes:

- Major Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose the Doctorate in Community College Leadership? - Program Spotlight

The Doctorate in Community College Leadership program at Ferris began in Summer 2010 and is designed for students who have a master's degree. Its development was in response to the need for leaders in community colleges due to an impending shortage of qualified candidates. A group of nationally recognized leaders initiated this program and guided the development to ensure that the program would meet the needs of 21st century community college leaders. The resulting program is unique in its delivery, with a focus on application grounded in theory. Problem solving based on real institutional issues will be the focus of the courses so that students learn in an environment that mirrors their professional world.

Ferris offers this program in a three-year cohort model with the dissertation integrated into course delivery. Community College Leadership dissertation approaches include project, research and evaluation options. Writing and research support is present from the first course. A hybrid delivery model will provide students an opportunity to meet face-to-face with community college leaders and faculty while providing flexibility with the online component of each course. A practicum experience will also give students an opportunity to work directly in a community college setting in a project that adds value to both the student's learning outcomes and the institution in which the student completes his/her practicum project.

Career Opportunities

An impending shortage of community college leadership candidates is well documented in the literature. Graduates with a doctorate from the Ferris Community College Leadership program will, therefore, have great career options. The wide range of leadership positions includes dean, director, provost, vice president, and president. Graduates will be especially qualified for these positions due to the applied nature and community college focus of the program.
Information on the doctoral degree program can be found at the Community College Leadership website:

http://www.ferris.edu/ccleadership

Contact:
Doctorate in Community College Leadership
410 Oak Street
Alumni Building, Room 115
Big Rapids, MI 49307

Phone: 800-562-9130 or 231-591-2710
Email: ccleadership@ferris.edu
Early Childhood Education

Program Requirements

Early Childhood Education, AAS Program Checksheet

Includes:

- Major Courses and General Education Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Early Childhood Education? - Program Spotlight

For those people who like to be around young children, a career in Early Childhood Education can be a labor of love. FSU's two-year program offers instruction in the growth, activities and teaching of children.

The Early Childhood Education program at Ferris teaches a broad spectrum of courses and includes extensive hands-on experiences. Students learn about the education of children and study early childhood development, nutrition, first aid, children's literature and child psychology. They also receive a broad educational background by completing general education courses in English, mathematics, humanities and sociology.

Practical experience is another significant part of the program. Majors have the opportunity in the child development laboratory to observe and work with infants, toddlers and pre-schoolers, applying theories and techniques taught in the classroom. Early Learning Center is a Ferris-owned and operated childcare service that serves as a training and observation laboratory for students. The center also offers quality care for children of students, faculty and staff of the University and members of the community.

During the final semester of the program students complete a faculty-supervised internship in a child-care setting. Job placement sites include FSU approved childcare centers.

Ferris offers the Early Childhood Endorsement (ZS) through the Michigan Department of Education. This program is designed for teachers holding Michigan teacher certification at the elementary level who wish to teach in public and pre-school programs.

Career Opportunities

Graduates of this program often find responsible positions in Headstart programs, day care centers or family day care homes, elementary schools, hospitals, recreation centers or other child-oriented businesses. Job opportunities are increasing as parents rely more and more upon
childcare outside the home.

Other graduates use their training in child development to supplement studies in nursing, dental hygiene, optometry, education, small business management and other business programs. Many students become interested in the Early Childhood Education curriculum simply because they want to become better parents.

Teacher Certification

If an early childhood education student wishes to continue in teacher education to complete a preliminary education teaching degree and obtain elementary certification, the State of Michigan requires that all candidates: (1) meet the MDE (CAEP) cohort requirements, (2) pass the pedagogy tests in elementary education and early childhood education, and (3) have a 2.75 minimum GPA to receive teacher certification in Michigan. These state requirements are in addition to the FSU graduation requirements of your individual program.

More Information

School of Education
Bishop Hall Room 421
Ferris State University
1349 Cramer Circle
Big Rapids, MI 49307-2737
Telephone: (231) 591-5361
Early Childhood Education

Program Requirements

Early Childhood Education, BS Program Checksheet

Includes:

- Major Courses, General Education Courses and Concentration Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Early Childhood Education? - Program Spotlight

For those people who like to be around children, a career in Early Childhood Education can be a labor of love.

The Early Childhood Education program at Ferris teaches a broad spectrum of courses. Students learn about the education of children and study early childhood development, nutrition, first aid, children's literature and child psychology. They also receive a broad educational background by completing general education courses in English, mathematics, humanities and sociology.

Practical experience is another significant part of the program. Majors have the opportunity in the child development laboratory to observe and work with infants, toddlers and preschoolers, applying theories and techniques taught in the classroom. Early Learning Center is a Ferris-owned and operated childcare center that serves as a training and observation laboratory for students. The center also offers quality care for children of students, faculty and staff of the University and members of the community.

Students select an area of concentration from lead teacher, manager or child life specialist. There are two internship requirements for this program. The first is completed as part of the first 60 credit hours and is completed as part of the Associates degree requirements. The second internship occurs at the end of the program and is completed in the specific concentration area that the student has selected.

Students choosing the Child Life Specialist have additional requirements after graduation as outlined by the Association of Child Life Professionals.

Career Opportunities

Students completing the Bachelor of Science program can seek positions as lead/head teacher, head start positions and other preschool positions. Those completing the management track are
able to seek positions as program directors. They may also be more successful in running a home day care program. Students completing the Child Life Specialist track are eligible to work in hospitals with children.

More Information

School of Education  
Bishop Hall Room 421  
Ferris State University  
1349 Cramer Circle  
Big Rapids, MI 49307-2737  
Telephone: (231) 591-5361
Early Childhood Elementary Education

Program Requirements

Early Childhood Elementary Education, Minor Program Checksheet

Includes:

- Minor Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Teaching Majors and Minors for Elementary Education Majors?

The Elementary Education program requires the completion of two academic teaching minors in addition to a planned program to fulfill the subject area requirements of the program. Students may choose from the subject areas of mathematics, integrated science, and language arts or a major in social studies.

In addition to the two academic minors, elementary education students may choose the Early Childhood Education minor (ZS). This minor prepares students to understand young children at the pre-school to 3rd grade levels. Many school districts in the state of Michigan require this additional endorsement to be hired in grades K-3.

More Information

School of Education
Bishop Hall Room 421
Ferris State University
1349 Cramer Circle
Big Rapids, MI 49307-2737
Telephone: (231) 591-5361
**Economics**

**Program Requirements**

Economics, Minor Program Checksheet

Includes:

- Minor Courses and Elective Courses
- Admission and Transfer Requirements
- Graduation Requirements

**Why Choose an Economics Minor?**

This minor is designed for students who wish to gain a deeper understanding of how economics impacts our daily lives and shapes the world around us. Economics proves to be an invaluable addition to the study of any discipline, from anthropology to zoology and everything in-between. Each of us makes many decisions on a daily basis that ultimately determine the course of our lives and affect the lives of the people around us. Economics students learn to look at this constellation of decisions and understand it based on the individual incentives that people face.

The Economics minor helps to prepare students for the world in which they are entering by providing them with a framework that they can use to understand the world around them, the analytic tools to figure out emerging trends in consumer data, and the ability to understand the trade-offs necessary when making difficult decisions. This helps students function better in any job but also as members of society.

**More Information**

ADVISOR: Dr. Mark Brandly  
PHONE: (231) 591-2433  
OFFICE: BUS 370  
EMAIL: MarkBrandly@ferris.edu

ADVISOR: Dr. Jennifer Dirmeyer  
PHONE: (231) 591-3147  
OFFICE: BUS 335  
EMAIL: JenniferDirmeyer@ferris.edu
Educational Leadership

Program Requirements

Educational Leadership, MS Program Checksheet

Includes:

- Major Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Educational Leadership?

Students will complete a core of theoretical and experiential courses that will build the foundation for their administrative experiences. These courses combine the convenience of online learning with face-to-face class time to practice and enhance skills. Of prime importance is the structured internship wherein local districts will be required to sponsor and mentor administrative candidates. During this internship, students will apply theoretical concepts and build administrative skills; they will also be expected to develop and complete a comprehensive project that will benefit their sponsor district. This cooperative effort of local districts is intended to help alleviate the shortage of prospective administrators, especially in rural schools.

Career Opportunities

The program enables secondary and elementary educators to advance in their district salary schedules and become educational leaders as building administrators. Successful completers of the program are eligible to apply to Michigan Department of Education for Building Level Administrator Certificate.

More Information

School of Education
Bishop Hall Room 421
Ferris State University
1349 Cramer Circle
Big Rapids, MI 49307-2737
Telephone: (231) 591-5361
Electrical Power Generation Certificate CT

Official Program Checksheet
Electrical/Electronics Engineering Technology

Program Requirements

Electrical/Electronics Engineering Technology, BS Program Checksheet

Includes:

- Major Courses, General Education Courses, and Elective Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Electrical/Electronics Engineering Technology?

Electronics, automation, and computers are the lifeblood of today’s high tech societies. The Bachelor of Science in Electrical/Electronics Engineering Technology (BS EEET) program graduates professionals that develop, design, apply, manage, and direct the future of these technologies.

Graduates are prepared for careers in Industrial Automation and Controls, Digital and Embedded Systems Design, Instrumentation, Programming, or Control Networks. Our graduates often obtain positions with titles such as Control System Integrator, Controls Engineer, Product Designer, Embedded Systems Developer, Control and Network Specialist, Technical Sales Specialist, and Electrical/Electronics Product Specialist.

The Bachelor of Science in Electrical/Electronics Engineering Technology is accredited by the Engineering Technology Accreditation Commission of the Accreditation Board for Engineering and Technology (ETAC-ABET) since 1993. The next accreditation review is scheduled for 2022. http://www.ABET.org

Career Opportunities

The BS EET program is known for its quality and responsiveness to industry. In addition to a solid foundation in electronic concepts, students learn the most current and relevant topics for today’s advanced technologies. Real-world theory and applications are emphasized throughout the program and theory is balanced with extensive hands-on experience. Program courses include topics in digital/microprocessors, control automation, industrial networking, and motion control. Recognizing the diverse career paths our graduates may enter, course selection can be customized by each student. Opportunities are also provided to gain valuable experience through summer internships, senior design projects, and professional organizations.

Most students in the BS EEET program ladder in from the Associate in Applied Science Industrial Electronics Technology (AAS IET) and complete in two years. However, students who have successfully completed an equivalent Associate's degree from another institution can also
usually complete the BS EEET in two years.

The Bachelor of Science in Electronics Engineering Technology boasts a history of excellent placement, high starting salaries, and graduates enjoying very successful careers. The program has strong support from several corporations influential in these fields and is accredited through the Engineering Technology Accreditation Commission of the Accreditation Board for Engineering and Technology (ETAC-ABET) from 1993 to present. The next accreditation review is scheduled for 2022. http://www.ABET.org

More Information

School of Engineering and Computing Technology
Electrical/Electronics Engineering Technology Programs
915 Campus Drive, SWN 405
Big Rapids, MI 49307
Phone: 231-591-2388
Email: eecn@ferris.edu
https://www.ferris.edu/CET/ceems/eeet/homepage.htm

Ferris State University
College of Engineering Technology
1009 Campus Drive, JOH 200
Big Rapids, MI 49307-2280
Phone: 231-591-2890
Email: technology@ferris.edu
www.ferris.edu/technology

Accreditation Information: The Bachelor of Science in Electrical/Electronics Engineering Technology is accredited by the Engineering Technology Accreditation Commission of the Accreditation Board for Engineering and Technology (ETAC-ABET). Next accreditation review scheduled for 2022. http://www.ABET.org
Elementary Education

Program Requirements

Elementary Education, BS Program Checksheet

Includes:

- Major Courses and General Education Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Elementary Education? - Program Spotlight

The School of Education offers an exemplary program in Elementary Education designed to provide a balanced blend of theory and practice. Throughout the program students will complete at least 600 hours in a variety of hands-on, field-based experiences in the K-8 classroom. Our class sizes of 20-25 students guarantee that all students receive the attention they deserve. A background in state-of-the-art educational technology prepares students to integrate computer technology into instruction.

The Elementary Education Program requires the completion of two elementary education minors or one elementary education teaching major in addition to a planned program minor, giving students a broad academic base in language arts, math, social studies and science. Students also receive an excellent foundation in physical education and the fine arts. The professional education courses include field-based experiences supervised by instructional teams comprised of teacher educators, professors from the content area disciplines, and expert K-8 teachers.

Points of Pride

- Fully integrated methods courses
- An emphasis on academic content
- A breadth of offerings for elementary educators
- Over 600 hours in teaching field experiences
- Technology applications across all program aspects
- Focus on classroom and hands-on application
- Small class sizes
- Individual attention
- Semester-by-semester advising
- 'Best-Practices' research-based curriculum
- Collaborative/Team teaching with K-12 educators

Career Opportunities
Every student will graduate with the knowledge and skills needed to begin an elementary teaching career.

**Teacher Certification Requirements**

As required by the State of Michigan to receive teacher certification, all teacher candidates must: (1) meet the MDE (CAEP) cohort requirements, (2) pass the pedagogy tests in their subject area majors, and (3) have a 2.75 minimum GPA to receive teacher certification in Michigan. These state requirements are in addition to the FSU graduation requirements of your individual program.

**More Information**

School of Education  
Bishop Hall Room 421  
Ferris State University  
1349 Cramer Circle  
Big Rapids, MI 49307-2737  
Telephone: (231) 591-5361
English

Program Requirements

English, BA Program Checksheet

Includes:

- Major Courses and General Education Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose English?

FSU's English major provides students with in-depth opportunities to develop and refine their communication skills, to develop critical thinking and analytic skills, and to write in different styles for different purposes and audiences. The English major also leads students to explore a wide variety of cultures, perspectives, and human dynamics through the study of literature.

The English major is taught by a large and outstanding group of faculty. They include award-winning 'master teachers,' published and award-winning authors, and faculty who bring experience in writing for business and industry. Some of the faculty are recipients of the coveted Fulbright Fellowship and have taught in universities abroad. Many faculty work closely with students throughout their undergraduate careers, and they mentor students in undergraduate research, or special projects.

Career Opportunities

The English major prepares students for a wide array of career opportunities. Many English majors enter the workplace immediately after graduation, working in business, publications, industry, public service, government, teaching, or the communication field. Their strong communication and analytical skills allow them to be flexible, adaptable, prepared to perform, and (once they have learned their employer's particular culture and business) able to advance into management and leadership positions. Other students go on to advanced study, and an English major is excellent preparation for graduate or professional study in such fields as law, business, education, or a variety of liberal arts disciplines.

More Information

ADVISOR: Dr. Heather Pavletic
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Department of English, Literature, and World Languages
English Education

Program Requirements

English Education, BS Program Checksheet

Includes:

- Major Courses and General Education Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose English Education?

The English Education program prepares its students to become outstanding English language arts teachers at the middle and high school levels. We offer a program of study for those who have a love of language, literature, and composition as well as a desire to share their passion with high school and middle school students. An array of courses offers English Education students a blend of classical and modern literature, written and oral skills, and critical and creative approaches to language studies. Students also may participate in a variety of co-curricular opportunities including Sigma Tau Delta English honor society, The Ferris State English Society, The Torch newspaper, the Annual Shakespeare Festival, student-led professional development events, and English language arts community outreach and services.

In addition, the English education program prepares prospective teachers for the challenges of teaching students from a broad range of cultural backgrounds in such diverse educational settings as traditional high and middle schools, vocational-technical centers, alternative and magnet schools and tech-prep programs.

Current vocational studies predict growing opportunities for teachers at all levels, both to replace retiring teachers and to provide lower student-teacher ratios in classrooms.

High school graduates, whether they plan to attend college or not, need language and writing instruction that qualifies them to meet the demands of their future careers. The FSU program prepares prospective teachers with the knowledge and skills essential to provide effective English instruction for students in Michigan and throughout the nation.

Career Opportunities

The English education program prepares students to teach in high school, as well as in vocational-technical centers, alternative and magnet schools, tech-prep programs and other non-traditional educational settings. With additional study, students may also teach in post-secondary schools. The program focuses on preparing prospective teachers for the challenges of
teaching students from a broad range of educational and cultural backgrounds. English teachers are in high demand and the employment outlook is excellent. A teaching minor is required. You cannot have an English teaching minor with this teaching major.

Teacher Certification Requirements

As required by the State of Michigan to receive teacher certification, all teacher candidates must: (1) meet the MDE (CAEP) cohort requirements, (2) pass the pedagogy tests in their subject area major, and (3) have a 2.75 minimum GPA to receive teacher certification in Michigan. These state requirements are in addition to the FSU graduation requirements of your individual program.

More Information

School of Education
Bishop Hall Room 421
Ferris State University
1349 Cramer Circle
Big Rapids, MI 49307-2737
Telephone: (231) 591-5361
English Education

Program Requirements

English Education/Secondary Education, Minor Program Checksheet

Includes:

- Minor Courses and Elective Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Teaching Minors for Secondary Education Majors

The Secondary Education program highly recommends the completion of a teaching minor.

More Information

School of Education
Bishop Hall Room 421
Ferris State University
1349 Cramer Circle
Big Rapids, MI 49307-2737
Telephone: (231) 591-5361
English Literature

Program Requirements

English Literature, Minor Program Checksheet

Includes:

- Minor Courses and Elective Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose the English Literature Minor?

A minor in English Literature enhances any degree. Students who minor in English Literature are perceived by employers as having the needed communication and critical thinking abilities that are a premium in today's workplace. The English minor allows students to explore a variety of cultures, perspectives, and human dynamics through the study of literature. The majority of courses are also writing intensive further adding to the graduate's marketability in a workplace where the ability to write clearly and expressively is an asset.

More Information

Advisor: Dr. Heather Pavletic
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Department of English, Literature, and World Languages
Ferris State University
820 Campus Drive, ASC 3080
Big Rapids, MI 49307
Phone: 231-591-3988
English/Professional Writing

Program Requirements

English/Professional Writing, Minor Program Checksheet

Includes:

- Minor Courses and Elective Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose the English/Professional Writing Minor?

This minor develops students’ skills in writing, critical reading, and analytical thinking - precisely the skills needed for advancement in nearly any career. The Professional Writing minor includes course work in linguistics, rhetoric, and a number of courses having to do with different forms of professional writing (e.g., grant proposals, publications, technical communication, opinion writing). Students in this minor may select the courses that apply most closely to their future career and employment goals. This minor enhances the employability of students for careers requiring intensive technical and professional reports, interpretive and critical thinking skills, formal proposals for funding, advanced writing abilities and methods of research, analysis, and interpretations.

While all careers are enhanced by communication skills, specific academic programs at Ferris especially lend themselves to the English/Professional Writing minor including:


More Information

Advisor/Coordinator: Dr. Zac Wendler
e-mail: ZacharyWendler@ferris.edu

Department of English, Literature, and World Languages
Ferris State University
820 Campus Drive, ASC 3080
Big Rapids, MI 49307
Phone: 231-591-3988
Event Management

Program Requirements

Event Management, Certificate Program Checksheet

Includes:

- Certificate Courses
- Admission Requirements
- Graduation Requirements

Why Choose Event Management Certificate?

The Event Management certificate is designed to provide meeting and event planning professionals, as well as those entering the hospitality field, with the skills and foundation of knowledge needed to excel in this multi-billion dollar industry. This certificate offers specialization in the areas of meeting and event management including market analysis and promotions development, contract development and negotiation, meeting and event service standards, project planning and execution, budget development and financial management, event production and protocols, food & beverage management, and experience delivery.

The event management certificate can complement virtually any degree program and lead to a multitude of career opportunities. Samples of employment include:

- Conference Coordinator
- Wedding Planning Professional
- Non-profit Event Coordinator
- Event Operations Manager

More Information

For more information, contact:

Hospitality Management Program
West Commons 106
1319 Cramer Circle
Big Rapids, MI 49307
Phone: 231-591-2382
Email: hospitality@ferris.edu
Event Management

Program Requirements

Event Management, Minor Program Checksheet

Includes:

- Minor Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose the Event Management Minor?

The Event Management minor is designed to provide students with a combination of hands-on skills and knowledge needed to be successful in the multi-billion dollar event management industry. Courses in this minor are designed to provide foundational knowledge on best practices in meeting and event management and allow for specialized study within a highly diverse industry.

This minor requires a 400-hour internship, and offers specialization in the areas of meeting and event management including market analysis and promotions development, contract development and negotiation, meeting and event service standards, project planning and execution, budget development and financial management, event production and protocols, food & beverage management, and experience delivery. The event management minor can complement virtually any bachelor degree program and lead to a multitude of career opportunities. Samples of employment include:

- Convention Sales Manager
- Wedding Planning Professional
- Event Production Manager
- Non-profit Event Coordinator
- Special Events Director
- Director of Exhibits

More Information

Hospitality Management Program
1319 Cramer Circle/WCO 106
Big Rapids, MI 49307
Phone: (231)591-2382
Email: hospitality@ferris.edu
Facility Management

Required Courses

Facility Management, BS Program Checksheet

Includes:

- Major Courses and General Education Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Facility Management?

Facility Management is the practice of coordinating the physical workplace with the people and work of a particular organization. Specifically, it is the management of facilities to maintain safe, healthy, and well-designed work environments. Facility Management integrates principles of business administration, architecture, and the behavioral and engineering sciences.

The Facility Management bachelor's degree program is a two-year, upper-division program designed for students who have already earned an associate degree in Architectural Technology or a related program.

Ferris' Facility Management curriculum combines a core of general education and business studies with building technology and facility coursework. The mission of the program is to provide students with the educational concepts, skills, and values necessary to successfully enter the employment market in facility management or related built environment professions.

This innovative baccalaureate degree program is one of a select group in North America accredited by the *International Facility Management Association (IFMA) as meeting the highest academic standards for professional education in facility management.

Between their junior and senior years, students complete an internship, for a minimum of 10 weeks. This experience is an integral part of the student's formal education that provides a valuable 'real-life' learning experience.

In addition to the Bachelor of Science degree in Facility Management, other options are available to students. These include:

- a Certificate in Facility Management (designed for the working professional)
- a Minor in Facility Planning Management
- a Minor in Facility Operations Management
The minors are designed for students pursuing degrees in other Ferris baccalaureate programs.

Of students entering the Facility Management program as juniors, 95% complete the program within two years. The job placement rate for graduates of the Facility Management program ranges from 94% - 98% each year.

**Career Opportunities**

The demand for facility management graduates is high and a career in facility management offers many opportunities. The responsibilities of facility management are varied and numerous. A facility manager may supervise many different aspects of a company's facilities, including architecture, interior design, technical infrastructure, real estate acquisition, security, environmental, safety issues, and more. Because of this, facility managers wear many professional hats and must be knowledgeable and skilled as follows: communicators, environmentalists, designers & space planners, strategic planners, financial planners, "tekkies" and team leaders.

In compliance with standards set by IFMA, the accrediting body for this degree, the Facility Management program is designed to meet the following objectives:

- Provide a foundation in mathematics and physical science, behavioral science, written and verbal communication, and computer skills.
- Provide a solid foundation in business, management, and its application to Facility Management.
- Develop an ability to use the tools and techniques of the facility manager.
- Develop an understanding of facility analysis, planning, and design.
- Develop knowledge of the architectural and construction process.
- Develop knowledge of contemporary office technology and philosophy.
- Develop knowledge of building systems technology and the proper operation and care of those systems.

Entry-level positions offer competitive salaries ranging from $48,000-$78,000 depending on geographic location, company size, and position. With five years of experience, average salaries range between $60,000 and $95,000. Academically prepared graduates of Ferris' Facility Management program have successfully transferred to Master of Architecture programs. The technology emphasized at Ferris complements the theory and design emphasis at architectural schools to provide a well-rounded professional education. Some graduates pursue other degrees such as an MBA (Master of Business Administration.) This degree complements the technical aspects of the Facility Management degree providing opportunities to assume leadership roles.

**More Information**

School of Built Environment  
Architecture and Facility Management Programs  
915 Campus Drive, SWN 101  
Big Rapids, MI 49307  
Phone: 231-591-3100  
email: atfm@ferris.edu  
www.buildyourfutu.re/ferris
*Accreditation: The College of Engineering Technology Facility Management program is an accredited program of the International Facility Management Association (IFMA).
http://www.ifma.org/
Facility Management

Program Requirement

Facility Management, Certificate Program Checksheet

Includes:

- Certificate Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose a Certificate in Facility Management?

Working professionals can earn a Certificate in Facility Management to advance their understanding of facility management as well as boost and advance their careers. Most of the people applying for this program are working in facility operations roles at universities, government agencies, and varied organizations. The certificate program helps to prepare participants for the Certified Facility Management (CFM) exam.

Program Objectives include:

To broaden the student’s awareness of the facility management profession and facility-related issues.

- Instill awareness of how facility management activities relate and complement each other; the relationship between the planning/construction and operations/maintenance efforts.
- Expand awareness of facility management issues and methods.
- Develop an understanding of the history of facility management.
- Develop an understanding of professional organizations and institutions that support the advancement of facility management.

To develop abilities to plan and manage projects.

To develop abilities to program spaces, identify user and organization needs and manage the design process.

To develop abilities to effectively maintain a facility, to anticipate and estimate resource requirements and to evaluate and re-engineer facility maintenance and operations practices.

Courses within the Facility Management Certificate program help prepare students for successful completion of the International Facility Management Association’s (IFMA) Certified Facility Management (CFM) exam. This credential sets the industry standard ensuring professional excellence and recognition. In addition, all courses qualify for IFMA CFM maintenance points.
More Information

School of Built Environment
Architecture and Facility Management Programs
915 Campus Drive, SWN 101
Big Rapids, MI 49307
Phone: 231-591-3100
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www.buildyourfuture.ferris.edu

Ferris State University
College of Engineering Technology
1009 Campus Drive, JOH 200
Big Rapids, MI 49307
Phone: 231-591-2890
e-mail: technology@ferris.edu
www.ferris.edu/technology
Facility Operations Management

Program Requirements

Facility Operations Management, Minor Program Checksheet

Includes:

- Minor Courses
- Admission and Transfer Requirements
- Graduation Requirements

Facility Operations Management Minor

This minor helps prepare non-technically oriented students to effectively participate in the facility operation process where they are employed. Also, this minor helps prepare technically-oriented students who are entering professions that require management of facilities.

Students pursuing bachelor’s degrees in Architecture, Automotive Management, Hospitality Management, Construction Management, HVACR, the Music and Entertainment Business, Health Care Administration, and Health Sciences can choose to minor in Facility Operations Management or Facility Planning Management. These minors build a valuable knowledge of the business, operations, and management of facilities.

More Information

School of Built Environment
Architecture and Facility Management Programs
915 Campus Drive, SWN 101
Big Rapids, MI 49307
Phone: 231-591-3100
Email: atfm@ferris.edu
https://buildyourfutu.re/ferris/programs/facility-operations-management-minor/

Ferris State University
College of Engineering Technology
1009 Campus Drive, JOH 200
Big Rapids, MI 49307-2280
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www.ferris.edu/technology
Facility Planning Management

Program Requirements

Facility Planning Management, Minor Program Checksheet

Includes:

- Minor Courses and Elective Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Facility Planning Management Minor

This minor helps prepare non-technically oriented students to effectively participate in the facility planning process of the physical aspects of where they are employed. Also, this minor helps prepare technically-oriented students who are entering professions that require management of facilities. This minor is most appropriate for students in the Architecture and Sustainability, Hospitality Management, Music and Entertainment Business, HVACR, Construction Management, and Allied Health programs.

More Information

School of Built Environment
Architecture and Facility Management Programs
915 Campus Drive, SWN 101
Big Rapids, MI 49307
Phone: 231-591-3100
Email: atfm@ferris.edu
https://buildyourfutu.re/ferris/programs/facility-operations-management-minor/

Ferris State University
College of Engineering Technology
1009 Campus Drive, JOH 200
Big Rapids, MI 49307-2280
Phone: 231-591-2890
Phone: 231-591-2890
email: technology@ferris.edu
www.ferris.edu/technology
Film Studies

Program Requirements

Film Studies, Minor Program Requirements

Includes:

- Minor Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose the Film Studies Minor? - Program Spotlight

Film is one of the most important art forms and entertainment forms in U.S. culture. The production and distribution of images in film and television parallels many areas of study in areas like Marketing, Business, Printing Technology and Visual Communication. Furthermore, the interpretation and analysis required in Film Studies compliment the study of Literature and Communication and involve theories relevant to Psychology and Sociology. This is why Film Studies would be a good compliment to many programs.

More Information

ADVISOR: Dr. Susan Morris
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EMAIL: SusanMorris@ferris.edu

Department of Humanities
Ferris State University
1009 Campus Drive/JOH 119
Big Rapids, MI 49307-2280
Phone: 231-591-3675
Finance

Program Requirements

Finance, BS Program Checksheet

Includes:

- Major Courses, General Education Courses and Elective Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Finance?

The Finance major is designed for students who are interested in the stewardship of the financial resources of individuals, corporations, or financial institutions. As future managers, students learn the principles and applications of financial analysis, management, and strategy. The program equips students with the theoretical understanding and practical skills necessary to evaluate and direct decisions regarding the allocation of financial resources among a variety of competing opportunities with the goal of maximizing the value of the resources being managed.

Career Opportunities

Money and finance touch almost every aspect of business and life. That’s why finance is a wise career choice for anyone with broad business interests. The function of finance involves decisions on how to best use money. Financial planning binds together all functions of an organization, and it takes special skills to deal with the complexities of keeping a firm profitable.

Graduates with Finance degrees find positions in a variety of companies and agencies with duties including analysis, planning and control, capital management, short-term and long-term financing, investment, security analysis and portfolio management. These occupations generally offer attractive starting salaries and working conditions. The need for finance graduates is expected to continue to rise in the next decade.

According to the recent edition of the Bureau of Labor Statistics Occupations Outlook Handbook, in the decade from 2014-2024, the employment of financial analysts, financial examiners, and personal financial advisors is expected to grow much faster than the average for all occupations. In addition, employment of financial managers, securities, commodities, and financial services agents is expected to grow about as fast as the average for all occupations. The areas you can work for:

Commercial Banking, Corporate Finance, Financial Planning, Government, Hedge Funds, Insurance, Investment Banking, Money Management, Private Equity, Real Estate, and others.


**More Information**

Accountancy, Finance & Info Systems
119 South Street, BUS 212
Big Rapids, MI 49307-2284
231-591-2434
AFIS@ferris.edu

The College of Business is accredited by the Accreditation Council for Business Schools and Programs (ACSBP). Next Accreditation Review is February 2028.

http://www.acbsp.org
Finance

Program Requirements

Finance, Minor Program Checksheet

Includes:

- Minor Courses and Elective Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose a Finance Minor?

This minor will prepare students for careers in financial institutions and business. Many students with other business majors are strongly encouraged to take additional courses in finance to prepare them for either finance related jobs or to strengthen their training and expertise in accounting, marketing, management, or computer information systems. By combining one of these majors with a minor in finance, the student is prepared for a greater number of career opportunities and greater flexibility. The designation of a Finance Minor provides such students with additional evidence of subject matter expertise.

More Information

Accountancy, Finance & Info Systems
119 South Street, BUS 212
Big Rapids, MI 49307-2284
231-591-2434
AFIS@ferris.edu
Fleet Management

Program Requirements

Fleet Management, Certificate Program Checksheet

Includes:

- Certificate Courses
- Admission Requirements
- Graduation Requirements

Why Choose the Fleet Management Certificate?

If you pursue the nation's only Fleet Management Certificate, you will be exposed to current theory and practice in the management of people, processes, and equipment.

This certificate is designed to enhance the knowledge and marketability of students with majors in areas such as automotive, heavy equipment, construction, as well as technology, business, and communications.

Employees in this field manage fleets of vehicles or equipment for corporations (covering a wide range of manufacturing, construction, and service organizations), governments (whether local, state, and federal), or public service entities (law enforcement, educational institutions, utilities, etc.).

Career Opportunities

Possible Fleet Management positions include working with commercial motor vehicles such as cars, aircraft (planes, helicopters etc.), ships, vans and trucks, as well as rail cars. Fleet (vehicle) management can include a range of functions, such as vehicle financing, vehicle maintenance, vehicle telematics (tracking and diagnostics), driver management, speed management, fuel management and health and safety management. Significant opportunities exist with commercial, construction, and governmental fleets.

More Information

Management Department
119 South Street/BUS 212
Big Rapids, MI 49307-2284
Phone: 231-591-2427
Email: MGMT@ferris.edu
Fleet Management

Program Requirements

Fleet Management, Minor Program Checksheet

Includes:

- Minor Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose the Fleet Management Minor?

Receiving the nation's only Fleet Management Minor gives you knowledge and skills that are highly sought after by numerous organizations. The Fleet Management Minor is designed to complement the student's existing major and expand their career opportunities.

Students' enrolled in this minor will learn current risk, financial, legal, and managerial concepts as well as gain awareness of fleet specification, acquisition, and maintenance issues. The course requirements reflect collaboration between the College of Business and the College of Engineering Technology to design a program that meets valued industry needs.

Employees in this field manage fleets of vehicles or equipment for corporations (covering a wide range of manufacturing, construction, and service organizations), governments (whether local, state, and federal), or public service entities (law enforcement, educational institutions, utilities, etc.).

The Fleet Management Minor is designed to enhance the knowledge and marketability of students with majors in areas such as automotive, heavy equipment, construction, as well technology, business, and communications.

Career Opportunities

Possible Fleet Management positions include working with commercial motor vehicles such as cars, aircraft (planes, helicopters etc.), ships, vans and trucks, as well as rail cars. Fleet (vehicle) management can include a range of functions, such as vehicle financing, vehicle maintenance, vehicle telematics (tracking and diagnostics), driver management, speed management, fuel management and health and safety management. Significant opportunities exist with commercial, construction, and governmental fleets.

More Information

Management Department
Forensic Accounting

Program Requirements

Forensic Accounting, Certificate Program Checksheet

Includes:

- Certificate Courses
- Admission Requirements
- Graduation Requirements

Why Choose the Forensic Accounting Certificate?

Whether you are primarily interested in accounting or a discipline such as computer information systems, criminal justice or risk management, the Forensic Accounting Certificate was created to broaden your skills and knowledge base in the areas of financial fraud, data analysis and business disputes. Growing demand exists for professionals who can assist businesses, government entities and not-for-profit organizations with issues arising from financial fraud, white-collar crime, business disputes, money laundering and many other related activities. Earning this certificate would advance your capabilities in areas such as:

- Prevention and detection of fraud.
- Using visual data analysis techniques to interpret information.
- Identifying the common fraud motives and rationalizations.
- Quantification of the financial damage caused by fraud and other illegal acts.
- Understanding the role of forensic experts in the legal system.

Career Opportunities

This certificate can increase your opportunities in accounting and finance related careers such as Fraud Examination, Auditing, and Financial Analysis. This certificate program also may complement knowledge and skills in many other majors and careers such as Risk Management, Cybersecurity, Digital Forensics, Insurance and Criminal Justice. Opportunities exist across the business industry spectrum in accounting, auditing, and computer information systems, with banking, insurance, finance, technology, construction and entertainment being very prominent. Opportunities can also be found in law enforcement agencies such as the Internal Revenue Service, Department of Defense, Government Accountability Office, and Federal Bureau of Investigation.

More Information

Ferris State University
Accountancy, Finance & Info Systems
119 South Street, BUS 212
Big Rapids, MI 49307-2284
231-591-2434
AFIS@ferris.edu
Forensic Psychology

Program Requirements

Forensic Psychology, Minor Program Checksheet

Includes:

- Minor Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose the Forensic Psychology minor?

This minor builds upon the already stellar criminal justice and psychology programs at Ferris State University. Our criminal justice program and its graduates are by far preferred in Michigan's law enforcement agencies. The psychology program at Ferris is well known. There has been tremendous interest in the addition of forensic psychology and Ferris will be one of the first to implement it in the state of Michigan.

Not only will law enforcement benefit but areas such as human services, victim advocacy groups, courts, government agencies, consulting firms, community mental health and many more would also see the benefit of those with this minor.

More Information

ADVISOR: Dr. Jim Van Treese
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Social and Behavioral Sciences Department
Ferris State University
820 Campus Drive, ASC 2108
Big Rapids, MI 49307
Phone: 231-591-2735
Forensic Science

Program Requirements

Forensic Science, Minor Program Checksheet

Includes:

- Minor Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose the Forensic Science Minor?

The minor in forensic science was created to increase the options available for Ferris State University students seeking to supplement their education in the field of forensic science. By having a solid education in both the field of criminal justice and forensics, it is believed that all other Ferris State University students majoring in other areas will increase their employment opportunities. The minor is based upon combining three criminal justice courses with four natural science courses (two in biology and two in chemistry). The minor is designed specifically to make the student a more thorough investigator at various crime scenes. Individuals who have the knowledge may be employable as crime scene technicians.

More Information

Ferris State University
School of Criminal Justice
1349 Cramer Circle, BIS 509
Big Rapids, MI 49307-2737
Phone: 231-591-3652 or 231-591-5080
French

Program Requirements

French, Minor Program Checksheet

Includes:

- Minor Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose the French Minor? - Program Spotlight

A demonstrated fluency in a second language is sure to be an asset in any career, whether it is education, health care, business, governmental service, technology, or other fields. The French minor allows students to develop their skills in written and conversational French and also to study the cultures of France and other countries around the world where French is spoken. Summer study abroad programs allow students to engage in firsthand experience in study in France, Martinique, Quebec and francophone Africa.

The study of French has already inspired many students to action, enhancing and changing lives in very positive ways. Students from Ferris have gained experience teaching English in France, living with French families while earning a salary. Others have taken appointments with the Peace Corp while others have set up internships for their majors in French speaking countries, giving them international exposure as they enter the work force.

While all careers are enhanced by knowledge of a second or third language, specific majors at Ferris lend themselves to this intercultural awareness including: International Business, Hospitality Management, Criminal Justice, Social Work, Plastics Engineering, Teacher Education, Public Relations, Public Administration, Health Care, HVAC, and building trades.

More Information

ADVISOR: Dr. Daniel Noren
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EMAIL: DanielNoren@ferris.edu

Department of English, Literature, and World Languages
Ferris State University
820 Campus Drive/ASC 3080
Big Rapids, MI 49307-2225
Phone: 231-591-3988
General Business

Program Requirements

General Business, AAS Program Checksheet

Includes:

- Major Courses and General Education Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose General Business?

Enrolling in the General Business program rapidly introduces you to the world of business. In a short two-year period of time, you will learn basic information for all the areas of business: accounting, management, marketing, finance, and information systems are introduced with directed electives allowing for a more in depth study of the student's area of interest.

Career Opportunities

After completion of the two-year General Business degree, students are prepared for entry level professional positions in many industries. Students often find that the program ignites an interest in further study and are pleased to see that the general business program has been designed to easily transfer into almost any four-year degree program in business at Ferris State University.

More Information

Management Department
119 South Street/BUS 212
Big Rapids, MI 49307-2284
Phone: (231) 591-2427
Email: MGMT@ferris.edu

The College of Business is accredited by the Accreditation Council for Business Schools and Programs (ACBSP.)
http://www.acbsp.org
General Studies

Program Requirements

General Studies, AA Program Checksheet

Includes:

- General Education Courses, Elective Courses and Concentration Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose General Studies? - Program Spotlight

The General Studies Program provides admitted university students who are deciding, or working toward acceptance into a desired program of study the opportunity to (a) enroll in courses needed for degree completion, (b) explore majors, minors and program concentrations, and/or (c) qualify for entry into a preferred area of study. Admitted students receive structured support. The program also assists students with a probationary enrollment status. Students meeting General Studies Program requirements are eligible for transfer to another academic program at Ferris State University.

FSUS and Advising Support

All first-year students in the General Studies Program enroll in the Ferris State University Seminar course - FSUS 100. The instructor of this weekly seminar is also the student's academic advisor allowing for weekly advising interactions.

More Information

Retention and Student Success
Ferris State University
820 Campus Drive, ASC 1017
Big Rapids, MI 49307

Shelly VandePanne
Director of Student Academic Affairs
Phone: 231-591-2360
Email: ShellyVandePanne@ferris.edu
Geographic Information Systems

Program Requirements

Geographic Information Systems, Certificate Program Checksheet

Includes:

- Certificate Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Geographic Information Systems Certificate?

A Geographic Information System (GIS) uses computers and software to leverage the fundamental principle of spatial data and information management. It is a tool used for managing information according to where it is located. There is currently a shortage of qualified professionals to fill GIS-related positions in diverse disciplines ranging from different levels of government to various private companies to large corporations. GIS is one of the most important components of approaching global problem-solving. It helps us look for patterns in both the man-made and natural worlds. People in business, government, education, and natural resources are using GIS to analyze markets, manage parcels of land, conduct research, and protect natural resources.

What is GIS?

Geographic Information Systems (GIS) is a computerized method for displaying spatial data. This means that information about the world is stored in a database and can be viewed on a map. The information can be just about anything. Take your house as an example. There are a lot of different kinds of information you can collect about your house - price, size, number of bedrooms, the year it was built. All of this information can be stored in a table created in a program like MS Excel. This database is the beginning of an Information System. Your house also has an address. The address is a type of geographic information. You put the two kinds of data together - information + geographic and you have GIS. You can see where the house is located and you can see information about the house.

Why should I take a GIS class?

GIS is a multidisciplinary discipline that relates to applications in various other fields. GIS can help deal with complex issues by modeling the earth and developing generalizations about how it functions. It can also be used in a variety of ways for any endeavor linking information to features on the ground.

Career Opportunities

Ferris State University
The growth of GIS applications in desktop computing is expanding exponentially, creating new and exciting developments. GIS technology represents a billion-dollar industry worldwide, growing 25% per year and serving 50,000 to 100,000 users in more than 100 countries. At this time, job opportunities outnumber qualified graduates. There will continue to be a need for GIS professionals to deal with newer and tougher air and water regulations, as well as civil engineers to rebuild the nation's infrastructure. Look at this site to see the type of jobs offered and qualifications desired by employers.

www.gjc.org

More Information

School of Engineering and Computing Technology
Survey Engineering Technology Programs
915 Campus Drive, SWN 312
Big Rapids, MI 49307-2291
Phone: 231-591-2633
Email: surveying@ferris.edu
https://www.ferris.edu/HTMLS/online/programs/gis_cert.htm

Ferris State University
College of Engineering Technology
1009 Campus Drive, JOH 200
Big Rapids, MI 49307-2280
Phone: 231-591-2890
Email: technology@ferris.edu
www.ferris.edu/technology
Geography Education

Program Requirements

Geography Education, BS Program Checksheet

Includes:

- Major Courses and General Education Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Geography Education?

The employment outlook for geography education students is excellent. Graduates are prepared to teach in middle and high schools and also have the necessary basic preparation to enter a career in industry or pursue an advanced degree in geography. One semester of directed teaching at the secondary level is required. A teaching minor is also required.

Career Opportunities

Geography Education is a four-year curriculum that may be selected as a major. A teaching minor is also required. Successful completion of the program leads to recommendation for a Michigan secondary provisional certificate. The program is designed to take full advantage of the unusual, hands-on Ferris instructional capabilities in developing both teaching and subject matter competency. Students receive the broad background in classroom, laboratory and field training essential to be effective teachers.

Teacher Certification Requirements

As required by the State of Michigan to receive teacher certification all teacher candidates must: (1) meet the MDE (CAEP) cohort requirements, (2) pass the pedagogy tests in their subject area majors, and (3) have a 2.75 minimum GPA to receive teacher certification in Michigan. These state requirements are in addition to the Ferris graduation requirements of your individual program.

More Information

School of Education
Bishop Hall Room 421
Ferris State University
1349 Cramer Circle
Big Rapids, MI 49307-2737
Telephone: (231) 591-5361
Geography Teaching

Program Requirements

Geography Teaching Secondary Education, Minor Program Checksheet

Includes:

- Minor Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Teaching Minors for Secondary Education Majors

The Secondary Education program highly recommends the completion of a teaching minor.

More Information

School of Education
Bishop Hall Room 421
Ferris State University
1349 Cramer Circle
Big Rapids, MI 49307-2737
Telephone: (231) 591-5361
Gerontology

Program Requirements

Gerontology, Certificate Program Checksheet

Includes:

- Certificate Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose the Gerontology Certificate?

This certificate is designed to provide health care program students or health care providers with the opportunity to gain valuable knowledge and skills that are needed to meet the unique needs of the elderly population.

Career Opportunities

This certificate provides an additional skill set for individuals who will be working in areas that focus on elder care. These areas include long term care, home care, hospice, public health, retirement villages and adult foster care settings.

More Information

Department of Health Administration and Health Information
College of Health Professions
Ferris State University
200 Ferris Drive
Big Rapids, MI 49307
Phone: 231-591-2261
chp@ferris.edu
Graphic Communications

Required Courses

Why Choose Graphic Communications?

The printing and graphic communications industry is the third largest industry in the United States, employing more than three quarters of a million people. It is estimated that nearly one third of those employed by the print media industry are over age 55. In addition to the aging workforce, nearly 5,000 new jobs are created each year due to the rapidly changing methods of graphic image transfer and distribution.

Graphic Communications processes are used in the manufacturing, marketing, and communications industries on just about every item that we use. Whether it is the label on an item that you purchase or the dashboard of your car, it was printed. The way we communicate through the internet and mobile devices has increased the demand for graduates with the knowledge and skills to choose the correct communications method for the desired outcome. The internet has actually caused a major increase in printed products as much as 20 percent.

Career Opportunities

Graphic Communications is a lot more than putting ink on paper. The creation and generation of high-resolution digital graphic files and the distribution of those images via Local Area Networks, the Internet, and mobile devices are all part of the job. There is a job for just about everyone with an interest in working with their hands, mind, deadlines, computers and an interest in creative problem solving.

While the AAS degree in Graphic Communications sets the stage for obtaining a BS degree in Graphic Media Management in just 2 more years, those who choose not to pursue a bachelor degree may find many great job opportunities in the print media industry with an average starting hourly wage of $14.00.

Admission Requirements

New Students SAT Scores

- 2.5 High School GPA (on a 4.0 scale)
- Two of the Three Criteria:
  1. SAT ERW score of 450 or higher
  2. SAT Math score of 500 or higher. Placement in MATH 109/110 will be considered (SAT Math score of 480 or higher).
  3. SAT Composite of 900 or higher
New Students ACT Scores

- 2.5 High School GPA (on a 4.0 scale)
- Two of the Three Criteria:
  1. ACT English score of 16 or higher
  2. ACT Math score of 19 or higher
  3. ACT Reading score of 19 or higher

Transfer Students

- Combined college or university GPA of 2.35 (on a 4.0 scale) from all institutions attended. GPA based on completion of 12 credit hours or more. Developmental courses will not be considered in computing the GPA requirement.
- Transfer equivalency for FSU ENGL 150 or placement during the first semester at FSU which would require an ACT English score of 16 or higher; or SAT ERW score of 450 or higher; or Accuplacer English score of 6 or higher.
- Transfer equivalency for FSU MATH 114/115 or placement during the first semester at FSU which would require an ACT Math score of 19 or higher; SAT Math score of 500 or higher; or Accuplacer Math scores: Elementary Algebra score 75 or higher and College Level Math 0-49.

More Information:
Additional guidance can be found on the College of Business Webpage under the Admissions tab.

General Education Requirements

All University General Education requirements for an Associate's degree is here

Please consult this link for a complete listing of General Education Electives.

Consult the Required Course above or program advisor for program specific General Education requirements.

Graduation Requirements

The Graphic Communications program at Ferris terminates with an associate in applied science degree but leads to a Bachelor of Science degree in Graphic Media Management. Graduation requires a minimum 2.0 GPA in core classes, in the major and overall. Students must complete all general education requirements as outlined on the General Education website.

More Information

Marketing Department
College of Business
119 South Street, BUS 212
Big Rapids, MI 49307 - 2284
Phone: 231-591-2426
Email: MKTG@ferris.edu

Graphic Communications is accredited by the Accrediting Council for Collegiate Graphic Communication, Inc.
Next accreditation review is 2021.
http://accgc.org/accredited-programs/
Graphic Media Management

Required Courses

Why Choose Graphic Media Management? - Program Spotlight

Offered through the Marketing Department, the Graphic Media Management program addresses operations management, IT, project planning and estimating, marketing, and embracing the rapidly changing media business environment. Today's print media industry is really a global communication industry using every type of technology available to help customers communicate their message. Graphic Media Management is just that, the cutting edge of all the latest and greatest imaging and digital communications technology. Leaders in the print media industry must be knowledgeable in all traditional printing methods as well as know how to best use leading-edge technology to remain competitive.

Career Opportunities

Nearly one-third of the three-quarters of a million people employed by the print media industry are over age 55. That means excellent opportunities for individuals who love to solve problems and work in a fast-paced environment on some of the most technologically advanced systems in the world. Graduates from the Graphic Media Management program are not only trained in traditional print operations, G7 color management and digital print pre-press workflow, they bring another level of skills to the workforce. This foundation of print media technology and processes combine with a solid core of business, marketing, management and financial courses make graduates from the Graphic Media Management program highly desirable employees for the future of the print media industry. There are career opportunities in sales, technical sales and marketing, information systems, project management, customer service and production management in the print media industry and throughout the supply chain.

More than 80 percent of the print media companies in the United States employ less than 50 employees. This allows graduates of Ferris State University's Graphic Media Management program excellent opportunities to stay close to the technology, people and business operations. Average starting salaries range from $40,000 to $55,000 a year.

Admission Requirements

New Students SAT Scores

- 2.5 High School GPA (on a 4.0 scale)
- Two of the Three Criteria:
  1. SAT ERW score of 450 or higher
  2. SAT Math score of 500 or higher. Placement in MATH 109/110 will be considered
(SAT Math score of 480 or higher).

3. SAT Composite of 900 or higher

**New Students ACT Scores**

- 2.5 High School GPA (on a 4.0 scale)
- Two of the Three Criteria:
  1. ACT English score of 16 or higher
  2. ACT Math score of 19 or higher
  3. ACT Reading score of 19 or higher

**Transfer Students**

- Combined college or university GPA of 2.35 (on a 4.0 scale) from all institutions attended. GPA based on completion of 12 credit hours or more. Developmental courses will not be considered in computing the GPA requirement.
- Transfer equivalency for FSU ENGL 150 or placement during the first semester at FSU which would require an ACT English score of 16 or higher; or SAT ERW score of 450 or higher; or Accuplacer English score of 6 or higher.
- Transfer equivalency for FSU MATH 114/115 or placement during the first semester at FSU which would require an ACT Math score of 19 or higher; SAT Math score of 500 or higher; or Accuplacer Math scores: Elementary Algebra score 75 or higher and College Level Math 0-49.

**More Information:**

Additional guidance can be found on the College of Business Webpage under the Admissions tab.

**General Education Requirements**

All University General Education requirements for a Bachelor’s degree is here

Please consult this link for a complete listing of General Education Electives.

Consult the Required Courses above or the program advisor for program specific General Education requirements.

**Graduation Requirements**

The Graphic Media Management program at Ferris leads to a Bachelor of Science degree. Students must complete a 400-hour internship prior to graduation and maintain a minimum 2.0 GPA in core classes, in the major and overall. Students must complete all general education requirements as outlined on the General Education website.

**More Information**

Marketing Department
Graphic Media Management is accredited by the Accrediting Council for Collegiate Graphic Communication, Inc.

http://accgc.org/accredited-programs/
Graphic Production Solutions

Program Requirements

Graphic Production Solutions, Certificate Program Checksheet

Includes:

- Certificate Courses
- Admission Requirements
- Graduation Requirements

Why Choose a Graphic Production Solutions Certificate?

The flagship applications of Adobe Creative Suite (InDesign, Photoshop, Illustrator, Acrobat) have become so popular that they can be found on the computers of most homes and businesses worldwide. The Graphic Production Solutions certificate will develop skills in creating digital documents that can be used to market products in print production or multimedia workflows. The Graphic Production Solutions certificate will build working knowledge in areas, such as:

- Building a working knowledge of digital photography, illustration and document layout
- Learning various uses and application of portable document files
- Understanding how to market products with various print and digital media
- Constructing production-ready one-to-one marketing materials
- Building an understanding of packaging and brand identity through the design of packaging materials

You will receive hands-on instruction in our state-of-the-art computer and print production labs. You may choose an elective in Media Production, Packaging, Variable Data Publishing or Color Management.

Career Opportunities

Graduates with a Graphic Production Solutions certificate will have the skills to successfully build digital documents at home or in the office for print production and multimedia workflows. They will understand how to market products using various graphic media techniques. Job titles include work in marketing, media production, creative, and print procurement.

More Information

Marketing Department
Health Care Systems Administration

Program Requirements

Health Care Systems Administration, BS Program Checksheet

Includes:

- Major Courses and General Education Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Health Care Systems Administration?

As the health care industry continues to grow and expand, the demand for skilled health care managers also increases. Employment is expected to grow faster than average with the fastest growth in home health agencies, residential care facilities and practitioners’ offices and clinics. This program has been designed in two formats, one for students who enter the program either as freshmen or who transfer into the program after having completed an associate degree and the second for students who wish to complete a bachelor's degree while enrolled in a clinical associate degree program.

The course work, which includes courses in management, marketing, accounting, quality assurance, health care finance, health care planning and long-term care management prepares you to work in many areas in health-care. Graduates are able to apply for an entry level administration position or enter graduate school to earn a master's degree.

In addition, the Health Care Systems Administration program also offers the option of a Long Term Care concentration which prepares students for leadership and administrative roles within the Long Term Care area of healthcare. As the healthcare system adjusts to providing care and services to a large aging population, this field affords many opportunities for graduates. See the program page for course information.

General education requirements may be taken at a local college or university and transferred to fulfill Ferris graduation requirements. A minimum of 30 semester credit hours must be earned at Ferris in order for the degree to be granted.

Career Opportunities

The term 'health services manager' encompasses individuals in many different positions who plan, organize, coordinate, and supervise the delivery of health care. Health services managers include both generalists (administrators who manage or help to manage an entire facility or system), and health specialists (managers in charge of specific departments or services found
only in the health care industry).

Earnings of health services managers vary by type and size of facility, level of responsibility and geographic region. The May 2017 Occupational Employment and Wages Report distributed by the U.S. Bureau of Labor Statistics provides the following:

Medical and Health Services Managers 2017 median pay is $93,360 per year.

Job outlook: 20% (much faster than average)

More Information

College of Health Professions
Ferris State University
200 Ferris Drive
Big Rapids, MI 49307-2740
or call 1-800-462-8553, ext. 2266
Health Care Systems Administration/Long Term Care Administration Concentration

Program Requirements

Health Care Systems Administration/Long Term Care Administration Concentration, BS Program Checklist

Includes:

- Major Courses, General Education Courses, and Concentration Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Health Care Systems Administration?

As the health care industry continues to grow and expand, the demand for skilled health care managers also increases. Employment is expected to grow faster than average with the fastest growth in home health agencies, residential care facilities and practitioners' offices and clinics. This program has been designed in two formats, one for students who enter the program either as freshmen or who transfer into the program after having completed an associate degree and the second for students who wish to complete a bachelor's degree while enrolled in a clinical associate degree program.

The course work, which includes courses in management, marketing, accounting, quality assurance, health care finance, health care planning and long-term care management prepares you to work in many areas in health-care. Graduates are able to apply for an entry level administration position or enter graduate school to earn a master's degree.

In addition, the Health Care Systems Administration program also offers the option of a Long Term Care concentration which prepares students for leadership and administrative roles within the Long Term Care area of healthcare. As the healthcare system adjusts to providing care and services to a large aging population, this field affords many opportunities for graduates. See the program page for course information.

General education requirements may be taken at a local college or university and transferred to fulfill Ferris graduation requirements. A minimum of 30 semester credit hours must be earned at Ferris in order for the degree to be granted.

Career Opportunities

The term 'health services manager' encompasses individuals in many different positions who plan, organize, coordinate, and supervise the delivery of health care. Health services managers
include both generalists (administrators who manage or help to manage an entire facility or system), and health specialists (managers in charge of specific departments or services found only in the health care industry).

Earnings of health services managers vary by type and size of the facility, level of responsibility and geographic region. The May 2017 Occupational Employment and Wages Report distributed by the U.S. Bureau of Labor Statistics provides the following:

Medical and Health Services Managers 2018 median pay is $99,730 per year.

Job outlook: 18% (much faster than average)

**More Information**

College of Health Professions  
Ferris State University  
200 Ferris Drive  
Big Rapids, MI 49307-2740  
or call 1-800-462-8553, ext. 2266
Health Information Management

Program Requirements
Health Information Management, BS Program Checksheet
Includes:
- Major Courses and General Education Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Health Information Management?
As the health care industry continues to grow and expand, the demand for health information managers also increases. Employment is expected to grow much faster than average through the year 2026 (Bureau of Labor Statistics 2018) because of rapid changes in health care regulations that require individuals skilled in the interpretation of health data. Individuals with an interest in computers, health care and business will find that health information management is a challenging and fulfilling career option. Many graduates are employed in hospitals, but job growth is projected to be greatest in physicians’ offices and clinics, nursing homes and home health agencies.

General education and support courses can be taken at another college or university and transferred to Ferris in fulfillment of graduation requirements. A minimum of 30 semester credit hours must be earned at Ferris in order for the degree to be granted.

At the end of the program, the student is eligible to apply to write the national certification examination to earn the designation of Registered Health Information Administrator (RHIA). The Health Information Management program is accredited by the Commission on Accreditation Health Informatics and Information Management Education (CAHIIM)

Career Opportunities
Health Information Managers have the skills and abilities to accept supervisory positions in health care facilities. They may decide to do the same kind of work as the health information technician or supervise the daily routine of the medical record department, working with the employees to make sure that procedures are carried out correctly. They may be responsible for training employees or evaluating their performance. Other health information managers work as private consultants, or work with various individuals in the health care setting to plan, assure that the facility meets accreditation requirements or serve as coordinators between other departments that deal with health information.
Earnings of health information managers vary by type and size of facility, level of responsibility and geographic region. The 2017 median pay for health information managers was $98,350. (Bureau of Labor Statistics 2018) Graduates of the program are immediately employable in a variety of health care settings.

**More Information**

College of Health Professions  
Ferris State University  
200 Ferris Drive  
Big Rapids, MI 49307  
Phone: 231-591-2270 or  
800-462-8553, ext. 2266  
chp@ferris.edu
Health Information Technology

Program Requirements

Health Information Technology, AAS Program Checksheet

Includes:

- Major Courses and General Education Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Health Information Technology?

As the health care industry continues to grow and expand, the demand for health information technicians also increases. Employment is expected to grow much faster than average through the year 2026 (Bureau of Labor Statistics 2018) because of the rapid growth in tests, treatments and procedures available. Technicians will be needed to work with computer databases and other tasks related to electronic health records. Many graduates are employed in hospitals, but job growth is projected to be greatest in physicians' offices and clinics, nursing homes and home health agencies.

At the end of the program, the student is eligible to apply to write the national certification examination to earn the designation of Registered Health Information Technician (RHIT).

General education courses may be completed either through Ferris State University or at a local college or university and transferred to fulfill graduation requirements. A minimum of 15 credit hours must be earned at Ferris in order for the degree to be granted.

This program is accredited by the Commission on Accreditation for Health Informatics and Information Management Education in collaboration with the American Health Information Management Association.

Career Opportunities

Technicians are trained to handle the important tasks of maintaining and safeguarding the information contained in the health record. Their work, however, involves much more than dealing with files. It involves contact with physicians, nurses, therapists and other medical professionals as well as customer relations dealing with patients about their health information.

Earnings of health information technicians vary by type and size of facility, level of responsibility and geographic region. The 2016 annual average wage for RHITs employed in hospitals is $49,560 compared to an annual median wage of $42,000 for those employed in physician's
offices. (AHIMA Salary Survey June 2016)

Graduates of this program are immediately employable in a variety of health care settings.

**More Information**

College of Health Professions  
Ferris State University  
200 Ferris Drive  
Big Rapids, MI 49307-2740  
Phone: 231-591-2270 or 800-462-8553, ext. 2266  
chp@ferris.edu
Healthcare Administration Accelerated Track

Program Requirements

Healthcare Administration Accelerated Track, MHA Program Checksheet

Includes:

- Major Courses and Elective Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Master of Healthcare Administration - Accelerated Track? - Program Spotlight

As the health care industry continues to grow and expand, the demand for skilled health care managers and executives also increases. Employment is expected to grow faster than average with the fastest growth in home health agencies, residential care facilities and practitioners' offices and clinics. The Master of Healthcare Administration (MHA) degree is designed to meet the needs of today’s healthcare leadership and beyond. In the expanding, ever-changing healthcare delivery system, extensive expertise and understanding of healthcare industry business is essential, especially for those in leadership roles. This program prepares graduates with the necessary skill and knowledge to lead healthcare organizations through the use of evidence-based decision making in the areas of economics, financial management, organizational behavior and human resource management, strategic planning, and marketing, with a keen focus on quality improvement, resource efficiency, and interprofessional collaboration.

A fully online program, designed for the early or mid-careerist, the MHA degree may be completed in 2 years full-time, or up to a maximum of 5 years part-time. No GRE exam is required for admission. Each course includes 8-10 hours of synchronous learning, in which students are required to participate in collaborative web-based sessions. To engage students in real-world healthcare leadership experiences, the program requires active service learning opportunities including a capstone research project conducted within the healthcare setting of the student’s choice.

The program is designed in three formats:

**Traditional Format** – 46 credits of study including six related elective graduate credits

- Intended for the student with less than 2 years of management and/or supervisory experience.

**Executive Format** – 40 credits of study

- Ferris State University

2020-2021 FSU Catalog
• Intended for the student with two or more years of management and/or supervisory experience, excluding hours accumulated during an internship experience.

**Accelerated Format** – 46 credits of study including 6 related elective graduate credits

• Intended for the student consecutively seeking the FSU undergraduate Health Care Systems Administration degree and the Master of Healthcare Administration degree, this format allows the student to complete both degrees in a 5-year timeline.

**Career Opportunities**

The term 'health services manager' encompasses individuals in many different positions, including healthcare executives and administrators, who plan, organize, coordinate, and supervise the delivery of health care. These individuals lead change that aligns with current healthcare laws and regulations, as well as current trends in technology and services models to meet the needs of the community(s) they serve. Health services managers include both generalists (administrators who manage or help to manage an entire facility or system), and health specialists (managers in charge of specific departments or services found only in the health care industry), and executives (administrators responsible for healthcare delivery systems, or the divisions within healthcare delivery healthcare systems).

Earnings of health services managers vary by type and size of facility, level of responsibility and geographic region. The May 2017 Occupational Employment and Wages Report distributed by the U.S. Department of Labor provides the following:

Medical and Health Services Managers 2018 median pay is $99,730 per year.

Job outlook: 18% (much faster than average)

**More Information**

Dr. Gail Bullard, Program Coordinator
Ferris State University
College of Health Professions
200 Ferris Drive
Big Rapids, MI 49307
231.591.2279
GailBullard@ferris.edu
Healthcare Administration Executive Track

Program Requirements

Healthcare Administration Executive Track, MHA Program Checksheet

Includes:

- Major Courses and Elective Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Master of Healthcare Administration - Executive Track? - Program Spotlight

As the health care industry continues to grow and expand, the demand for skilled health care managers and executives also increases. Employment is expected to grow faster than average with the fastest growth in home health agencies, residential care facilities and practitioners' offices and clinics. The Master of Healthcare Administration (MHA) degree is designed to meet the needs of today’s healthcare leadership and beyond. In the expanding, ever-changing healthcare delivery system, extensive expertise and understanding of healthcare industry business is essential, especially for those in leadership roles. This program prepares graduates with the necessary skill and knowledge to lead healthcare organizations through the use of evidence-based decision making in the areas of economics, financial management, organizational behavior and human resource management, strategic planning, and marketing, with a keen focus on quality improvement, resource efficiency, and interprofessional collaboration.

A fully online program, designed for the early to mid-careerist, the MHA degree may be completed in 2 years full-time, or up to a maximum of 5 years, part-time. No GRE exam is requirement for admission. Each course includes 8-10 hours of synchronous learning, in which students are required to participate in collaborative web-based sessions. To engage students in real-world healthcare leadership experiences, the program requires active service learning opportunities including a capstone research project conducted within the healthcare setting of the student’s choice.

The program is designed in three formats:

*Traditional Format* – 46 credits of study including six related elective graduate credits

- Intended for the student with less than 2 years of management and/or supervisory experience.
Executive Format – 40 credits of study

- Intended for the student with two or more years of management and/or supervisory experience, excluding hours accumulated during an internship experience.

Accelerated Format – 46 credits of study including 6 related elective graduate credits

- Intended for the student consecutively seeking the FSU undergraduate Health Care Systems Administration degree and the Master of Healthcare Administration degree, this format allows the student to complete both degrees in a 5-year timeline.

Career Opportunities

The term 'health services manager' encompasses individuals in many different positions including healthcare executives and administrators, who plan, organize, coordinate, and supervise the delivery of health care. These individuals lead change that aligns with current healthcare laws and regulations, as well as current trends in technology and service models to meet the needs of the community(s) they serve. Health services managers include both generalists (administrators who manage or help to manage an entire facility or system), and health specialists (managers in charge of specific departments or services found only in the health care industry), and executives (administrators responsible for healthcare delivery systems, or the divisions within healthcare delivery systems).

Earnings of health services managers vary by type and size of facility, level of responsibility and geographic region. The May 2017 Occupational Employment and Wages Report distributed by the U.S. Department of Labor provides the following:

Medical and Health Services Managers 2018 median pay is $99,730 per year.

Job outlook: 20% (much faster than average)

More Information

Dr. Gail Bullard, Program Coordinator
Ferris State University
College of Health Professions
200 Ferris Drive
Big Rapids, MI 49307
231.591.2279
GailBullard@ferris.edu
Healthcare Administration Traditional Track

Program Requirements

Healthcare Administration Traditional Track, MHA Program Checksheet

Includes:

- Major Courses and Elective Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Master of Healthcare Administration - Traditional Track? - Program Spotlight

As the health care industry continues to grow and expand, the demand for skilled health care managers and executives also increases. Employment is expected to grow faster than average with the fastest growth in home health agencies, residential care facilities and practitioners' offices and clinics. The Master of Healthcare Administration (MHA) degree is designed to meet the needs of today’s healthcare leadership and beyond. In the expanding, ever-changing healthcare delivery system, extensive expertise and understanding of healthcare industry business is essential, especially for those in leadership roles. This program prepares graduates with the necessary skill and knowledge to lead healthcare organizations through the use of evidence-based decision making in the areas of economics, financial management, organizational behavior and human resource management, strategic planning, and marketing, with a keen focus on quality improvement, resource efficiency, and interprofessional collaboration.

A fully online program, designed for the early or mid-careerist, the MHA degree may be completed in 2 years full-time, or up to a maximum of 5 years part-time. No GRE exam is required for admission. Each course includes 8-10 hours of synchronous learning, in which students are required to participate in collaborative web-based sessions. To engage students in real-world healthcare leadership experiences, the program requires active service learning opportunities including a capstone research project conducted within the healthcare setting of the student’s choice.

The program is designed in three formats:

**Traditional Format** – 46 credits of study including six related elective graduate credits

- Intended for the student with less than 2 years of management and/or supervisory experience.
Executive Format – 40 credits of study

- Intended for the student with two or more years of management and/or supervisory experience, excluding hours accumulated during an internship experience.

Accelerated Format – 46 credits of study including 6 related elective graduate credits

- Intended for the student consecutively seeking the FSU undergraduate Health Care Systems Administration degree and the Master of Healthcare Administration degree, this format allows the student to complete both degrees in a 5-year timeline.

Career Opportunities

The term 'health services manager' encompasses individuals in many different positions including healthcare executive and administrators, who plan, organize, coordinate, and supervise the delivery of health care. These individuals lead change that aligns with current healthcare laws and regulations, as well as current trends in technology and service model to meet the needs of the community(s) they serve. Health services managers include both generalists (administrators who manage or help to manage an entire facility or system), and health specialists (managers in charge of specific departments or services found only in the health care industry), and executives (administrators responsible for healthcare delivery systems, or the division within healthcare delivery systems.)

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More Information

Dr. Gail Bullard, Program Coordinator
Ferris State University
College of Health Professions
200 Ferris Drive
Big Rapids, MI 49307
231.591.2279
GailBullard@ferris.edu
Healthcare Marketing

Program Requirements

Healthcare Marketing, BS Program Checksheet

Includes:

- Major Courses and General Education Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Healthcare Marketing?

Want a career in healthcare but working from a medical aspect is not for you? Want a career in business but the boardroom bores you? Well, now you can combine the medical world with the business world with a BS in Healthcare Marketing. This program is designed to develop graduates capable of marketing within the healthcare industry across the supply chain - including hospitals and hospital systems, physician practices, specialized clinics; manufacturers of pharmaceuticals, medical devices, and medical furniture; social service providers and change-behavior specialists.

The job market for students with competence in healthcare marketing is currently very strong. However, healthcare systems and organizations are generally reluctant to hire undergraduates for entry-level positions if those undergraduates do not have healthcare or healthcare-related competencies and experience. The BS Healthcare Marketing program at Ferris State University was designed with input from both industry and academia to teach you those marketing competencies valued by the healthcare industry.

Career Opportunities

Healthcare spending is 4.3 times the amount spent on national defense. A survey of nearly 300 hospitals by the Society for Healthcare Strategy and Market Development (SHSMD) found that hospital marketing departments averaged 6 (six) staff members with budgets of 1.2 million. Marketing departments are incorporated into the structure of healthcare organizations and marketers are being promoted to manager’s directors, and ultimately vice presidents. Some careers in Healthcare Marketing you may start at are jobs in sales and marketing for healthcare providers and their suppliers, including medical device and furniture sales and marketing, customer service, and social marketing.

More Information

Marketing Department
College of Business
Ferris State University

2020-2021 FSU Catalog
Heavy Equipment Service Engineering Technology

Program Requirements

Heavy Equipment Service Engineering Technology, BS Program Checksheet

Includes:

- Major Courses and General Education Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Heavy Equipment Service Engineering Technology (HSET)?

HSET provides the skills and knowledge required to test, diagnose, service and repair multiple, interfacing and technically sophisticated systems used on equipment in the agricultural, construction, forestry, stationary power, and trucking industries. Mechanical, electrical, electronic and hydraulic technology are addressed, along with failure analysis, troubleshooting procedures, and techniques, metrology, product design for manufacturing and fleet management.

Career Opportunities

Increased use of heavy equipment in the agriculture, trucking, construction, and auxiliary power industries has created a widespread need for qualified heavy equipment technicians. Estimates suggest less than half of the current demand for technicians in this industry is being met, so skilled graduates are already in high demand.

Employment opportunities exist throughout the various heavy equipment industries. Job titles include diagnostic technician, technician, service engineer, field engineer, service manager, shop foreman, trainer, engineering technician, and maintenance team leader.

More Information

School of Automotive and Heavy Equipment
Heavy Equipment Engineering Technology Programs
220 Sports Drive, HEC 203
Big Rapids, MI 49307
Phone: 231-591-2810
Email: HeavyEquipment@ferris.edu
https://www.ferris.edu/CET/auto-heet/hset/homepage.htm

Ferris State University
College of Engineering Technology
1009 Campus Drive, JOH 200
The College of Engineering Technology Heavy Equipment Service Engineering Technology Bachelor of Science program is an accredited program of the Associated Equipment Distributors Foundation (AED). The next accreditation review is scheduled for 2020. http://aednet.org/
Heavy Equipment Technology

Program Requirements

Heavy Equipment Technology, AAS Program Checksheet

Includes:

- Major Courses and General Education Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Heavy Equipment Technology?

Heavy equipment technicians keep diesel and gasoline-powered equipment moving freight, earth, and people; pumping water for irrigation; drilling for oil; powering farm tractors, and generating electrical power. They not only diagnose malfunctions and repair engines, but they also repair and service fuel injection systems, electrical and electronic systems, hydraulic systems, brakes, steering systems, and power transmission systems.

Students in the Heavy Equipment Technology program learn to use shop manuals, reference charts, diagnostic instruments and special tools to diagnose equipment malfunctions. They identify problems through measurement and observation, interpret data collected and decide on a course of action. In hands-on labs, students repair, replace or adjust components and perform preventive maintenance tasks. Knowledge and skill-development concentrations include inspection, diagnostics, repair/rebuild of all types of heavy-duty equipment and mechanical and electronic components.

Career Opportunities

Increased use of heavy equipment in the agriculture, trucking, construction, and auxiliary power industries has created a widespread need for qualified heavy equipment technicians. Estimates suggest less than half of the current demand for technicians in this industry is being met, so skilled graduates are already in high demand.

Fleet maintenance, farm equipment, truck rental, and construction equipment repair industries, as well as independent repair shops, are only some of the employers. Heavy equipment technicians also work at stationary power plants, marine engine companies and manufacturers of heavy equipment.

Graduates of the Heavy Equipment Technology program at Ferris are immediately employable by the heavy equipment industry. This program also serves as the major preparatory program for the Bachelor of Science Degree in Heavy Equipment Service Engineering Technology.
More Information

School of Automotive and Heavy Equipment
Heavy Equipment Engineering Technology Programs
220 Sports Drive, HEC 203
Big Rapids, MI 49307
Phone: 231-591-2810
Email: HeavyEquipment@ferris.edu
https://www.ferris.edu/CET/auto-heet/heqt/homepage.htm

Ferris State University
College of Engineering Technology
1009 Campus Drive, JOH 200
Big Rapids, MI 49307-2280
Phone: 231-591-2890
Email: technology@ferris.edu
www.ferris.edu/technology

The College of Engineering Technology, Heavy Equipment Technology, AAS program is accredited by the National Automotive Technicians Education Foundation (NATEF). The next accreditation review is scheduled for 2020. http://www.natef.org/
Highly Effective CTE Instructional Leadership

Program Requirements

Highly Effective CTE Instructional Leadership, Certificate Program Checksheet

Includes:

- Certificate Courses
- Graduation Requirements

Why Choose Highly Effective CTE Instructional Leadership?

The goal of the 9 credit Advanced Graduate Certificate in Highly Effective CTE Instructional Leadership is to provide teachers with the latest research knowledge on the different programs, products, practices and policies that work in schools. The goal is to provide CTE educators with the information they need to make evidence-based decisions to address classroom challenges and improve student success. These same principles can be translated into effective training for business and industry as they struggle to improve the effectiveness of their training programs.

Career Opportunities for Graduates in Highly Effective CTE Instructional Leadership

This certificate will enhance the learners knowledge and may lead to increase in salary based on new skills and/or credit hours.

For More Information

Graduate Coordinator, School of Education.

231-591-5361. SOE@ferris.edu
History

Program Requirements

History, BA Program Checksheet

Includes:

- Major Courses and General Education Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose History? - Program Spotlight

Historians are like 'social detectives.' They try to understand the men and women, groups and events of earlier times by studying the 'clues' left behind such as visual documents and artifacts, diaries, official documents and records, economic data and newspapers. Historians use these 'clues' to determine which events were most important, why things turned out the way they did, or what lessons we can learn from the past.

The history major prepares students to see 'the big picture' and to focus on our most important societal issues, decisions, and trends. The history major prepares students to gather, assimilate, and interpret a wide variety of information from many different sources and to view issues from different perspectives. Students entering the History major should have strong reading skills and be interested in learning about the experiences of others. Students in the History major study the history of the United States, the history of other regions of the world, and the methods of historical research. They also have the opportunity to select courses of special interest to them, such as African American history or the history of science and technology. Advanced students may participate in undergraduate research projects or internships.

Career Opportunities

The History major also gives students a broad and in-depth understanding of the diverse political, economic, and cultural factors affecting American life and the global marketplace today. For this reason, the History major is excellent preparation for a wide variety of career paths, including the law, education, journalism, government, public policy analysis, business, or executive-level management.

More Information

ADVISOR: Dr. Gary Huey
PHONE: 231-591-2758
EMAIL: GaryHuey@ferris.edu
History

Program Requirements

History, Minor Program Checksheet

Includes:

- Minor Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose the History Minor?

In this age of 'informational overload,' the history minor helps students to deal with information from many different sources, to sort out the 'big picture' from the short-term details, and to recognize the decisions and events that will have lasting impact on their business and community. The history minor allows students to study traditional topics in history (e.g., military history) as well as topics that may have particular interest to them personally or professionally (e.g., history of technology, business, health care, or sport; women's history; African-American history).

More Information

ADVISOR: Dr. Kimn Carlton-Smith
PHONE: 231-591-5850
EMAIL: KimnCarlton-Smith@ferris.edu

Humanities Department
Ferris State University
1009 Campus Drive, JOH 119
Big Rapids, MI 49307-2280
Phone: 231-591-3675
History Education

Program Requirements

History Education Secondary Education, Minor Program Checksheet

Includes:

- Minor Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Teaching Minors for Secondary Education Majors

The Secondary Education program highly recommends the completion of a teaching minor.

More Information

School of Education
Bishop Hall Room 421
Ferris State University
1349 Cramer Circle
Big Rapids, MI 49307-2737
Telephone: (231) 591-5361
History Education Secondary Education

Program Requirements

History Education Secondary Education, BS Program Checksheet

Includes:

- Major Courses, General Education Courses, and Minor Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose History Education?

History is more than the study of the past, it also involves the study of change and continuity over time. According to historian and educator Peter Stearns, "Only through studying history can we grasp how things change; only through history can we begin to comprehend the factors that cause change; and only through history can we understand what elements of an institution or a society persist despite change." History education is an ideal choice for any student who finds they are always asking "why?" and then, once learning the answer, wants to share that knowledge and insight with others. In today's society, history education is especially relevant. Trained history educators will play an important role in helping future generations understand the world around them - whether in terms of understanding the root causes of social or political conflict or better appreciating diverse cultural values or valuing democratic institutions and ideals.

Career Opportunities

Current employment opportunities in the field of history education are based on two key factors. Both on a national and state level there is a common theme of the extreme need for teachers and adequately prepared history teachers. Concerns at the beginning of the decade focused primarily on the issue of the retirement for a significant number of educators, in the Michigan Education Report of 2001. Teacher shortages in Michigan are predicted to be most severe at the secondary education level. The issue of teacher shortage due to retirement has been compounded by the impact of the federal law No Child Left Behind (2003). NCLB seeks to redress a major issue - teachers who teach in content areas where they have little or no formal training. This issue is especially relevant to the field of history.

Teacher Certification Requirements

As required by the State of Michigan to receive teacher certification, all teacher candidates must: (1) meet the MDE (CAEP) cohort requirements, (2) pass the pedagogy tests in their subject area majors and minors, and (3) have a 2.75 minimum GPA to receive teacher certification in Michigan. These state requirements are in addition to the FSU graduation...
requirements of your individual program.

More Information

School of Education
Bishop Hall Room 421
Ferris State University
1349 Cramer Circle
Big Rapids, MI 49307-2737
Telephone: (231) 591-5361
Honors Program Associate Level

Program Requirements
Honors Program Associate Level, Certificate Program Checksheet
Includes:

- Certificate Courses
- Admission and Transfer Requirements

Why Choose an Associate's Level Honors Program?

Students who choose the Honors Program want to get the most out of their college experience. The opportunities provided in Honors allow students to gain experience and explore interests beyond their primary major or program.

What is an Honors Program?

The Honors Program at Ferris State University’s purpose is to provide intellectual challenges, resources, and support to highly able and motivated students while encouraging service and leadership for the public good.

Honors Programs provide enriching curricular and co-curricular opportunities for students regardless of their major who want to graduate with well-rounded experiences so that they can succeed in their chosen field. Honors is for students who want to get the most out of college—those who like to explore new ideas and are not afraid of a challenge.

Why should I take Honors courses?

Honors courses challenge students to take more responsibility for their own learning, by requiring primary texts, analytic thinking, and writing, global and intergenerational cultural competency and considering areas of further work or research in the topic of the course. Honors courses meet general education requirements, so that they enhance, not replace or extend, your educational experience.

More Information

For more information, visit our website at http://ferris.edu/honors/ or contact the Honors Program office at x2216
Honors Program Bachelor Level

Program Requirements

Honors Program Bachelor Level, Certificate Program Checksheet

Includes:

- Certificate Courses
- Admission and Transfer Requirements

Why Choose a Bachelor’s Level Honors Program?

Students who choose the Honors Program want to get the most out of their college experience. The opportunities provided in Honors allow students to gain experience and explore interests beyond their primary major or program.

What is an Honors Program?

The Honors Program at Ferris State University’s purpose is to provide intellectual challenges, resources and support to highly able and motivated students, while encouraging service and leadership for the public good.

Honors Programs provide enriching curricular and co-curricular opportunities for students regardless of their major who want to graduate with well-rounded experiences so that they can succeed in their chosen field. Honors is for students who want to get the most out of college—those who like to explore new ideas and are not afraid of a challenge.

Why should I take Honors courses?

Honors courses challenge students to take more responsibility for their own learning, by requiring primary texts, analytic thinking and writing, global and intergenerational cultural competency and considering areas of further work or research in the topic of the course. Honors courses meet general education requirements, so that they enhance, not replace or extend, your educational experience.
Graduation Requirements

Students must complete 22 credit-hours in Honors coursework or 20% of the credits earned at Ferris. Students also commit to co-curricular requirements, including service, leadership and cultural events.

More Information

For more information, visit our website at http://ferris.edu/honors/ or contact the Honors Program office at x2216
Hospitality Management

Program Requirements

Hospitality Management, BS Program Checksheet

Includes:

- Major Courses, General Education Courses, and Concentration Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Hospitality Management?

The Bachelor of Science (BS) in Business degree in Hospitality Management provides a highly diverse range of career opportunities within the exciting, fast-paced and dynamic environment of the hospitality industry. As one of the few programs in the country housed within a College of Business, our students gain skills and aptitude in operational and financial management highly valued by industry employers.

The Hospitality Management curriculum combines theory with practice by incorporating hands-on experience through numerous industry site visits, service learning projects, and curriculum focused internships. The degree consists of a core of classes relevant to all facets of hospitality including Guest Service Management, Sanitation & Safety, and Hospitality Law. Students then specialize their study by selecting a focus in one of four concentrations: Lodging, Food & Beverage, Event, or Specialized Management. These offerings combined with a comprehensive business core provide our graduates with the practical knowledge, leadership skills, and service-oriented philosophy to be successful in today’s industry.

Students gain insight in their area of study through interactions with professionals across the spectrum of hospitality by means of program partnerships with national associations and industry leaders. Whether attending a campus presentation on company-wide opportunities with corporate recruiters or traveling to attend state and national conferences, our students spend time learning with professionals and building their industry network.

To maintain the highest level of quality curriculum, our program is guided by an active advisory board consisting of alumni and industry professionals from across the country. Combined with dedicated faculty, well-connected in the industry, students find relevant knowledge and active learning to be a daily component of their academic experience.

Graduates are well prepared to enter the hospitality industry with advanced professional skills and their own industry connections. With strategic preparation and an interwoven approach to service, our alumni are leading their organizations across the country.
Joining us with current college credit? Transfer students will find the Hospitality Management Program articulates well with numerous community colleges. Transfer guides are readily available on the Ferris website. Students may complete the degree at the main campus or at our Grand Rapids locations. Students completing a culinary arts program at any career center can earn up to nine credit hours of articulated credit. Two minors and four certificates are available as well.

**Career Opportunities**

Graduates of the Hospitality Management degree are prepared to pursue careers in a variety of hospitality related businesses. Positions in hospitality management are abundant and employers are actively seeking quality graduates. A small sample of positions include:

Lodging Management

- Front Office Manager
- Guest Services Manager
- Revenue Manager
- Executive Housekeeper

Food & Beverage Operations

- Dining Room Manager
- Bar Manager
- Banquet Manager
- Food and Beverage Director

Event Management

- Convention Sales Manager
- Associate Destination Manager
- Event Operations Manager
- Event Producer

Hospitality Management also expands into country club management, spa management, ski management, and guest service specialist positions.

**More Information**

Hospitality Management Program
West Commons 106
1319 Cramer Circle
Big Rapids, MI 49307
Phone: 231-591-2382
Email: hospitality@ferris.edu

The College of Business is accredited by the Accreditation Council for Business Schools and Programs (ACBSP.)
http://www.acbsp.org
Hotel/Restaurant and Food Industry Management

Program Requirements

Hotel/Restaurant and Food Industry Management, Minor Program Checksheet

Includes:

- Minor Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose the Hotel/Restaurant and Food Industry Management Minor?

The Hotel/Restaurant and Food Industry Management minor is designed to complement any major by preparing students with a fundamental knowledge of hotel and restaurant operations. Required courses focus on an essential understanding of the financial management and service leadership critical to ensure successful operations of a safe and profitable hospitality business. Additional electives allow students the opportunity to select courses that fit their particular career objectives and interests. Throughout their studies, students will have the opportunity to earn nationally recognized certifications, such as ServSafe, and TIPS as part of their courses.

More Information

Hospitality Management Program
1319 Cramer Circle/WCO 106
Big Rapids, MI 49307
Phone: (231) 591-2382
Email: hospitality@ferris.edu
Human Resource Management

Program Requirements

Human Resource Management, BS Program Checksheet

Includes:

- Major Courses and General Education Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Human Resource Management? - Program Spotlight

As a student, you have the opportunity to develop expertise in human resource management through courses in employment law, compensation, negotiations, and employee benefits. You also receive a well-rounded education in business through courses in accounting, computer information systems, finance, international business, management and marketing.

In addition, the required internship allows you to earn university credit while gaining valuable experience. Internships often lead to permanent employment.

Career Opportunities

Do you enjoy working with people? Helping people? Are you looking for a job that will make use of your 'people skills' in a business setting? You might find the right career for you in human resource management, a field that depends upon people skills and talents.

Professionals in the human resource management field work each day with a variety of people, including employees and job applicants, managers and union representatives. They also work in a variety of roles. They may, for example, be responsible for recruiting and selecting the best employees available for a job. They also counsel employees, conduct training and career development programs and perform job evaluations. They work in compensation and benefits administration and participate in negotiations. They also engage in personnel research and job analysis.

The education you receive is also beneficial for gaining employment in various management positions.

More Information

Management Department
119 South Street, BUS 212
Big Rapids, MI 49307-2284
The College of Business is accredited by the Accreditation Council for Business Schools and Programs (ACBSP.)
http://www.acbsp.org
Human Resource Management

Program Requirements

Human Resource Management, Certificate Program Checksheet

Includes:

- Certificate Courses
- Admission Requirements
- Graduation Requirements

Why Choose the Certificate in Human Resource Management - Program Spotlight

The Certificate in Human Resource Management provides an opportunity for students in any major to gain the basic knowledge and skills in the field of Human Resources required of supervisors and managers in all areas of an organization.

More Information

Management Department
119 South Street/BUS 212
Big Rapids, MI 49307-2284
Phone: 231-591-2427
Email: MGMT@ferris.edu
Human Resource Management

Program Requirements

Human Resource Management, Minor Program Checksheet

Includes:

- Minor Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose the Human Resource Management Minor? - Program Spotlight

A minor in Human Resource Management helps to position students in other majors to become supervisors/managers in their chosen field. It is a popular minor for students pursuing majors in health care (e.g., Health Care Systems Administration, Radiography, Sonography, Nuclear Medical Technology, and Nursing), Communications, Engineering Technology, and Psychology. Students will take courses in Human Resources, Employment Law, Compensation, and Negotiations and have a choice of electives depending on their interests.

More Information

Management Department
119 South Street/BUS 212
Big Rapids, MI 49307-2284
Phone: 231-591-2427
Email: MGMT@ferris.edu
HVACR Engineering Technology HVAC

Why Choose HVACR Engineering Technology?

The Heating, Ventilation, Air Conditioning and Refrigeration (HVACR) Engineering Technology curriculum is a two-year, upper-division sequence leading to a bachelor of science degree. Instruction is aimed at developing expertise in system and controls design, retrofitting, testing and adjusting, system balancing and building operations with microcomputer controls.

Students learn up-to-date methods of identifying and performing efficiency evaluations on different types of heating, ventilation and air conditioning systems found in commercial and industrial buildings. They also learn methods of adjusting and balancing equipment for maximum performance.

In addition to classroom study, students perform energy and HVACR systems analysis for West Michigan businesses and industries. An energy systems laboratory includes equipment, computers and instrumentation found in commercial or industrial buildings. The lab includes a ten-ton variable air volume, four-zone system that controls cooling, heating and ventilation with computerized energy management. There also is a paid internship in the summer semester between the junior and senior year.

Career Opportunities

The HVACR Engineering Technology program addresses designing, retrofitting, testing and balancing on a problem-solving level to prepare technologists to fill the wide technological gap between service technicians and engineers.

Challenging careers abound in manufacturing, contracting, building operations and in the engineering of commercial, institutional and industrial building systems.

These industries look for trained HVACR engineering technicians for a variety of positions, including applications engineer, project engineer, systems control, estimator, field technician, systems representative, control systems trainer and in-plant engineer. There also are many opportunities to be found with architectural and engineering firms.

Graduate placement rate has been near 100% since the program was founded in 1984, with starting salaries currently averaging $53,000 per year.

Admission Requirements

Students entering the HVACR Engineering Technology program must have completed the HVACR Technology program at Ferris or an equivalent A.A.S. program at another institution (or equivalent) with a minimum 2.5 GPA. In addition, students should possess computer literacy
skills and have completed college intermediate algebra and trigonometry and a scientific understanding course.

**Graduation Requirements**

The HVACR Engineering Technology program at Ferris leads to a bachelor of science degree. Graduation requires a minimum 2.0 GPA in the major and overall. Students must complete all general education requirements as outlined on the General Education website.

**More Information**

College of Engineering Technology
Ferris State University
1009 Campus Drive
Big Rapids, MI 49307-2280
Phone: 231-591-2890
HVACR Technology

Program Requirements

HVACR Technology, AAS Program Checksheet

Includes:

- Major Courses and General Education Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose HVACR Technology?

The Heating, Ventilation, Air Conditioning, and Refrigeration (HVACR) Technology programs provide a balance of theory and application, in keeping with the philosophy of Ferris State University. This includes a solid foundation of the principles of heating, ventilation, air conditioning, and refrigeration combined with extensive laboratory experience.

While in the lab, students learn to test, systematically troubleshoot, repair and maintain electrical and mechanical HVACR systems and components. Residential and light commercial heating, ventilating and air conditioning along with food preservation refrigeration are the main focus of the program.

Career Opportunities

Because of the continuing demand for technicians, HVACR graduates can easily find employment in any state or country. In fact, a Ferris HVACR graduate statistically has multiple jobs to choose from at graduation with starting salaries averaging $41,000 per year.

Career opportunities for technicians are multiplying with technological advances in the use of microcomputers for data processing and system control. The demand also is spurred by expansion in the production, storage, and marketing of food and other perishables.

The growing emphasis on energy cost and utilization is also creating a need for technicians to renovate, convert, and service existing heating and air conditioning systems. Graduates may work as service technicians, manufacturers, laboratory technicians, sales representatives, or designers.

More Information

School of Built Environment
HVACR Engineering Technology Programs
605 S. Warren Avenue, GRN 227
Big Rapids, MI 49307-2280
Industrial Chemistry - Fermentation Science Concentration

Program Requirements

Industrial Chemistry Fermentation Science Concentration, BS Program Checksheet

Includes:

- Major Courses, General Education Courses, and Concentration Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Industrial Chemistry Fermentation Science Concentration?

Students in the Industrial Chemistry program are trained in organic, analytical, physical, and biological chemistry. In addition, coursework and experience provide skills and practical application in the areas of safety issues, instrumental analysis, and fermentation.

This program is designed to prepare students with the lab experience necessary to build a career in chemistry along with the theoretical underpinnings and supporting knowledge needed to advance in such a career.

All classes are taught with an emphasis on practical application and problem solving, culminating in an internship experience. This allows each student to apply the skills and knowledge they have gained in a real-world, commercial setting.

Career Opportunities

Industries in Michigan, the Midwest, and throughout the entire country are using increasingly sophisticated chemical procedures, processes, and instrumentation. Consequently, industrial leaders are becoming more concerned about health hazards and safety factors. These companies need chemists and chemical professionals that are experienced and ready to work. Many managers seek Ferris graduates to fill the demand.

Graduates find jobs in a variety of industries, including chemical, plastics, pharmaceutical, environmental, paint, food, automotive, petroleum and personal care products.

More Information

MAJOR ADVISOR: Dr. Mark Thomson
PHONE: 231-591-2590
EMAIL: thomsom@ferris.edu

Department of Physical Sciences
Industrial Chemistry - Manufacturing Concentration

Program Requirements

Industrial Chemistry Manufacturing Concentration, BS Program Checksheet

Includes:

- Major Courses, General Education Courses, and Concentration Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Industrial Chemistry Manufacturing Concentration?

Students in the Industrial Chemistry program are trained in organic, analytical, physical, and biological chemistry. In addition, coursework and experience provide skills and practical application in the areas of safety issues, instrumental analysis, and fermentation.

This program is designed to prepare students with the lab experience necessary to build a career in chemistry along with the theoretical underpinnings and supporting knowledge needed to advance in such a career.

All classes are taught with an emphasis on practical application and problem solving, culminating in an internship experience. This allows each student to apply the skills and knowledge they have gained in a real-world, commercial setting.

Career Opportunities

Industries in Michigan, the Midwest, and throughout the entire country are using increasingly sophisticated chemical procedures, processes, and instrumentation. Consequently, industrial leaders are becoming more concerned about health hazards and safety factors. These companies need chemists and chemical professionals that are experienced and ready to work. Many managers seek Ferris graduates to fill the demand.

Graduates find jobs in a variety of industries, including chemical, plastics, pharmaceutical, environmental, paint, food, automotive, petroleum and personal care products.

More Information

MAJOR ADVISOR: Dr. Mark Thomson
PHONE: 231-591-2590
EMAIL: MarkThomson@ferris.edu

Department of Physical Sciences
Industrial Chemistry Technology

Program Requirements

Industrial Chemistry Technology, AAS Program Checksheet

Includes:

- Major Courses and General Education Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Industrial Chemistry Technology?

Students in the Industrial Chemistry Technology program are trained in general, organic, analytical and instrumental chemistry. In addition, specialty classes focus on the chemical industry, safety issues and statistical process control.

The Industrial Chemistry Technology courses also provide an excellent gateway into other science-based majors, including biology, chemistry, optometry, and pharmacy. This program is designed to give students the improved laboratory skills and analytical abilities that will help them to excel in other four-year programs.

All classes are taught by faculty with many years of experience in industrial chemistry. The Ferris Industrial Chemistry Technology program is one of only a few such programs approved by the American Chemical Society.

Career Opportunities

Industries throughout Michigan and the Midwest are using increasingly sophisticated chemical procedures. Consequently, industrial leaders are becoming more concerned about health hazards and safety factors. These companies need better-trained chemistry technicians, and many managers seek Ferris graduates to fill the demand.

Graduates find jobs in a variety of industries, including chemical, plastics, pharmaceutical, environmental, paint, food, automotive, petroleum and personal care products.

More Information

ADVISOR: Prof. Bill Killian
PHONE: 231-591-2590
EMAIL: WilliamKillian@ferris.edu

Department of Physical Sciences
Industrial Control Systems

Program Requirements

Industrial Control Systems, Minor Program Checksheet

Includes:

- Minor Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Industrial Control Systems Minor?

The Industrial Control Systems Minor provides essential concepts necessary for non-Electrical/Electronics students in industrial controls and automation systems technology. Topics such as programmable logic controllers, industrial communications and networking, transformers, motors, sensors, and fundamental electrical concepts are presented with emphasis on hands-on experience.

Students with this minor will gain experience to enhance their knowledge in the key aspects of controls and automation that are vital to careers in industry and technology.

More Information

School of Engineering and Computing Technology

Electrical/Electronics Engineering Technology Programs

915 Campus Drive, SWN 405
Big Rapids, MI 49307
Phone: 231-591-2388
Email: eecn@ferris.edu
https://www.ferris.edu/CET/ceems/eeet/homepage.htm

Ferris State University

College of Engineering Technology

1009 Campus Drive, JOH 200
Big Rapids, MI 49307-2280
Phone: 231-591-2890
Email: technology@ferris.edu
www.ferris.edu/technology
Industrial Electronics Technology

Program Requirements

Industrial Electronics Technology, AAS Program Checksheet

Includes:

- Major Courses and General Education Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Industrial Electronics Technology?

The Industrial Electronics Technology program is ideal for students interested in pursuing careers working with the latest electronic, computer and control technologies. This challenging program provides an exceptionally strong foundation in electronics theory supported by the extensive hands-on experience through accompanying labs. Topics include amplifier and digital circuitry, programmable logic, microprocessors, instrumentation, simulation, troubleshooting, and industrial automation. Real-world theory and applications are emphasized throughout the program.

The Associate in Applied Science in Industrial Electronics Technology (AAS IET) serves as the major preparatory program for the Bachelor of Science in Electrical/Electronics Engineering Technology. The IET degree can also be used to ladder into other Bachelor degrees at Ferris State University.

The Associate in Applied Science in Industrial Electronics Technology is accredited by the Engineering Technology Accreditation Commission of the Accreditation Board for Engineering and Technology (ETAC-ABET) since 2014. The next accreditation review is scheduled for 2022. http://www.abet.org/

Career Opportunities

Aerospace, commercial, consumer, industrial, medical, security, and transportation technologies depend on electronic systems. The operation, implementation, and design of these require knowledgeable technicians and technologists. Industrial Electronics Technology graduates are employed in the design, testing, installation, and troubleshooting of industrial process control systems, robotics devices, communications systems, and sophisticated instrumentation. Most qualifying graduates, however, choose to optimize their career opportunities by advancing into our Bachelor of Science in Electrical/Electronics Engineering Technology program.

More Information
The Associate in Applied Science in Industrial Electronics Technology is accredited by the Engineering Technology Accreditation Commission of the Accreditation Board for Engineering and Technology (ETAC-ABET) since 2014. The next accreditation review is scheduled for 2022.
http://www.abet.org/
Industrial Practices

Program Requirements

Industrial Practices, Certificate Program Checksheet

Includes:

- Certificate Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose a Certificate in Industrial Practices?

Modern industry relies upon employees with broad backgrounds in manufacturing engineering-related topics, whether they hold the title of "manufacturing engineer" or not. Employee expertise in areas such as standardized work, lean manufacturing, statistical analysis, automation, and plant layout techniques are essential to the success of any industrial company. Students entering the job market with experience in these topics enjoy a competitive advantage in the marketplace. Ferris State University students will want to complete the Industrial Practices Certificate series in order to expand and document their industry-related skillsets beyond those developed from courses just within their majors.

Career Opportunities

Specific populations who would benefit by adding the Industrial Practices Certificate to their list of credentials include:

- The Industrial Practices Certificate enhances process-oriented majors such as welding, plastics, and rubber engineering technology by making the employee less vertically-oriented and more resistant to being “pigeon-holed” in one small area as nothing more than a single-subject matter expert.
- The Industrial Practices Certificate enhances design-oriented majors such as Electrical/Electronics, Mechanical, Automotive, and Product Design Engineering Technology. Companies recognize the advantages of simultaneous engineering when designing products and services, and candidates for design positions who have an understanding of design for manufacturability, industrial operations, and capabilities will enjoy a competitive advantage over those who do not.
- The Industrial Practices Certificate enhances industrial management-oriented majors such as Operations and Supply Management. Industrial managers are responsible for overseeing the activities addressed in the Industrial Practices course set. A manager familiar with concepts beyond just the terminology used will be able to more effectively communicate with the various constituencies involved in industrial operations.
In addition, students in other majors such as Construction Management, Health Care Administration, and Hospitality Management may also benefit from an Industrial Practices Certificate. Traditionally manufacturing-oriented topics such as lean, six sigma, and standardized work find wider applications in non-manufacturing sectors.

More Information

School of Design and Manufacturing
Manufacturing Engineering Technology Programs
915 Campus Drive, SWN 220
Big Rapids, MI 49307
Phone: 231-591-2511
Email: ManufacturingDegrees@ferris.edu
https://www.ferris.edu/CET/design-mfg/Manufacturing/Industrial-practices-cert.htm

Ferris State University
College of Engineering Technology
1009 Campus Drive, JOH 200
Big Rapids, MI 49307-2280
Phone: 231-591-2890
Email: technology@ferris.edu
www.ferris.edu/technology
Industrial Technology and Management

Program Requirements

Industrial Technology and Management, BAS Program Checksheet

Includes:

- Major Courses and General Education Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Industrial Technology and Management?

The Industrial Technology and Management (ITM) program is designed to complement previous training in a technical area to move into a management role in a manufacturing or related facility. The ITM degree is interdisciplinary, bringing components of various programs together with specialty courses that expand the knowledge base of the student in manufacturing and industrial settings. The foundation classes provide a depth of knowledge applicable to any technology field with classes in automation, globalization, lean manufacturing, general management, quality statistics, and industrial operations. Students typically come to the ITM program with work experience in a manufacturing environment. This allows students to bring their own experiences from their jobs to the classroom for a unique perspective on solving manufacturing-related problems.

The Industrial Technology and Management degree is designed for persons involved in any one of several areas in manufacturing who may possess many manufacturing or business-related credits or an associate degree, and who desire a bachelor's degree. This degree will assist persons who want to make a career change with their current employer or a career transition to a new employer. It is designed to assist persons who desire to work in production supervision, sales engineering, production planning, quality, engineering supervision, and project management among other positions.

A significant part of the degree is an area called "Related Electives" where an individual can bring up to 40 credits into the degree which may include an associate degree. These credits should be from the area of manufacturing, however, appropriate business-related classes can be included. This area can be used to add a concentration of classes that represents an area of interest to the student.

Program offered through Statewide locations only.

Career Opportunities

Most of our current students work in a manufacturing facility and wish to advance their careers,
responsibilities and salaries. By bringing a comprehensive understanding of the fundamentals of manufacturing, additional skills are learned in the program which can transfer directly to the workplace. Employment opportunities for Industrial Technology and Management graduates are found across the entire spectrum of manufacturing and related industries. Common job titles one could expect from completing this program include production supervisor, project leader, project manager, continuous improvement manager, lean specialist, team leader or in middle management. Depending on your previous experience, additional career tracks one could expect from obtaining this degree may also be available in engineering, upper management and sales.

More Information

School of Design and Manufacturing
Industrial Technology and Management (ITM) Degree

Ferris Statewide @ Warren, MI
14500 E 12 Mile Road
Warren, MI 48088
Phone: 586-263-6773
Email: ferrisSE@ferris.edu
https://www.ferris.edu/HTMLS/statewide/industrial-technology-management.htm

Ferris Statewide @ Grand Rapids, MI
151 Fountain Street, NE
Grand Rapids, MI 49503
Phone: 616-451-4777 or 800-998-3425
Email: ferrisgr@ferris.edu
https://www.ferris.edu/HTMLS/statewide/industrial-technology-management.htm

Ferris State University
College of Engineering Technology
1009 Campus Drive, JOH 200
Big Rapids, MI 49307-2280
Phone: 231-591-2890
Email: technology@ferris.edu
www.ferris.edu/technology
Why Choose the 5-Year Bachelor and Master of Science in Information Security and Intelligence?

This unique dual enrollment opportunity allows students to begin graduate studies once they have acquired senior status in the ISIN Bachelor program. MISI 629 can be used for ISIN 429 and PROJ 640 can be used for PROJ 320. Alternately, one MISI course can be used as an undergraduate directed elective. As a result, two courses can be used toward both degrees. Application and acceptance to the MS-ISI program is required prior to enrolling in graduate level courses and full admission to the MS-ISI program will begin the semester after completion of the Bachelor of Science in Information Security and Intelligence degree.

MS-ISI courses are offered fully online and face-to-face for flexible scheduling to serve full-time, part-time, and accelerated students as well as working professionals, and military students and international students who require 70% of their coursework in-seat.

The MS-ISI consists of eight core courses, including an integrated capstone project, and an Advanced Studies Certificate that focuses on the student’s concentration of choice: Business Intelligence, Incident Response (computer security), or Project Management. The MS-ISI can be completed 100% online.
There are several things that distinguish our Information Security and Intelligence programs in the top 10 of the nation and the premier programs for cyber security:

We have achieved the following much sought after designations:

- **National Center of Academic Excellence in Information Assurance Education** as designated by the *U.S. Department of Homeland Security (DHS)* and the *National Security Agency (NSA)*.
- **National Center of Academic Excellence in Cyber Defense Education** as designated by the *U.S. Department of Homeland Security (DHS)* and the *National Security Agency (NSA)*.
- **National Center of Digital Forensics Academic Excellence** as designated by the *Department of Defense Cyber Crime Center (DC3)* and the *DC3 Academic Cyber Curriculum Alliance (DACCA)*.
- **ABET Accreditation** by the Computing Accreditation Commission (CAC) of the Accreditation Board for Engineering and Technology, Inc. (ABET).
- Accredited Amazon Web Services (AWS) Academy for Cloud Computing Architecture
- Cellebrite Forensic Academic Partner
- EC-Council Accredited Training Center
- Palo Alto Networks Academy Partner
- CompTIA Academy Partner
- Pearson Vue Testing Center

**Other achievements that distinguish the Ferris ISI programs in the nation’s top 10:**

- Michigan’s most advanced digital forensic research lab equipped with Axiom, EnCase, FTK, Forensic Explorer, Cellebrite, XRY, Passware Decryption Suite, Maltego, Shadow Dragon Social Net, i2, Stereo and Digital Laser microscopes, network segmentation, Steel Central, Burp Suite, and Palo Alto.
- Funded research grants from the National Security Agency, National Science Foundation and various other foundations.
- Consistently ranked by US News and World Reports as one of the top online non-MBA business programs in the United States.
- Extensive publication record consisting of multiple journals, books and periodicals. Some of this work has been cited in the United States Supreme Court such as in the landmark case Riley v. California.
- Students compete in various cyber security competitions and frequently finish in the top 10% nationally.
- As an NSA Center of Excellence, our students are eligible for NSA NIETP scholarships and DOD CySP scholarships.
- Active student organizations including the Information Security & Intelligence Association and Women in Cybersecurity.
- Multiple faculty have been certified as an expert witnesses in various courts.
- Faculty that have the following certifications: CISSP, E|CSA, GIAC GSSP-.NET, GIAC GCIH, C|ND, CPTE, CLFE, CAN, C|SCU, PMP, EnCE, ACE, CEH, CAPM, Scrum Master.
- Faculty that average over 15 years of work experience ranging from leadership positions in multibillion dollar corporations to law enforcement and licensed professional...
• Faculty that include a Distinguished Professor, Fulbright Scholar, and International Educator of the year.
• Faculty that have taught on 4 continents that includes teaching digital forensics to the entire federal cybercrime units in Chile and Perú
• A student body that includes graduates from over 50 countries.
• Alumni that have distinguished themselves as leaders at dozens of organizations worldwide.
• Host site of Michigan's Cyber Range. Host of cyber competitions and various summer camps and workshops.

Invest in Your Future

The BS in Information Security & Intelligence degree prepares students for a variety of career opportunities in fields such as Computer Forensics, Information Security, Intelligence/Big Data, Incident Response, and Mobile Security. Opportunities exist in the government, security, intelligence, health care, insurance, finance, and education fields.

The MS in Information Security & Intelligence (MS-ISI) program further develops students for careers in Business Intelligence, Incident Response (proactive and reactive in areas such as hacking and digital forensics), and Project Management utilizing secure practices. Positions include security officers, analysts, forensics experts, project managers, and technical managers.

More Information

College of Business - Graduate Programs
119 South Street, BUS 212B
Big Rapids, MI 49307
Phone: 231-591-2168
E-mail: ShannonYost@ferris.edu
Web: http://ferris.edu/misi/
Information Security and Intelligence

Program Requirements

Information Security and Intelligence, MISI Program Checksheet

Includes:

- Major Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose the Master of Science in Information Security and Intelligence?

The thirty-three (33) credit hour Information Security and Intelligence program has been developed to prepare students for careers in Business Intelligence, Incident Response (proactive and reactive in areas such as hacking and digital forensics), and Project Management utilizing secure practices. Positions include security officers, analysts, forensics experts, project managers, and technical managers.

MS-ISI courses are offered fully online and face-to-face for flexible scheduling to serve full-time, part-time, and accelerated students as well as working professionals, and military students and international students who require 70% of their coursework in-seat.

The MS-ISI consists of eight core courses, including an integrated capstone project, and an Advanced Studies Certificate that focuses on the student’s concentration of choice: Business Intelligence, Incident Response (computer security), or Project Management. The MS-ISI can be completed 100% online.

There are several things that distinguish our Information Security and Intelligence programs in the top 10 of the nation and the premier programs for cyber security:

We have achieved the following much sought after designations:

- **National Center of Academic Excellence in Information Assurance Education** as designated by the *U.S. Department of Homeland Security (DHS)* and the *National Security Agency (NSA)*.
- **National Center of Academic Excellence in Cyber Defense Education** as designated by the *U.S. Department of Homeland Security (DHS)* and the *National Security Agency (NSA)*
- **National Center of Digital Forensics Academic Excellence** as designated by the *Department of Defense Cyber Crime Center (DC3)* and the *DC3 Academic Cyber Curriculum Alliance (DACCA)*.
- **ABET Accreditation** by the Computing Accreditation Commission (CAC) of the...
Accreditation Board for Engineering and Technology, Inc. (ABET)
- Accredited Amazon Web Services (AWS) Academy for Cloud Computing Architecture
- Cellebrite Forensic Academic Partner
- EC-Council Accredited Training Center
- Palo Alto Networks Academy Partner
- CompTIA Academy Partner
- Pearson Vue Testing Center

Other achievements that distinguish the Ferris ISI programs in the nation’s top 10:

- Michigan’s most advanced digital forensic research lab equipped with Axiom, EnCase, FTK, Forensic Explorer, Cellebrite, XRY, Passware Decryption Suite, Maltego, Shadow Dragon Social Net, i2, Stereo and Digital Laser microscopes, network segmentation, Steel Central, Burp Suite, and Palo Alto.
- Funded research grants from the National Security Agency, National Science Foundation and various other foundations.
- Consistently ranked by US News and World Reports as one of the top online non-MBA business programs in the United States.
- Extensive publication record consisting of multiple journals, books and periodicals. Some of this work has been cited in the United States Supreme Court such as in the landmark case Riley v. California.
- Students compete in various cyber security competitions and frequently finish in the top 10% nationally.
- As an NSA Center of Excellence, students are eligible for NSA NIETP scholarships and DOD CySP scholarships.
- Active student organizations including the Information Security & Intelligence Association and Women in Cybersecurity.
- Multiple faculty have been certified as an expert witness in various courts.
- Faculty that have the following certifications: CISSP, E|CSA, GIAC GSSP-.NET, GIAC GCIH, C|ND, CPTE, CLFE, CAN, C|SCU, PMP, EnCE, ACE, CEH, CAPM, Scrum Master.
- Faculty that average over 15 years of work experience ranging from leadership positions in multibillion dollar corporations to law enforcement and licensed professional investigator.
- Faculty that include a Distinguished Professor, Fulbright Scholar, and International Educator of the year.
- Faculty that have taught on 4 continents that includes teaching digital forensics to the entire federal cybercrime units in Chile and Perú.
- A student body that includes graduates from over 50 countries.
- Alumni that have distinguished themselves as leaders at dozens of organizations worldwide.
- Host site of Michigan’s Cyber Range.
- Host of cyber competitions and various summer camps and workshops.

Invest in Your Future

An environmental scan of job opportunities and academic programs nationally has confirmed a strong outlook for the field of Information Security and Intelligence and the three concentration
areas of the program.

The MS-ISI at Ferris State University not only prepares you for a career in a number of growing fields but also for a career where the analytical and leadership requirements are not easily outsourced or sent offshore. Information Security, Business Intelligence, Project Management, and Cyber Incident Response are some of the areas that you may choose to launch a new career or strengthen the skills needed for advancement in your current career. According to the United States Department of Labor, employment in these areas will grow much faster than average and excellent job prospects are expected.

It is critical to all organizations to be able to ensure their computer systems are safe against vulnerabilities and attacks. Therefore, there is a growing demand for Information Security professionals that not only understand how to prevent these vulnerabilities and attacks but also are trained to properly respond to computer security incidents when they occur. Professionals are in high demand that have what it takes to analyze incident data so they can recognize and respond to security risks and threats as well as prevent future incidents.

The ability to analyze and manage data extends far beyond incident data analysis. A recent report from the McKinsey Institute predicts a shortage of 1.5 million business intelligence analysts by 2018. The Bureau of Labor and Statistics also reports growing demand for workers with deep analytical skills. Potential growth industries are medical and financial where heavy regulations and large amounts of data create a strong need for business intelligence solutions.

If you have an interest or desire to lead and manage then Project Management is a career you should consider. The U.S. Bureau of Labor Statistics also expects job growth in this field to be faster than average through 2018. In addition, a study published by the Anderson Economic Group stated that an average of 1.2 million project management positions will need to be filled each year through 2016. You'll need excellent communication, leadership, organizational, and decision-making skills to be successful in a Project Management career. A solid educational foundation in Project Management that is aligned with industry best practices can be found within the ISM program at Ferris State University.

The disciplines of Information Security, Business Intelligence, Project Management, and Cyber Incident Response are not isolated to a particular industry or sector. Job opportunities exist in large corporations, small business, government, and education to name a few. There is clearly no shortage of demand expected in any of these careers if you have the right education and skills.

Some job opportunities are, but not limited to:

- Digital Forensics
- Secure Software Developer
- Network Security
- Penetration Tester (Ethical Hacking)
- Information Security Crime Investigator
- Security Architect
- Security Auditor
- Malware & Intrusion Analyst
• Disaster Recovery/Business Continuity
• Vulnerability Researcher
• Chief Security Officer

More Information

College of Business - Graduate Programs
119 South Street, BUS 212B
Big Rapids, MI 49307
Phone: 231-591-2168
E-mail: ShannonYost@ferris.edu
Web: http://ferris.edu/misi
Information Security and Intelligence

Program Requirements

Information Security and Intelligence, BS Program Checksheet

Includes:

- Major Courses and General Education Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Information Security & Intelligence?

- There are several things that distinguish the ISIN programs as one of the top 25 in the nation and the premier cybersecurity program in Michigan:
  - The Bachelor of Science in Information Security is the only Cyber Security program in Michigan that is ABET accredited and the only Cyber Security program in the United States to be ABET accredited for online delivery.
  - The National Security Agency and the Department of Homeland Security have designated Ferris State University as a National Center of Academic Excellence in Cyber Defense Education.
  - The Department of Defense Cyber Crime Center (DC3) and the Air Force Office of Special Investigations has named Ferris State University as the first university in the United States to obtain designation as a National Center of Digital Forensics Academic Excellence.
  - Michigan’s most advanced digital forensic research lab equipped with EnCase, FTK, Nuix, Cellebrite, XRY, Passware Decryption Suite, Maltego, Shadow Dragon Social Net, i2, Stereo and Digital Laser microscopes, network segmentation, Steel Central, Burp Suite, and Palo Alto Academic Partner.
  - Funded research grants from the National Science Foundation and various other foundations.
  - Extensive publication record consisting of multiple journals, books, and periodicals. Some of this work has been cited in the United States Supreme Court such as in the landmark case Riley v. California.
  - Students compete in various cybersecurity competitions and frequently finish in the top 10% nationally.
Active student organizations including the Information Security & Intelligence Association and Women in Cybersecurity.

Multiple faculty have been certified as an expert witness in various courts.

Faculty that have the following certifications: CISSP, E|CSA, GIAC GSSP-.NET, GIAC GCIH, C|ND, CPTE, CLFE, CAN, C|SCU, PMP, EnCE, ACE, CEH, CAPM, Scrum Master.

Faculty that average over 15 years of work experience ranging from leadership positions in multibillion dollar corporations to law enforcement and licensed professional investigator.

Faculty that include a Distinguished Professor, Fulbright Scholar, and International Educator of the year.

Faculty that have taught on 4 continents including teaching digital forensics to the entire federal cybercrime units in Chile and Perú.

A student body that includes graduates from over 50 countries.

Alumni that have distinguished themselves as leaders for dozens of organizations worldwide.

Host site of Michigan's Cyber Range.

Host of various summer camps and workshops.

**Career Opportunities**

The Information Security & Intelligence degree prepares you for a variety of career possibilities in fields that allow you to see your contribution in action. Computer Forensics, Information Security, Intelligence/Big Data, Incident Response, and Mobile Security are a few of the possibilities. Opportunities exist in the government, security, intelligence, health care, insurance, finance, and education fields.

**More Information**

Accountancy, Finance & Info Systems
119 South Street, BUS 212
Big Rapids, MI 49307-2284
231-591-2434
AFIS@ferris.edu
Information Security and Intelligence

Required Courses

Why Choose Information Security & Intelligence?

There are several things that distinguish the ISI program as one of the top 25 in the nation and the premier cyber security program in Michigan.

- The National Security Agency and the Department of Homeland Security have designated Ferris State University as a National Center of Academic Excellence in Cyber Defense Education.
- The Department of Defense Cyber Crime Center (DC3) and the Air Force Office of Special Investigations have named Ferris State University as the first university in the United States to obtain designation as a National Center of Digital Forensics Academic Excellence.
- Michigan’s most advanced digital forensic research lab equipped with EnCase, FTK, Nuix, Cellebrite, XRY, Passware Decryption Suite, Maltego, Shadow Dragon Social Net, i2, Stereo and Digital Laser microscopes, network segmentation, Steel Central, Burp Suite, and Palo Alto Academic Partner.
- Funded research grants from the National Science Foundation and various other foundations.
- Extensive publication record consisting of multiple journals, books and periodicals. Some of this work has been cited in the United States Supreme Court such as in the landmark case Riley v. California.
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- Faculty that have the following certifications: CISSP, E|CSA, GIAC GSSP-.NET, GIAC GCIH, C|ND, CPTE, CLFE, CAN, C|SCU, PMP, EnCE, ACE, CEH, CAPM, Scrum Master.
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- Faculty that include a Distinguished Professor, Fulbright Scholar, and International Educator of the year.
- Faculty that have taught on 4 continents that includes teaching digital forensics to the entire federal cybercrime units in Chile and Perú.
- A student body that includes graduates from over 50 countries.
- Alumni that have distinguished themselves as leaders for dozens of organizations.
worldwide.

- Host site of Michigan’s Cyber Range.
- Host of various summer camps and workshops.

**Career Opportunities**

The Information Security & Intelligence minor prepares you for a variety of career possibilities in fields that allow you to see your contribution in action. Computer Forensics, Information Security, Intelligence/Big Data, Incident Response, and Mobile Security are a few of the possibilities. Opportunities exist in the government, security, intelligence, health care, insurance, finance, and education fields.

**Admission Requirements**

Any current Ferris State University undergraduate student who is in good academic standing may enroll in this minor.

**Graduation Requirements**

Minimum requirement for the minor is 18 credits. An ISI minor is a collection of four required courses and three elective courses approved by an advisor.

A Ferris student will receive the Information Security & Intelligence minor upon graduation with a Baccalaureate degree, and completion of the requirements for the minor with a minimum 2.0 grade point average in Information Security & Intelligence courses.

No more than 50% of the credits in this minor may be transferred from another institution. A maximum of one third of the credits, but not more than 7 credits in a minor, may overlap with the student’s major.

**More Information**

Accountancy, Finance & Info Systems
119 South Street, BUS 212
Big Rapids, MI 49307-2284
Phone: (231) 591-2434
Email: AFIS@ferris.edu
Information Security and Intelligence

Program Requirements

Information Security and Intelligence, AAS Program Checksheet

Includes:

- Major Courses and General Education Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Information Security and Intelligence?

- The National Security Agency and the Department of Homeland Security have designated Ferris State University as a National Center of Academic Excellence in Cyber Defense Education.

- The Department of Defense Cyber Crime Center (DC3) and the Air Force Office of Special Investigations has named Ferris State University as the first university to obtain designation as a National Center of Digital Forensics Academic Excellence.

- Ferris State University is a host site for the Michigan Cyber Range. This provides students with a unique opportunity to develop skills in detecting, preventing, and responding to cyber-attacks in a controlled setting that approximates the real world. The Cyber Range allows for actual performance of cyber security techniques such as penetration testing, digital forensics, malware analysis, and other information technology pursuits in a logically isolated system that has connectivity potential nationwide.

Career Opportunities

The Information Security & Intelligence Associate degree prepares you for a variety of career possibilities in fields that allow you to see your contribution in action. Computer Forensics, Information Security, Ethical Hacking, Penetration Testing, Intelligence/Big Data, Incident Response, and Mobile Security are a few of the possibilities. Opportunities exist in the government, business, intelligence, health care, insurance, finance, and education fields.

More Information

Accountancy, Finance, & Info Systems
119 South Street, BUS 212
Big Rapids, MI 49307-2284
231-591-2434
AFIS@ferris.edu
Integrated Marketing Communications

Program Requirements

Integrated Marketing Communications, Certificate Program Checksheet

Includes:

- Certificate Courses
- Admission Requirements
- Graduation Requirements

Why Choose an Integrated Marketing Communications Certificate?

With so many media choices available today, all kinds of companies are looking for grads that understand IMC (Integrated Marketing Communications.) The U. S. Department of Commerce identifies IMC as one of the fastest-growing career fields. A certificate in IMC can give you an additional skillset to complement your major and make you a more attractive hire. It exposes you to the latest advertising techniques, and it also acquaints you with the other promo techniques that work effectively with advertising. Just what companies are looking for these days. It's all about creating and placing ads and other instruments of promotion for maximum impact in traditional media like radio, television, and direct marketing channels, plus the hottest social media, like Facebook, Twitter, Pinterest, and more.

Career Opportunities

Students with an integrated marketing background are in demand at companies and agencies that market using direct and digital marketing, advertising, sales promotion, and public relations. Job titles include work in account services, media, research or creative.

More Information

Marketing Department
119 South Street, BUS 212
Big Rapids, MI 49307-2284
Phone: 231-592-2426
E-mail: MKTG@ferris.edu
Integrated Marketing Techniques

Program Requirements

Integrated Marketing Techniques, Minor Program Checksheet

Includes:

- Minor Courses and Emphasis Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Integrated Marketing Techniques Minor?

Integrated Marketing is a management concept designed to integrate all aspects of marketing communication such as advertising, sales promotion, public relations, digital and direct marketing. The goal of integrated marketing is to create and sustain an overall brand that is consistent and targeted to select markets. The integrated marketing field has grown significantly and marketing organizations are requiring employees to have knowledge in all aspects of tactics and techniques. The Integrated Marketing Techniques Minor provides this knowledge base while allowing students to specialize in their area of interest. The completion of this minor provides a firm academic basis for additional advanced courses in the discipline.

Career Opportunities

Professionals in the field of Integrated Marketing work to maximize the impact and efficiency of marketing strategies. As the national and global economies develop, companies will use integrated marketing more and more to differentiate themselves from the competition and position themselves with key publics. People with knowledge and experience in integrated marketing are in high demand and this field is projected to be an area of growth for the future.

More Information

Marketing Department
119 South Street/BUS 212
Big Rapids, MI 49307-2284
Phone: 231-591-2426
E-mail: MKTG@ferris.edu
Integrated Science Elementary Education

Program Requirements

Integrated Science Elementary Education, Minor Program Checksheet

Includes:

- Minor Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Teaching Majors and Minors for Elementary Education Majors?

The Elementary Education program requires the completion of two elementary education teaching minors in addition to a planned program to fulfill the subject area requirements of the program. Students may choose from the subject areas of mathematics, integrated science, and language arts or a major in social studies.

More Information

School of Education
Bishop Hall Room 421
Ferris State University
1349 Cramer Circle
Big Rapids, MI 49307-2737
Telephone: (231) 591-5361
Integrative Studies

Program Requirements

Integrative Studies, BS Program Checksheet

Includes:

- Major Courses and General Education Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose the Bachelor of Science in Integrative Studies Program? - Program Spotlight

The Integrative Studies BS program is a flexible degree program designed for highly motivated, independent students who wish to pursue an interdisciplinary baccalaureate degree in educational areas where Ferris State University has appropriate faculty, facilities, and course work, but for which FSU does not have an existing baccalaureate degree program.

Within the individualized study program, a student could propose a program of study that crosses department or college disciplinary areas in an unconventional manner or creates a new configuration of areas of study. The proposed programs should not duplicate any existing FSU major.

In short, the program allows students to develop competencies from a variety of disciplines that will be well matched with their intended career and/or educational goals.

Career Opportunities

The 21st century workforce calls for individuals who have multiple talents who must be flexible and have the ability to contract their skills in a variety of contexts. The Integrative Studies B.S. asks students to focus on multiple capacities that they wish to develop and combine for individualized career paths. While each self-styled program is different, the orientation/capstone experiences and general education core provide commonality.

More Information

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Integrative Studies Associates Program Coordinator
College of Arts and Sciences
820 Campus Drive, ASC 3076
Big Rapids, MI 49307
Email: HeatherPavletic@ferris.edu
Integrative Studies

Program Requirements

Integrative Studies, AA Program Checksheet

Includes:

- Major Courses, General Education Courses, and Elective Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose the Bachelor of Science in Integrative Studies Program? - Program Spotlight

You can make a program that is unique; it is built around your special interests and career goals. The degree represents YOU, not a prescribed group of courses that lots of other students take. It's not a curriculum designed by people who don't know you; instead it is a curriculum that you and your advisor craft together based on your unique talents and interests.

Changing majors costs time and money, so why not start by building the foundation that underpins all degrees and in the process discover your future. This degree allows you to explore and supports your individual path of discovery. By the end of the degree you know what bachelor's degree you want and you are prepared to start it with more expertise and maturity than a traditional college freshman.

Career Opportunities

Content knowledge is changing at such a rapid pace that we can't keep up. Schooling has become less about "remembering" information and all about "finding and using information". Employers are looking for people who can learn on their own, who can use information and make connections, people who can work in teams and who can communicate effectively with audiences. That is the focus of this degree program. You and your community of INST students will take classes together, work collaboratively, be challenged to see the connections among the wide variety of subjects you study and develop autonomy as a learner. You will become a problem-solver and your problem-solving skills will culminate in a final thesis project that you and your advisor design around your special interests.

More Information

Dr. Heather Pavletic
Integrative Studies Associates Program Coordinator
College of Arts and Sciences
820 Campus Drive, ASC 3076
Big Rapids, MI 49307
Email: HeatherPavletic@ferris.edu
International Business

Program Requirements

International Business, Certificate Program Checksheet

Includes:

- Certificate Courses
- Admission Requirements
- Graduation Requirements

Why Choose the Certificate in International Business?

The International Business certificate gives you a more advanced understanding of contemporary international business theory and its practical application. The certificate can improve your overall performance, remove uncertainty and widen market opportunities. The certificate displays a level of competency and interest to your employer. Graduates with in-demand skills should seek out positions that call for these abilities. Corporations that have established overseas or are looking to cement bonds with global partners are especially looking for candidates with skills in international business. With applications across a spectrum of industries, salaries will vary depending on what type of business you specialize in, who you work for and where.

Career Opportunities

Students who complete a certificate in International Business will find jobs at entry level positions in the following international areas: international human resources manager, international training manager, international operations manager, accountant, taxation, hospitality, and logistics.

More Information

Management Department
119 South Street/BUS 212
Big Rapids, MI 49307-2284
Phone: 231-591-2427
Email: MGMT@ferris.edu
International Business

Program Requirements

International Business, Minor Program Checksheet

Includes:

- Minor Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose an International Business Minor? - Program Spotlight

An International Business Minor is the perfect companion if you are an undergraduate business student majoring in Accounting, Business Administration, Computer Information Systems, Finance, Management, or Marketing. The International Business Minor will enhance your employability. In today's marketplace, graduates who combine strong professional skills with international competence are in demand. Globalization is a force that is affecting all of our lives.

In the same way that business administration provides the general skills that can transfer into a wide array of careers in business, international business offers a multitude of career opportunities. The exciting thing about international and multinational business is that you can literally take your skills with you—and to just about anywhere. With applications across a spectrum of industries, salaries will vary depending on what type of business you specialize in, who you work for and where.

More Information

Management Department
119 South Street/BUS 212
Big Rapids, MI 49307-2284
Phone: 231-591-2427
Email: MGMT@ferris.edu
International Studies

Program Requirements

International Studies, Minor Program Checksheet

Includes:

- Minor Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose the International Studies Minor?

The International Studies minor will enable students to better understand the global economy, international influences, and political events that shape the world we live in today. This interdisciplinary minor includes a core of required courses in geography, history, political science, and sociology. Students then select additional course work dealing with a particular topic or region they want to learn more about. This would be an excellent minor for students with a major in business or in the arts and sciences fields.

More Information

ADVISOR: Michael Berghoef
PHONE: 231-591-2765
EMAIL: MichaelBerghoef@ferris.edu

Department of Social and Behavioral Sciences
Ferris State University
820 Campus Drive/ASC 2108
Big Rapids, MI 49307
Phone: 231-591-2735
Journalism

Program Requirements

Journalism, Certificate Program Checksheet

Includes:

- Certificate Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose the Journalism Certificate?

The Journalism certificate provides students with training in basic journalistic writing and editing, serving as an excellent complement to communications-related majors.

More Information

ADVISOR: Garrett Stack
PHONE: 231-591-5869
EMAIL: GarrettStack@ferris.edu

Department of English, Literature, and World Languages
Ferris State University
820 Campus Drive/ASC 3080
Big Rapids, MI 49307-2225
Phone: 231-591-3988
Journalism and Technical Communication

Program Requirements

Journalism and Technical Communication, BS Program Checksheet

Includes:

- Major Courses and General Education Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Journalism and Technical Communication? - Program Spotlight

Journalism and Technical Communication students learn about journalistic techniques applied to technical and professional communication. As with all concentrations in Technical and Professional Communication, they also learn the history and future of writing, understand the elements of writing and develop project planning skills. In addition, they analyze newspapers and print medium, contemporary news sources including the internet, journals, books, magazines, and speeches.

All TPC students identify a "content specialty concentration," a 21-credit grouping of courses that builds on their interest in a specific career area. While many TPC students enter the program with an associate degree in a technical area - for example, electronics or plastics technology - many develop their technical specialty based on an established area of expertise in the field of technical communication. Students are encouraged to work with their advisors to select the best grouping of courses for their professional interests. The content specialty gives students a specialized background and typically opens the door to their first professional job.

Career Opportunities

Journalism and Technical Communication is a combination of writing, organizing, and communicating information. Students gain an understanding of communication media, technical and expository writing, desktop publishing, verbal communication, and a chosen technical or professional specialty.

Job opportunities continue to grow for graduates of this program. Nearly every industry needs employees who can communicate technical and professional information effectively to its customers and clients. Jobs also are expanding into marketing, advertising, and public relations fields.

More Information

Advisor/Coordinator: Dr. Zac Wendler
Language Arts for Elementary Education

Program Requirements

Languate Arts for Elementary Education, Minor Program Checksheet

Includes:

- Minor Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Teaching Majors and Minors for Elementary Education Majors

The Elementary Education program requires the completion of two elementary education teaching minors in addition to a planned program to fulfill the subject area requirements of the program. Students may choose from the subject areas of mathematics, integrated science, and language arts or a major in social studies. The early childhood minor is an optional minor and is in addition to the subject area major or minors required.

See Elementary Education, Bachelor of Science for additional program details.

More Information

School of Education
Bishop Hall Room 421
Ferris State University
1349 Cramer Circle
Big Rapids, MI 49307-2737
Telephone: (231) 591-5361
Leaderhip and Project Management

Program Requirements

Leadership and Project Management, Minor Program Checksheet

Includes:

- Minor Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose the Leadership and Project Management Minor?

This Leadership and Project Management minor integrates multiple disciplinary topics to form an effective project management and modern leadership curriculum. Students will gain the skills necessary to lead and manage real world continuous improvement projects. Undergraduates of this curriculum will learn how to create customer value and continuous improvement through development of cost-effective, creative solutions in complex work environments. Concurrently, students will be educated on how to effectively mitigate risk. Lessons will focus on increasing student's conceptual understanding of the subjects by applying a practical, action learning approach. Graduates will be able to differentiate themselves in a market of skilled professionals.

More Information

Ferris State University
College of Business Room 212
Management Department
119 South Street, Big Rapids, MI 49307-2284
Phone: 231-591-2427
Email: MGMT@ferris.edu
Leadership and Supervision

Program Requirements

Leadership and Supervision Certificate Program Checksheet

Includes:

- Certificate Courses
- Admission Requirements
- Graduation Requirements

Why Choose the Advanced Studies in Supervision Certificate?

The Leadership and Supervision certificate is designed to educate students on effective strategies and tools for managing real-world issues. Students will encounter challenges generated in a variety of complex work environments. Diverse organizational situations will be used when applying theory to specific situations. Creativity, critical thinking, problem solving and collaboration skills will be utilized to ensure that objectives are efficiently, effectively and ethically achieved. A practical, action learning approach is incorporated to further professional development.

More Information

Management Department
119 South Street/BUS 212
Big Rapids, MI 49307-2284
Phone: 231-591-2427
Email: MGMT@ferris.edu

The College of Business is accredited by the Accreditation Council for Business Schools and Programs (ACBSP).
http://www.acbsp.org
Lean Healthcare

Program Requirements
Lean Healthcare, Certificate Program Checksheet

Includes:
- Certificate Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Lean Healthcare Certificate? - Program Spotlight
As healthcare costs continue to skyrocket, health facilities are fraught with inconsistent and inefficient processes, while having no system for implementing solutions to deliver safe, cost-effective, quality care. Lean management is being recognized globally as a solution that affords clear guidelines for identifying these inefficiencies, while providing effective methods for developing effective, sustainable change solutions. Students who earn this certificate will be at a unique advantage and in high-demand in the field of healthcare administration, as the Joint Commission Center for Transformative Healthcare encourages use of Lean Six Sigma principles.

Students completing this certificate are prepared to write the Lean Six Sigma Green Belt in Healthcare Certification exam.

More Information
Dr. Gail Bullard, Program Coordinator
College of Health Professions
Ferris State University
200 Ferris Drive
Big Rapids, MI 49307-2740
Phone: 231-591-2279
GailBullard@ferris.edu
Lean Healthcare

Program Requirements

Lean Healthcare, Minor Program Checksheet

Includes:

- Minor Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Lean Healthcare Minor? - Program Spotlight

As healthcare costs continue to skyrocket, health facilities are fraught with inconsistent and inefficient processes, while having no system for implementing solutions to deliver safe, cost-effective, quality care. Lean management is being recognized globally as a solution that affords clear guidelines for identifying these inefficiencies, while providing effective methods for developing effective, sustainable change solutions. Students who earn this minor will be at a unique advantage and in high-demand in the field of healthcare administration, as the Joint Commission Center for Transformative Healthcare encourages use of Lean Six Sigma principles.

Students completing this minor are prepared to write the Lean Six Sigma Green Belt in Healthcare Certification exam.

More Information

Dr. Gail Bullard, Program Coordinator

College of Health Professions
Ferris State University
200 Ferris Drive
Big Rapids, MI 49307-2740
GailBullard@ferris.edu
Phone: 231-591-2279
Lean Systems

Program Requirements

Lean Systems, Certificate Program Checksheet

Includes:

- Certificate Courses and Elective Courses
- Admission Requirements
- Graduation Requirements

Why Choose the Lean Systems Certificate?

The Lean Systems Certificate prepares individuals for technical and non-technical careers in lean systems and six sigma management. It specifically integrates the Lean concepts (process efficiency), Six Sigma (process quality), and leadership techniques (employee centric) to assist the organization in achieving and sustaining optimal employee and organization/operational performance.

Career Opportunities

If you are the type of person that likes to take a process and make it better, this certificate could be for you! Have you ever performed a task and through it could be improved? This certificate content addresses how to improve tasks/processes in a repeatable and successful manner. The Lean Systems certificate has been recognized as a professional development educational tool that adds value to internal operations. The applicability of the certificate extends from hospitals to manufacturing to retail and to the front office as a method to increase overall efficiencies and organizational performance.

More Information

Ferris State University
College of Business Room 212
Management Department
119 South Street, Big Rapids, MI 49307-2284
Phone: 231-591-2427
Email: MGMT@ferris.edu
Lean Systems

Program Requirements

Lean Systems, Minor Program Checksheet

Includes:

- Minor Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose the Lean Systems Minor?

The Lean Systems minor is designed to deliver a comprehensive education for applying lean concepts to various industries: e.g. banks, nonprofits, offices, hospitals, restaurants, manufacturing. The classes prepare individuals to lead, manage, and evaluate a continuous improvement system. Students will acquire the skills to apply the lean principles in a complex work environment. This cutting edge approach will provide graduates with highly sought-after capabilities to improve operational & financial performance and monitor growth within any type of organization.

The courses of this Minor focus on:

1. Integrating the core Lean principles (process efficiency, value stream mapping, kaizen, PDCA, 5S, pull, leveling process stability, standardized work, root-cause problem resolution and A3 Reporting)
2. Six Sigma (process quality)
3. Lean culture (skills development)
4. Lean accounting (value stream performance measurement)
5. Leadership techniques (employee centric) to assist the organization in achieving and sustaining optimal employee and organization/operational performance.

Lessons will focus on increasing student's conceptual understanding of the subjects by applying a practical, action learning approach. This collection of coursework is designed to ensure that participants own the skills upon completion. Graduates will be able to differentiate themselves in a market of skilled professionals.

Career Opportunities

Individuals who acquire the Lean Systems minor possess knowledge of Lean Systems. They are prepared for the following potential occupations: Continuous/Process Improvement Professional/Manager, Quality Improvement Specialist/Leader, Lean Project Alayst, Value Stream Improvement Manager, Operations Analyst/Manager, and many more.
More Information

Management Department
119 South Street/Bus 212
Big Rapids, MI 49307-2284
Email: MGMT@ferris.edu
Lean Technology

Program Requirements

Lean Technology, Certificate Program Checksheet

Includes:

- Major Courses and General Education Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Lean Technology?

The Lean Technology Certificate supports employer demands for an entry-level, applications-based approach to Lean concepts. The courses in this certificate provide hands-on, career-oriented applications of Lean fundamentals, filling a critical gap necessary for achieving process optimization.

Career Opportunities for Graduates in Lean Technology

This certificate supports development of fundamental lean initiatives at various levels within an organization, ranging from the shop floor to technical team leadership.

Individuals wanting to advance their industrial or technical careers, but not pursue a FSU bachelor degree program at this time, may earn this certificate. The courses qualify as technical electives in several BS- or BAS- degree programs.

For More Information

School of Design and Manufacturing

Lean Technology Certificate
Ferris Statewide, Grand Rapids
151 Fountain Street, NE
Grand Rapids, MI 49503
Phone: 616-451-4777 or 800-998-3425
Email: Ferrisgr@ferris.edu
https://www.ferris.edu/HTMLS/statewide/lean-technology-certificate.htm

Ferris State University

College of Engineering Technology
1009 Campus Drive, JOH 200
Big Rapids, MI 49307-2280
Legal Studies

Program Requirements

Legal Studies, Minor Program Checksheet

Includes:

- Minor Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose the Legal Studies Minor? - Program Spotlight

Students enrolled in the Legal Studies Minor will be exposed to the practical knowledge necessary to address the legal rights, duties and obligations arising in personal, professional, and business contexts. This Minor provides students with a solid foundation and understanding of substantive and procedural laws, including constitutional, judicial, legislative, and administrative sources of law. Through the Legal Studies Minor, students will further develop their applied critical thinking and problem-solving skills as applicable to current legal issues that impact their lives and success in their chosen career.

While Legal Studies Minor students develop skills and knowledge that will help prepare them for success in law school, the Minor is also designed for students who are not considering a career in law, but who want to understand the legal aspects of their chosen fields. The Legal Studies Minor is a relevant and applicable choice for students from all disciplines.

More Information

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Emily W. Fransted, J.D.
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Phone: 231-591-2479
Email: AaronMadziar@ferris.edu
Liberal Arts

Program Requirements

Liberal Arts, AA Program Checksheet

Includes:

- Major Courses and General Education Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Liberal Arts?

If you plan to obtain a liberal arts degree in a major not available at Ferris State University, you should consider the associate of liberal arts program. During the first year, you take basic courses including English, communication, culture and humanities, science, mathematics and social sciences. However, the design of the program allows for flexibility through choice of electives. Therefore, it is possible for you to earn an associate of arts degree while working towards a specific major.

These courses can also be applied to the bachelor of arts degrees at Ferris, or into other career programs in the College of Arts and Sciences such as Psychology, Applied Speech Communication, Technical and Professional Communication and Public Administration, and also into career programs in the Colleges of Education and Human Services, Business and Allied Health Sciences.

As a Liberal Arts major, you will be assigned a faculty advisor to assist you with program planning. Career counseling is available at the Ferris Career and Educational Counseling Center.

Career Opportunities

Liberal Arts provides the educational foundation needed for all careers because it teaches:

- Thinking
- Reading
- Communicating
- Analyzing
- Problem solving

You may earn an associate in arts degree while working toward a specific career objective. Faculty advisors will assist you with educational planning.

More Information

Ferris State University
Why Choose a Certificate in Long Term Care?

As the health care industry continues to grow and expand, the demand for skilled health care managers also increases. Employment is expected to grow faster than average with the fastest growth in home health agencies, residential care facilities and practitioners' offices and clinics. This program has been designed in two formats, one for students who enter the program either as freshmen or who transfer into the program after having completed an associate degree and the second for students who wish to complete a bachelor's degree while enrolled in a clinical associate degree program.

The course work, which includes courses in management, marketing, accounting, quality assurance, health care finance, health care planning and long-term care management prepares you to work in many areas in health-care. Graduates are able to apply for an entry level administration position or enter graduate school to earn a master's degree.

In addition, the Health Care Systems Administration program also offers the option of a Long Term Care concentration which prepares students for leadership and administrative roles within the Long Term Care area of healthcare. As the healthcare system adjusts to providing care and services to a large aging population, this field affords many opportunities for graduates. See the program page for course information.

General education requirements may be taken at a local college or university and transferred to fulfill Ferris graduation requirements. A minimum of 30 semester credit hours must be earned at Ferris in order for the degree to be granted.

Career Opportunities

The term 'health services manager' encompasses individuals in many different positions who plan, organize, coordinate, and supervise the delivery of health care. Health services managers include both generalists (administrators who manage or help to manage an entire facility or system), and health specialists (managers in charge of specific departments or services found only in the health care industry).

Earnings of health services managers vary by type and size of facility, level of responsibility and geographic region. The May 2014 Occupational Employment and Wages Report distributed by the U.S. Department of Labor provides the following:

Medical and Health Services Managers 2014 median pay is $92,810 per year.
Job outlook: 17% (much faster than average)

**Admission Requirements**

Applicants for admission to the Health Care Systems Administration program must have a 2.5 GPA in high school or college work and one year of high school algebra with a 'C-' or better. Students can enter the program from any associate degree program or directly from high school.

**Graduation Requirements**

The Health Care Systems Administration program at Ferris leads to a bachelor of science degree. Graduation requires a minimum 2.25 GPA overall. Students must earn a 'C' or better in professional (HCSA) courses, many of the professional support, and core courses.

Please refer to the Progression Policy for Health Care Systems Administration Program at the following link:
https://www.ferris.edu/health-professions/HAHL/Bachelors/Health-Care-Systems-Administration/HCSA-Progression-Policy-Fall-2010.htm

Students must meet all general education requirements as outlined on the General Education website. Also, students must either have an ACT math subscore of 24 or better, complete MATH 115 or pass a proficiency exam.

**More Information**

College of Health Professions
Ferris State University
200 Ferris Drive
Big Rapids, MI 49307-2740
or call 1-800-462-8553, ext. 2266
Machine Learning Certificate

Required Courses

Why Choose Machine Learning Certificate?

What is Machine Learning?

Why should I take a Machine Learning class?

Career Opportunities

What is the employment outlook for the Machine Learning industry?

Admission Requirements

Graduation Requirements

In addition to meeting all of the programmatic requirements, students must:

1. Maintain a 2.70 cumulative FSU GPA
2. Earn no individual course grade lower than a 2.00
3. Earn 50% of the certificate credits from FSU (Residency)
4. Earn a maximum of 50% of certificate credits that overlap with their major
5. A term prior to completion of the certificate, log into MyFSU and complete the "Apply for Graduation". The application can be accessed in MyFSU under "Student Records".

More Information

School of Digital Media
1349 Cramer Circle, BIS 303
Big Rapids, MI 49307
Phone: 231-591-2712
email: burgor@ferris.edu
Manufacturing Engineering Technology with Process Development Concentration

Program Requirements

Manufacturing Engineering Technology - Process Development Concentration, BS Program Checksheet

Includes:

• Major Courses and General Education Courses
• Admission and Transfer Requirements
• Graduation Requirements

Why Choose Manufacturing Engineering Technology with Process Development Concentration?

Did you ever drive your parents up the wall by taking things apart just to see how they were put together? (Or do you still do this?) If so, Manufacturing Engineering Technology may be the program for you! Simply put, manufacturing engineers figure out how to make products; anything from tools to toys, cars to consumer goods, and electronics to earthmovers.

Good manufacturing engineers can determine how to make their company's products better, faster, safer, and less expensive than competitors. These abilities are always in demand and the Manufacturing Engineering Technology program at Ferris gives you the skills to command an excellent starting salary. You'll also get to work with state-of-the-art computers and equipment while you're here, plus get the valuable team and project experience than anywhere else.

Ferris students learn to identify and select materials based on production requirements and work closely with computer-aided design equipment (CAD/CAM). They conduct time studies, complete cost estimates, utilize computer software to aid in solving manufacturing problems, formulate plant layout requirements, understand management control systems, justify and select quality equipment and automated systems, and design a total product manufacturing system. Students also receive on-the-job experience through an internship education program.

Program available full time during day on the main campus in Big Rapids, MI and part-time at night on Ferris Statewide Grand Rapids campus.

Career Opportunities for Graduates in Manufacturing Engineering Technology, Process Development Concentration

Manufacturing engineers get involved on the ground level of the production of a variety of industrial and consumer goods and develop the expertise to see production through to completion. Their knowledge of process design analysis, planning, supervision, manufacturing
methods, and equipment is used from start to finish. The location of every machine, the
movement of each tool or part, the order of operation and the selection of the machines
themselves are all decisions that manufacturing engineers make as part of the total production
process.
Employment opportunities for Manufacturing Engineering Technology graduates are found across
the entire spectrum of manufacturing industries. Specific entry-level positions include
manufacturing engineer, process engineer, production engineer, tool engineer, industrial engineer,
and quality engineer. Graduates of this program typically enjoy high placement rates and starting
salaries averaging over $60,000.

For More Information

School of Design and Manufacturing
Manufacturing Engineering Technology Programs
915 Campus Drive, SWN 220
Big Rapids, MI 49307
Phone: 231-591-2511
Email: ManufacturingDegrees@ferris.edu
https://www.ferris.edu/CET/design-mfg/Manufacturing/

Manufacturing Engineering Technology @ Statewide, Grand Rapids
151 Fountain Street, NE
Grand Rapids, MI 49503
Phone: 616-451-4777 or 800-998-3425
Email: ferrisgr@ferris.edu
https://www.ferris.edu/HTMLS/statewide/manufacturing-engineering-technology.htm

Ferris State University
College of Engineering Technology
1009 Campus Drive, JOH 200
Big Rapids, MI 49307-2280
Phone: 231-591-2890
Email: technology@ferris.edu
www.ferris.edu/technology
Manufacturing Engineering Technology with Quality Concentration

Program Requirements
Manufacturing Engineering Technology with Quality Concentration, BS Program Checksheet

Includes:

- Major Courses and General Education Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Manufacturing Engineering Technology with Quality Concentration?

From Prototype to Final Product-

Ferris State University's Manufacturing Engineering Technology program will allow you to see just how things work. Everything from complex electronics and consumer goods to intricate tools and toys requires a well-qualified manufacturing engineer to take them from a sketch to a finished, functioning product. At Ferris, you'll gain the skills and experience to perfect that process, making it better, faster, safer and less expensive from start to finish.

Ferris has partnered with the American Society for Quality to create a unique Quality Concentration within our Manufacturing Engineering Technology program. If you have an interest or are currently employed in quality, this may be the perfect opportunity to advance your skills and your career.

The program is designed for those who wish to expand and build upon the base of technical knowledge they have acquired through work experience and academic training. Ferris has tailored the program for the part-time student by offering courses at night at the Advanced Technology Center in Grand Rapids.

Career Opportunities

Graduates of the program are prepared to assume technical and leadership positions in all areas of quality within a variety of industries including automotive, aerospace, office furniture, medical manufacture, and food processing. Graduates are prepared to advance into such positions as quality engineer, quality manager, plant manager, and project engineer.

More Information

College of Engineering Technology, School of Design and Manufacturing
Manufacturing Operations Management

Program Requirements

Manufacturing Operations Management, Certificate Program Checksheet

Includes:

- Certificate Courses and Elective Courses
- Admission Requirements
- Graduation Requirements

Why Choose the Manufacturing Operations Management Certificate?

The certificate in Manufacturing Operations Management is designed to give the student a basic understanding of the principles involved in developing and managing a process from input through finished product including quality control.

Career Opportunities

Operations individuals work with the business activities that include planning/scheduling, manufacturing, purchasing, supply chain, and other internal related processes. Operations managers typically possess good communication, technical, and organizational skills, leadership ability, a good work ethic, and are high energy. An operations manager replicates an efficient and effective process from one part of the business and implements it in other pertinent areas. They create and support working teams by providing appropriate resources to accomplish specific tasks. The focus is on solving issues to ensure that the processes flow smoothly, resulting in delivering high quality goods or services to the customer. Individuals who acquire the Manufacturing Operations Management certificate are equipped for the following potential occupations: Operations Supervisor/Manager, Plant Manager, Purchasing Specialist/Supervisor, and Quality Supervisor/Manager.

More Information

Management Department
119 South Street/BUS 212
Big Rapids, MI 49307-2284
Phone: 231-591-2427
Email: MGMT@ferris.edu
Manufacturing Technology

Program Requirements

Manufacturing Technology, AAS Program Checksheet

Includes:

- Major Courses and General Education Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Manufacturing Technology?

This degree gives you hands-on experience in a variety of manufacturing-related technologies. This mix of experience and related technologies results in a solid foundation on which you can build your career.

You will develop both knowledge and skill in precision machining, 3-D parametric solid modeling, CNC programming and machine operation, fixture design and build, advanced CNC applications, and custom project design and development.

All courses feature project-based learning in well-equipped facilities. Course projects focus on processing and problem solving and are designed to ensure that students understand both the science and methodology behind manufacturing systems.

Although graduates can go directly to work upon graduation, many use this as a stepping stone to a related bachelor's degree program.

Career Opportunities for Graduates in Manufacturing Technology

Because nearly every industry requires skilled professionals with a solid foundation in manufacturing, graduates of the Manufacturing Technology program are in high demand and have an array of options to choose from upon graduation.

The Manufacturing Technology degree is designed to prepare students to enter industry directly. These career opportunities include working as a machinist, toolmaker, CNC programmer, tooling technician, and quality technician.

With additional experience and/or education, graduates can move into occupations such as Process Engineer, Tooling Engineer, Manufacturing Engineer, Project Engineer, and Technical Instructor, as well as all levels of management. Graduates who decide to continue their education can stay at Ferris and with two additional years, earn a bachelor's degree in one of many related programs.
For More Information

School of Design and Manufacturing
**Manufacturing Engineering Technology Programs**
915 Campus Drive, SWN 220
Big Rapids, MI 49307
Phone: 231-591-2511
Email: ManufacturingDegrees@ferris.edu
https://www.ferris.edu/CET/design-mfg/Manufacturing/

Ferris State University
**College of Engineering Technology**
1009 Campus Drive, JOH 200
Big Rapids, MI 49307-2280
Phone: 231-591-2890
Email: technology@ferris.edu
www.ferris.edu/technology
Marketing MKT

Official Program Checksheet

Why Choose Marketing?

Our Marketing degree provides students with the opportunity to develop a solid broad-based foundation along with the specialization (in areas such as sport marketing, e-commerce, retailing, sales, etc.) that employers appreciate in their entry-level employees. In fact, students can work with faculty to design a concentration more closely aligned with their particular areas of interest. The Marketing curriculum emphasizes opportunities for hands-on experience, meeting and working with practitioners.

- Our quality faculty with years of "real world" experience combine with modern classroom technology to provide a unique and up-to-date learning environment.
- Internships build on our students' learning from their real-world experience.
- With classes averaging less than 20 students, we stress team-based skills, interactive student presentations and hands-on projects to make learning enjoyable.
- One out of every five presidents or CEO's in the top 500 US corporations has a marketing undergraduate degree.

Career Opportunities

Employers like to hire Ferris marketing graduates because of their practical skills, receptive attitudes and their ability to hit the ground running. Our alumni are a testament to the 50+ year of Marketing program experience. They range from CEO, to VP, to manager and small business owner, serving both for profit and non-profit enterprises, including entertainment and professional sports. Some marketing career options include: sales manager, marketing director, brand manager, market research account manager, sports marketing director, retail manager, e-commerce marketer, purchasing director, industrial marketing director or VP marketing.

Admission Requirements

New Students: 2.5 high school GPA (on a 4.0 scale) and two of the three criteria below: (1) English ACT score of 16 or higher, or SAT Writing score of 370 or higher; (2) Math ACT score of 19 or higher, or SAT Math score of 460 or higher; (3) Reading ACT score of 19 or higher, or SAT Reading score of 430 or higher.

Transfer Students: Combined college or university GPA of 2.35 (on a 4.0 scale) from all institutions attended. GPA is based on completion of 12 credit hours or more. Transfer equivalency for FSU ENGLISH 150 or placement during the first semester at FSU which would require an ACT English score of 16 or higher; Compass score 70 – 100. Transfer equivalency for
FSU MATH 115 or placement during the first semester at FSU which would require an ACT Math score of 19 or higher; Compass Algebra score 46 - 74 and HS Algebra with 2.0.

Exceptions for New and Transfer Students: Applicants not meeting the above criteria but having a 2.35 High School GPA and at least a 16 ACT in Math or Reading (2.00 Overall GPA for Transfer Students) can be considered for conditional admission in a College of Business Pre-Program. Any mitigating circumstances will be considered on an individual basis by the College of Business Dean’s Office.

Pre-Program students must complete a minimum of 12 FSU credits (excluding developmental courses) with a 2.35 GPA; courses must include ENGL 150 and MATH 115 before being considered for admission into their program of choice. Students must meet admission criteria for their chosen degree program by the time they have earned 30 credits.

More Information:
Additional guidance can be found on the College of Business Webpage under the Admissions tab.

**Graduation Requirements**

The Marketing program leads to a Bachelor of Science degree. Graduation requires a minimum 2.0 GPA in business core courses, the major courses and overall.

**More Information**

Marketing Department  
119 South Street/BUS 212  
Big Rapids, MI 49307-2284  
Phone: (231) 591-2426  
Email: MKTG@ferris.edu

The College of Business is accredited by the Accreditation Council for Business Schools and Programs (ACBSP.) Next review is February 2018.  
http://www.acbsp.org
Marketing

Program Requirements

Marketing, Certificate Program Checksheet

Includes:

- Certificate Courses
- Admission Requirements
- Graduation Requirements

Why Choose a Marketing Certificate? - Program Spotlight

If you have a desire to manage organizational activities which service customers and build relationships, this certificate will provide you skills in the following:

- Oral and written communication
- Solving customer-based problems
- Developing, implementing and controlling marketing activities, programs, and plans
- You will be exposed to a highly relevant set of concepts that will serve you, not just in marketing, but in any career field in which you become a manager or leader and must influence others in order to accomplish the tasks they face in their own job positions.

Employers like to hire Ferris marketing graduates because of their practical skills, receptive attitudes and their ability to hit the ground running. Our alumni are a testament to the 50+ years of Marketing program experience. They range from CEO to VP, to manager and small business owner, serving both for-profit and non-profit enterprises, including entertainment and professional sports. Some marketing career options include sales manager, marketing director, brand manager, market research account manager, sports marketing director, retail manager, digital marketing marketer, purchasing director, industrial marketing director or VP marketing.

More Information

Marketing Department
119 South Street, Business 212
Big Rapids, MI 49307-2284
Phone: 231-591-2426
Email: MKTG@ferris.edu
Marketing

Program Requirements

Marketing, AAS Program Requirements

Includes:

- Major Courses and General Education Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose a Marketing Associate in Applied Science - Program Spotlight

The Marketing Associates degree introduces students to business foundational concepts and the basic marketing-related disciplines. Students will take a combination of general education courses, business foundation courses, and marketing courses with an opportunity to select electives that meet their professional interests in the marketing field.

Career Opportunities

Graduates are prepared for entry-level positions in Marketing and related fields of Customer Service, Sales, and Retailing.

Students completing their marketing associate’s degree are prepared to enter a four-year degree program in Marketing with concentrations in Retail, Digital Marketing, Sales, or Sports Marketing; Public Relations; or Advertising/Integrated Marketing Communications.

More Information

Marketing Department
College of Business
119 South Street, BUS 212
Big Rapids, MI 49307 - 2284
Phone: 231-591-2426
Email: MKTG@ferris.edu
Marketing Research
Program Checksheets
Marketing Research, Certificate Program Checksheets

Includes:

- Certificate Courses
- Admission Requirements
- Graduation Requirements

Why Choose a Marketing Research Certificate?
If you have a strong interest in analytical decision making, this certificate will prepare you for the following:

- Creating effective surveys
- Employing computer-based statistical analysis procedures
- Applying research information in real-world marketing decisions
- You will be exposed to a wonderful set of concepts that will serve you, not just in a marketing research career pathway, but in any career field you choose that depends on the information in order to make successful business decisions.

More Information
Marketing Department
119 South Street, Business 212
Big Rapids, MI 49307-2284
Phone: 231-591-2426
Email: MKTG@ferris.edu
Marketing Sales

Program Requirements

Marketing Sales, Certificate Program Checksheet

Includes:

- Certificate Courses
- Admission Requirements
- Graduation Requirements

Why Choose Marketing Sales Certificate?

- Oral and written communication skills
- Ability to solve customer-based problems
- The ability to provide consulting service to persons and/or organizations that seek, or might seek, the products and services you sell
- You will be exposed to an exciting set of concepts that will serve you, not just in marketing/sales, but in any career field in which you become a manager or leader and must influence others.

More Information

Marketing Department
119 South Street, Business 212
Big Rapids, MI 49307-2284
Phone: 231-591-2426
Email: MKTG@ferris.edu
Marketing Sales

Program Requirements

Marketing Sales, Minor Program Checksheet

Includes:

- Minor Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Marketing Sales Minor?

If you are majoring in a non-marketing degree such as a technology degree or the professional fields of optometry or pharmacy, you will find that the marketing sales minor will give you additional skill sets that will help you in creating a successful and rewarding career.

If you are enrolled in this minor, you will build your skills in:

- Creating and delivering effective sales presentations
- Developing a managerially relevant marketing strategy
- Creating value-added customer relationships
- Evaluating the effectiveness of marketing/sales activities
- This valuable minor will provide non-marketing majors with skills that will allow them to expand upon their chosen major into a broader marketing career track. You and the marketing sales minor advisor will design a course of study based on specific courses that best complement your career goals and academic major.

More Information

Marketing Department
119 South Street, BUS 212
Big Rapids MI 49307-2284
Phone: (231) 591-2426
Email: MKTG@ferris.edu
Master of Business Administration with Pharmacy Concentration

Program Requirements

Pharmacy and Master of Business Administration, MBA Program Checksheet

Includes:

- Major Courses, Concentration Courses, and Elective Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose the Doctor of Pharmacy and MBA?

There has been and will continue to be a significant increase in the opportunity for pharmacists to move into new roles, including management and pharmacoeconomic positions, requiring a significant grounding in business methodology.

A dual Doctor of Pharmacy and Master of Business Administration degree is a logical combination of two Ferris State University degrees that can provide select Pharmacy students with the unique capability of meeting the clinical expectations of the medical community with greatly enhanced business acumen demanded in today's cost conscious health environment.

Who is Eligible for PharmD/MBA Dual Enrollment?

The Ferris PharmD/MBA is a program option available to PharmD students who have earned a minimum 3.0 Professional GPA their first semester of studies, or PharmD students who have earned a Bachelor degree with a minimum 3.0 GPA. Only students who have demonstrated the academic capability and motivation to succeed in this rigorous program option will be considered.

Students admitted to the PharmD/MBA will be required to maintain a 3.0 GPA in all MBA and PharmD coursework.

PharmD/MBA students will be required to complete a specialized six (6) credit hour experiential concentration in one of the following options; Corporate Pharmacy, Pharmaceutical Industry, and/or Health Systems Pharmacy.

Career Opportunities

Since its inception in 1893, the College of Pharmacy has adapted its programming to meet the challenges and complex demands of an ever-changing profession. Current emphasis is on clinical practice and the provision of medication therapy management to ensure that the patient's drug therapy is appropriate, safe, effective for the condition being treated and cost-effective.
Graduates of the College will be prepared to deliver care to patients in a wide range of practice settings.

The Dual PharmD and MBA with Pharmacy Concentration, offered since 2005, is intended for Pharmacy students interested in corporate management positions within the pharmaceutical industry, health care industry, or corporate pharmacies (chains.)

**More Information**

College of Pharmacy  
Ferris State University  
220 Ferris Drive, PHR 105  
Big Rapids, MI 49307-2740  
Phone: (231) 591-2304  
GregWellman@ferris.edu

or

College of Business  
Graduate Programs  
119 South Street, BUS 212B  
Big Rapids, MI 49307-2284  
Phone: (231) 591-2168  
ShannonYost@ferris.edu

The College of Pharmacy is recognized by the Michigan Board of Pharmacy and is accredited by the American Council of Pharmaceutical Education, the national accrediting agency for all colleges of pharmacy. Ferris is a member of the American Association of Colleges of Pharmacy.
Math Education

Required Courses

Math Education, Graduate Certificate Checksheet

- Certificate Courses
- Admissing Requirements
- Graduation Requirements

Why Choose the Math Education Graduate Certificate?

The six-course certificate, completable in 24 months and offered exclusively online, provides a practical approach for in-service K-12 mathematics teachers to broaden and deepen their understanding of issues related to the teaching and learning of mathematics. Each course is designed with the working professional in mind, offers opportunities for meaningful interaction with other mathematics teachers, and integrates content and teaching methodology.

Those who complete the 18-hour program will be qualified to teach mathematics courses for the FerrisNow program.

More Information

Advisor: Kirk Weller
Phone: 231-591-2565
email: KirkWeller@ferris.edu

Ferris State University
820 Campus Drive
Big Rapids, MI 49307
Phone: 231-591-2565
Mathematics

Program Requirements

Mathematics, Minor Program Checksheet

Includes:

- Minor Courses and Elective Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose the Mathematics Minor?

Real life problem solving on the job is often mathematically based. The Mathematics minor provides the opportunity for students to develop the logical thinking and problem solving abilities many employers are seeking. When coupled with a technical or scientific baccalaureate it provides the mathematical maturity needed to succeed in the highly competitive employment world of today. It also prepares students for graduate study in mathematically intense graduate programs such as physics, engineering, statistics, operations research or mathematics.

More Information

ADVISOR: Dr. Kent Sun
PHONE: 231-591-2579
EMAIL: MathDepartment@ferris.edu

Department of Mathematics
Ferris State University
820 Campus Drive/ASC 2021
Big Rapids, MI 49307
Phone: 231-591-2565
Mathematics Education Secondary Education

Program Requirements

Mathematics Education Secondary Education, BS Program Checksheet

Includes:

- Major Courses, General Education Courses, and Minor Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Mathematics Education?

Employment prospects are excellent for mathematics education students. A critical shortage of math teachers exists throughout the nation, creating increasing demand for bright new instructors. Mathematics education graduates also have the basic background to pursue careers in industry.

The mathematics education program joins faculty from two top-notch programs. College of Arts and Sciences mathematics faculty provide mathematics instruction while College of Education faculty teaches education classes. Students also receive appropriate field experiences teaching in selected Michigan middle or high schools.

The Ferris State University mathematics education program requires classes in general education, mathematics major and professional education. A teaching minor is also required. You cannot have a mathematics teaching minor with this teaching major. Students complete one semester of directed teaching at the middle or high school level. Upon completion of program requirements, students may apply for Michigan Secondary Provisional Certification. Candidates are required to pass state-mandated Subject Matter Exams in selected teaching major and minors prior to certification recommendation.

Career Opportunities

Students receive hands-on, technology-rich instruction in both mathematics and education, preparing them for secondary level teaching. Appropriate additional studies may also lead to college teaching careers.

Teacher Certification Requirements

As required by the State of Michigan to receive teacher certification, all teacher candidates must: (1) meet the MDE (CAEP) cohort requirements, (2) pass the pedagogy tests in their subject area majors and minors, and (3) have a 2.75 minimum GPA to receive teacher certification in Michigan. These state requirements are in addition to the FSU graduation...
requirements of your individual program.

**More Information**

College of Education & Human Services  
School of Education  
Bishop Hall Room 421  
Ferris State University  
1349 Cramer Circle  
Big Rapids, MI 49307-2737  
Telephone: (231) 591-5361
Mathematics for Elementary Education

Program Requirements

Mathematics for Elementary Education, Minor Program Checksheet

Includes:

- Minor Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Teaching Majors and Minors for Elementary Education Majors

The Elementary Education program requires the completion of two elementary education teaching minors in addition to a planned program to fulfill the subject area requirements of the program. Students may choose from the subject areas of mathematics, integrated science, and language arts or a major in social studies.

More Information

School of Education
Bishop Hall Room 421
Ferris State University
1349 Cramer Circle
Big Rapids, MI 49307-2737
Telephone: (231) 591-5361
Mathematics Teaching

Program Requirements

Mathematics Teaching, Secondary Education Minor Program Checksheet

Includes:

- Minor Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Teaching Minors for Secondary Education Majors?

The Secondary Education program highly recommends the completion of a teaching minor.

More Information

School of Education
Bishop Hall Room 421
Ferris State University
1349 Cramer Circle
Big Rapids, MI 49307-2737
Telephone: (231) 591-5361
Mechanical Engineering Technology

Program Requirements

Mechanical Engineering Technology, AAS Program Checksheet

Includes:

- Major Courses and General Education Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Mechanical Engineering Technology?

In this program, students develop an understanding of how mechanical systems perform. They begin by taking the MET seminar where they get to apply their "engineering intuition" to a team robot build project. They also take engineering graphics and CAD, manufacturing processes, and computer applications in the first year. AAS MET program students take mathematics through Calculus 1 plus Physics 1 and Chemistry. Writing, public speaking, and two general education electives are required for the Associate's degree.

By their second year, students are well prepared to take applied engineering science courses (including Statics and Strength of Materials, Fluid Mechanics, Thermodynamics, Kinematics, Machine Design, and Electrical Fundamentals) which give them a solid technical background for a future in technology. Coursework is enhanced with hands-on lab experiences and real-world applications provided by faculty with extensive industrial experience.

The Associate of Applied Science in Mechanical Engineering Technology is accredited by the Engineering Technology Accreditation Commission ABET (ETAC-ABET), http://www.abet.org.

Career Opportunities

Graduates of the AAS in Mechanical Engineering Technology program work with others to develop machinery, equipment, products, and processes. They operate test equipment, prepare engineering drawings with CAD systems, review designs for specifications, build prototypes of new products, and design new or modify existing products and equipment. Employment opportunities in this field are plentiful because manufacturers are continually introducing new products and processes as well as redesigning current ones.

Most graduates of the program continue into the BS in Mechanical Engineering Technology. Some choose to pursue other disciplines such as Product Design Engineering Technology, Manufacturing Engineering Technology, or even Business. Students receiving their AAS degree accept positions as test technicians, machine designers, product designers, production expediters, quality control technicians, engineering assistants, cost estimators, specifications
writers, machinery maintenance technicians, and manufacturing team leaders.

More Information

School of Engineering and Computing Technology
Mechanical Engineering Technology Programs
915 Campus Drive, SWN 405
Big Rapids, MI 49307
Phone: 231-591-2755
Email: mech@ferris.edu
http://www.ferris.edu/mech

Ferris State University
College of Engineering Technology
1009 Campus Drive, JOH 200
Big Rapids, MI 49307-2280
Phone: 231-591-2890
Email: technology@ferris.edu
www.ferris.edu/technology

The College of Engineering Technology Mechanical Engineering Technology AAS program is accredited by the Engineering Technology Accreditation Commission of ABET (ETAC-ABET). The next accreditation review is 2022. http://www.abet.org/
Mechanical Engineering Technology

Program Requirements

Mechanical Engineering Technology, BS Program Checksheet

Includes:

- Major Courses and General Education Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Mechanical Engineering Technology?

The Mechanical Engineering Technology program prepares students for a broad range of occupations and challenges. Students in this program continue where they left off in the AAS Mechanical Engineering Technology program. They finish their mathematics requirements with Calculus 2 as well as Physics 2. Advanced technical writing and four more general education electives are required before graduation. Students take more advanced applied engineering courses that give them a solid technical background for their careers. These include several MET courses (Heat Transfer, Solid Modeling with FEA, Dynamics, Mechanical Measurements, Noise and Vibrations, Senior Lab, Senior Project, and Computer Applications 2) as well as technical courses from other majors. There is room built in the schedule for 6 credits of open technical electives to explore technical topics outside the MET major. Through the Bachelor's degree coursework, students develop strong analytic and problem-solving skills across a broad range of technical areas. Students’ understanding of the principles taught in the classroom is enhanced with many hands-on labs and real-world applications provided by faculty with extensive industrial experience.

The Bachelor of Science in Mechanical Engineering Technology is accredited by the Engineering Technology Accreditation Commission of ABET (ETAC-ABET), http://www.abet.org.

Career Opportunities

Due to the broad nature of their studies, graduates of the BS in Mechanical Engineering Technology program will find a great variety of jobs open to them. Most graduates will work in engineering departments. Many will work in the design and development of products, machines, and processes. Others will be involved in manufacturing, operations, and technical sales. Areas of employment will include automotive and transportation, power generation, climate control, machine design, manufacturing, materials, and automation.

More Information

School of Engineering and Computing Technology
The Bachelor of Science in Mechanical Engineering Technology is accredited by the Engineering Technology Accreditation Commission of ABET (ETAC-ABET), http://www.abet.org. The next accreditation review is in 2022.
Medical Informatics

Program Requirements

Medical Informatics, Minor Program Checksheet

Includes:

- Minor Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Medical Informatics Minor?

According to the Bureau of Labor Statistics, employment in medical and health informatics is expected to increase by 22 percent through the year 2022. That's faster than the average for all occupations in the United States. One reason the field of medical informatics is expanding at this high rate is the increasing number of medical tests, treatments and procedures evaluated by health insurance companies, regulators, courts and consumers. As a result, there's an increased demand for electronic record-keeping and the professionals who can lead and manage this effort. Medical Informatics specialists are finding jobs in hospitals, medical research laboratories, health insurance companies, health information technology suppliers, consulting organizations and more. They are employed as database administrators, project designers, project managers, computer programmers, researchers, and system analysts. They provide technical support for databases, design new systems, evaluate usability, determine ways to enhance systems, and verify accuracy of medical information.

More Information

College of Health Professions
Ferris State University
200 Ferris Drive
Big Rapids, MI 49307-2740

Phone: 231-591-2270 or
800-462-8553, x2266
Medical Laboratory Science

Program Requirements

Medical Laboratory Science, BS Program Checksheet

Includes:

- Major Courses and General Education Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Medical Laboratory Science? - Program Spotlight

Medical Laboratory Scientists (MLS) perform laboratory analyses to help the physician detect, diagnose and treat disease. Lab scientists work with sophisticated laboratory instruments and computers that must be kept in optimal operating condition to give the most accurate results. The volume and sophistication of laboratory testing will increase as the population ages. Physicians base about 70% of their diagnoses and treatment decisions on the results of laboratory testing.

Medical Laboratory Scientists work under the supervision of a medical laboratory director in such departments as blood bank, clinical chemistry, microbiology, hematology, immunology, phlebotomy, body fluid analysis, and molecular testing.

The program combines classroom instruction and laboratory practice on-campus with an internship in an affiliated laboratory.

The program is fully accredited by the National Accrediting Agency for Clinical Laboratory Sciences (NAACLS.) NAACLS can be contacted at the following: 5600 N. River Road, Suite 720, Rosemont, IL 60018. (773) 714-8880.
www.naacls.org

Career Opportunities

Career opportunities exist mainly in the clinical laboratories at hospitals and medical centers and physician offices. Other opportunities may exist in the pharmaceutical industry, research and biotechnology; government crime labs, accreditation offices, environmental technology, veterinary medicine and lab information systems; humanitarian work in the Peace Corps, Project Hope, and medical missionary workers. Many assume positions as laboratory directors and supervisors.

The average annual base salary of full-time medical laboratory scientists was $62,440 in 2016.
Laboratory managers averaged $89,762. Salaries are increasing annually.

**More Information**

College of Health Professions  
Ferris State University  
200 Ferris Drive  
Big Rapids, MI 49307  
Phone: 231-591-2270
Medical Laboratory Technology

Program Requirements

Medical Laboratory Technology, AAS Program Checksheet

Includes:

- Major Courses and General Education Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Medical Laboratory Technology

Medical Laboratory Technicians (MLT) perform laboratory analyses to help the physician detect, diagnose and treat disease. Technicians work with sophisticated laboratory instruments and computers that must be kept in optimal operating condition to give the most accurate results. The volume and sophistication of laboratory testing will increase as the population ages. Physicians base about 70% of their diagnoses and treatment decisions on the results of laboratory testing.

Medical laboratory technicians work under the supervision of the medical laboratory scientist and the medical director of the laboratory in such departments of the medical laboratory as blood bank, clinical chemistry, microbiology, hematology, serology, and body fluid analysis.

The program combines classroom instruction and laboratory practice on-campus with an internship in an affiliated laboratory.

The program is fully accredited by the National Accrediting Agency for Clinical Laboratory Sciences (NAACLS.) NAACLS can be contacted at the following: 5600 N. River Road, Suite 720, Rosemont, IL 60018, (773)714-8880. www.naacls.org

Career Opportunities

Career opportunities exist mainly in clinical laboratories at hospitals, medical centers, and physician offices. Other opportunities may exist in: the pharmaceutical industry, research and biotechnology; government crime labs, accreditation offices, environmental technology, veterinary medicine and lab information systems; humanitarian work in the Peace Corps, Project Hope, and with medical missionary workers.

The average annual base salary of full-time medical laboratory technicians was $45,715 in 2017. Salaries are increasing annually.
More Information

College of Health Professions
Ferris State University
200 Ferris Drive
Big Rapids, MI 49307
Phone: 231-591-2270
Military Science

Program Requirements

Military Science, Minor Program Checksheet

Includes:

- Minor Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose the Military Science Minor?

The Military Science curriculum and faculty are completely focused on the students and their development as world-class leaders. By completing the curriculum, students may qualify to become Army Officers and lead in one of America's most respected professions. Military Science academic programs are open to all students, without any obligation for military service. The program helps students acquire leadership and management skills that make them a sought-after commodity in the civilian job market. Emphasis is placed on strengthening values and ethical leadership. Students develop their mental, physical, and emotional capabilities. They also develop their conceptual and interpersonal skills. Finally, they learn how to communicate effectively; make good decisions; motivate others; plan, execute, and assess operations; develop and build teams; and improve themselves and the organizations they lead. It is the most comprehensive leadership development program in the nation.

More Information

For more information about the Military Science Minor or ROTC, contact:

www.ferris.edu/ROTC

Ferris State University
Military Science Department (ROTC)
1349 Cramer Circle, BIS 621 and 627
Big Rapids, MI 49307
Phone: 231-591-5319 or 231-591-5321
Email: rotc@ferris.edu
Molecular Diagnostics

Program Requirements

Molecular Diagnostics, BS Program Checksheet

Includes:

- Major Courses and General Education Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Molecular Diagnostics?

The field of laboratory medicine is advancing towards the use of molecular techniques and molecular diagnostics for the detection of genetic disorders, pre-implantation screening, infectious disease and cancer. With the introduction of personalized medicine which allows an individual to have a panel of genetic tests performed to determine predisposition to disease there will be a rise in genetic testing. Molecular diagnostics can also aid in the decision about therapy to be used for genetic disorders.

Genetic companies are demanding certified, professionally educated, technically competent individuals to work in this growing facet of laboratory medicine. There is a demand nationally in hospitals, reference laboratories, private genetic laboratories and pharmaceutical industries.

The program combines classroom instruction and laboratory practice on-campus with internships in various laboratories to prepare graduates.

The program is fully accredited as a DMS training program by the National Accrediting Agency for Clinical Laboratory Sciences (NAACLS) in accordance with their regulations. www.NAACLS.org

Career Opportunities

Graduates of the program will be able to work in hospital, reference, public health, genetic and pharmaceutical laboratories. They may also work for regulatory agencies or as field technicians. Graduates will be able to apply for molecular biology certification through the American Society for Clinical Pathology.

More Information

Dr. Jacqueline Peacock

Program Coordinator
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Grand Rapids, MI  49503
Phone:  616.643.5727
Email:  JacquelinePeacock@ferris.edu

NAACLS
5600 N. River Rd, Suite 720
Rosemont, IL  60018-5119
info@naacles.org
http://naacles.org
Phone:  847.979.3597
Multi-Media Journalism

Program Requirements

Multi-Media Journalism, Minor Program Checksheet

Includes:

- Minor Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose the Multi-Media Journalism Minor?

In the digital age, communication involves far more than pen and paper. It includes audio and video media and publishing on the World Wide Web. The Multi-media Journalism minor prepares students to practice journalism in the various media used today. This minor teaches students to develop the writing skills needed for professional work but also to do design and production work in the electronic media. This minor would be an excellent complement to communications-related majors.

More Information

ADVISOR: Garrett Stack
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Department of English, Literature, and World Languages
Ferris State University
820 Campus Drive, ASC-3080
Big Rapids, MI 49307-2225
Phone: 231-591-3988
Multicultural Relations in the U.S.

Program Requirements

Multicultural Relations in the U.S, Minor Program Checksheet

Includes:

- Minor Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose the Multicultural Relations in the U.S. Minor?

United States society is becoming more diverse. Consequently, the people being hired and promoted in corporate America are those able to understand and adapt to this diversity. Employers seek applicants who are adept at negotiating multiple differences, who can move back and forth across boundaries that normally separate people, and who understand the historical and persistent structural inequalities that threaten communities.

This minor will provide you with a holistic vision of the multicultural realities of America. You will learn practical communication and collaborative skills to function effectively in culturally diverse work environments, and it will give you a broad understanding of the cultural complexity of contemporary America.

More Information

ADVISOR: Michael Berghoef
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E-MAIL: MichaelBerghoef@ferris.edu

Social and Behavioral Sciences Department
Ferris State University
820 Campus Dr., ASC 2108
Big Rapids, MI 49307
Phone: 231-591-2735
Music and Entertainment Business

Program Requirements

Music and Entertainment Business, BS Program Checksheet

Includes:

- Major Courses and General Education Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Music and Entertainment Business? - Program Spotlight

The Music and Entertainment Business program prepares students to enter the global, multi-billion dollar music and entertainment industries. The degree combines a solid business background with an emphasis on the music and entertainment business. Students are required to complete a minimum of two internships which allow them to focus on areas of the industry which interest them. Internships frequently take place in major metropolitan markets, and smaller regional markets, for well-known record labels, radio stations, manufacturers, agents, and concert venues.

The Music and Entertainment Business program is endorsed by the National Association of Music Merchants (NAMM), the professional trade organization that represents the global music products industry. NAMM sponsors two world-class trade shows per year and Music and Entertainment Business students are allowed to attend these at greatly reduced educational rates. The Winter Show at the Anaheim Convention Center, in California, is the single largest event of its kind in the world. At these shows, students will see the latest in music related products and enjoy live performances by some of their favorite artists. Students benefit as well from special sessions and seminars designed specifically for those planning a career in the music and entertainment industry.

Students may also take part in conferences and trade shows sponsored by the Music Business Association (MusicBiz). These are currently held in Nashville, Tennessee and are attended by industry professionals representing record companies, distributors, music publishers, artist management agencies, booking/talent agencies and entertainment law firms.

Within the degree program, multiple areas of the music and entertainment business are explored with emphasis on preparing students for positions in marketing, management, sales, advertising, public relations, promotion and production. In addition, students are able to choose a relevant academic minor, certificate or courses that provide a personalized approach to career preparation. Previous formal training in music is not required for admission to the program. Select music courses are required to enhance the student’s understanding of the role of a
performing artist.

Career Opportunities

As a result of their academic preparation, in conjunction with the extensive hands-on component of this curriculum (derived from two internships, participation in national/international trade shows and conventions, and active involvement in the student-based organization which functions as a model production company), our graduates participate in local, regional and national employment opportunities provided by industry providers throughout the United States.

More Information

Music and Entertainment Business
119 South Street, BUS 112
Big Rapids, MI 49307-2279
Phone: 231-591-2441
E-mail: PaulKwant@ferris.edu

The College of Business is accredited by the Accreditation Council for Business Schools and Programs (ACBSP.) Next Accreditation Review is Spring 2028.
http://www.acbsp.org
Natural Science

Program Requirements

Natural Science, AS Program Checksheet

Includes:

- Major Courses and General Education Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Natural Science?

Natural Science is intended for students who have a general interest in science but who are not ready to choose a specific field of study. The program also is intended to provide students with preparatory course work if previous academic experiences require fundamental improvements.

During the first year, you take coursework necessary to fulfill the general education requirements common to all college degrees. You also choose courses in mathematics, biology, chemistry, physics and other sciences to build fundamental skills in these disciplines. During the second year, you continue selecting similar courses to assist you in focusing on an appropriate career direction. Coursework is extremely flexible and advisors work with you to plot a program of courses that suits your interests, goals and needs.

Get a Great Background in Science

Do you enjoy studying the biological and physical sciences? Have you done well in your science and math courses in high school? Are you considering a career in a science-related field but are uncertain of which specific one? The Natural Science program at Ferris provides you with the solid foundation in mathematics and science necessary to pursue these careers.

More Information

PROFESSIONAL ADVISOR: Jenice Winowiecki
PHONE: 231-591-2555
EMAIL: JeniceWinowiecki@ferris.edu

Department of Biological Sciences
Ferris State University
820 Campus Drive/ASC 2004
Big Rapids, MI 49307
Phone: 231-591-2550
Department of Physical Sciences
Ferris State University
820 Campus Drive/ASC 3021
Big Rapids, MI 49307
Phone: 231-591-2580
Nuclear Medicine Technology

Program Requirements

Nuclear Medicine Technology, BS Program Checksheet

Includes:

- Major Courses and General Education Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Nuclear Medicine Technology?

Ferris has the only University-based program in Michigan. Ferris graduates demonstrate excellent pass rates on national exams. The program is fully accredited by the Joint Review Committee on Educational Programs in Nuclear Medicine Technology. The program combines general education and specialized courses with clinical training.

Course work includes human anatomy and physiology, radiation and nuclear physics, and nuclear medicine theory and methods. Students spend the final two semesters in a hospital setting with emphasis on the clinical application of theory.

Graduates of this program are well prepared to work in the field of nuclear medicine, and are eligible to take the national certifying examinations for registry in nuclear medicine technology.

Career Opportunities

In nuclear medicine, radionuclides (unstable atoms that emit radiation spontaneously) are used to diagnose and treat disease. Nuclear medicine technologists administer these radiopharmaceuticals to patients, then monitor the characteristics and functions of tissues or organs in which they localize. Abnormal areas show higher or lower concentrations of radioactivity than normal.

Nuclear medicine technologists operate gamma scintillation cameras that detect and map the radioactive material in the patient's body to create an image. Nuclear medicine technologists explain test procedures to patients. They prepare a dosage of the radio pharmaceutical and administer it by injection or other means. Technologists then produce the images for a physician to interpret. Technologists adhere to safety standards to keep radiation doses to workers and patients as low as reasonably achievable.

Almost 8 out of 10 jobs are in hospitals. The rest are in specialized settings including imaging centers, radiopharmacies, and manufacturers. The national median annual base salary of full-
time nuclear medicine technologists was $76,820 in 2018.

More Information

College of Health Professions
Ferris State University
200 Ferris Drive
Big Rapids, MI 49307-2740
Phone: 231-591-2270
Email: CHP@ferris.edu

American Society of Radiologic Technologists
15000 Central Ave., SE
Albuquerque, NM 87123-3917
www.asrt.org

The Society of Nuclear Medicine-Technologist Section
1850 Samuel Morse Drive
Reston, VA 22090
www.snmmi.org

For information on certification:

Nuclear Medicine Technology Certification Board
3558 Habersham at Northlake, Building I
Tucker, GA 30084
www.nmtcb.org

Information on program accreditation:

Joint Review Committee on Educational Programs in Nuclear Medicine Technology
2000 W. Danforth Road, Suite 130, #203
Edmond, OK 73003
www.jrcnmt.org
Nursing

Program Requirements

Nursing, MSN Program Checksheet

Includes:

- Major Courses and Concentration Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose the MSN Degree?

The graduate program in nursing is designed to provide a learner-centered curriculum that prepares nurses with the knowledge and skills needed for a variety of advanced specialty roles. The 37 credit degree is comprised of three components: a basic set of Nursing Core courses for 18 credits, a specialized advanced specialty role concentration for an additional 9 credits and the final 10 credits which include the practicum and experiences.

In the discipline of nursing, specialization occurs academically at the graduate level. The Master of Science in Nursing (MSN) program, with specialty concentration options for advanced leadership roles, provides educational opportunities for bachelor prepared nurses who seek career mobility options in new and exciting areas of leadership within the profession. The graduate degree in nursing is intended to build upon the bachelor's degree and provides the student with three specialty concentration options. The specialty advanced leadership concentrations all support professional roles that are in very high demand within the discipline of nursing at the present time. These focused advanced leadership role options include: nursing education, nursing administration, and nursing informatics.

The MSN program is designed to meet the needs of bachelor prepared nurses who want to further their educational growth and development.

Career Opportunities

The MSN degree offers three specialty concentration options, depending on the professional career goal of the graduate student:

**Nursing Education**: The current and anticipated shortage of nursing faculty reflects the general shortage in the nursing profession. The average age of current nursing faculty is 55, heralding a need to replace current faculty as they retire in large numbers over the next several years. If you have ever considered entering the academic setting as a nurse educator, this degree can be your first step to attaining that goal.
Nursing Administration: The demand for nurses with a grounded theory base in business administration continues to increase in the health care delivery system. The basic BSN program prepares nurses for entry-level positions in nursing or health care management settings. Those nurses who desire to hold executive positions in those same settings must possess the knowledge and skills that are critical to the administrative role in these tumultuous times in the health care industry.

Nursing Informatics: The area of nursing informatics is a growing specialty that many nurses are recognizing as an area of marked career growth in the past few years. This new practice area addresses the burgeoning need for experts who have a health care background, such as nursing, to manage the continuous expansion of information technology in the health care setting. The use of technology in the storage, dissemination and utilization of patient data has become a constantly evolving challenge for the health care industry.

More Information

Sharon Colley, Program Coordinator
College of Health Professions
Ferris State University
200 Ferris Drive
Big Rapids, MI 49307
231-591-2288
colleys@ferris.edu

The MSN program is accredited by the Accreditation Commission for Education in Nursing (ACEN.)

Communications Department
Accreditation Commission for Education in Nursing
3343 Peachtree Road NE, Suite 850
Atlanta, GA 30326
Phone: 404-975-5000
FAX: 404-975-5020
http://www.acenursing.org
Nursing Education

Program Requirements

Nursing Education, Graduate Certificate Program Checksheet

Includes:

- Certificate Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose the Nursing Education Certificate?

The purpose of this graduate certificate is to provide a theoretical and practical foundation in nursing education for staff development role or Master's prepared nurses who wish to assume the role of nursing faculty in an associate or baccalaureate degree nursing program. This certificate will provide the opportunity to acquire some of the basic skills utilized by the nurse educator.

This certificate can also be used to target bachelor prepared nurses who may be teaching in a community college setting by exception (faculty hired without required credentials due to a lack of qualified faculty) and desire career mobility to attain a faculty position in that same setting. The certificate can serve as the first step toward the MSN degree, thus providing a ladder into graduate programming for bachelor prepared nurses. This certificate provides 12 credits of focused coursework in the areas of learning theory, cognition, curriculum and instructional design, and evaluation nursing education programs. The 12 credits of this certificate also comprise the nursing education specialty concentration for the MSN degree.

Career Opportunities

This certificate provides career mobility options for bachelor and masters prepared nurses who wish to enter academia to teach in undergraduate nursing programs. The certificate would also provide career mobility for nurses who desire to work as staff and patient educators in hospitals and other health care settings.

More Information

Sharon Colley, Program Coordinator
College of Health Professions
Ferris State University
200 Ferris Drive
Big Rapids, MI 49307
Phone: 231-591-2288
Nursing Practice

Program Requirements

Nursing Practice, DNP Program Checksheet

Includes:

- Major Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose the Doctor of Nursing Practice?

The DNP program is designed to equip masters-prepared advance practice and specialty nurses with the skills and knowledge to practice in various nursing leadership roles. The DNP degree is comprised of 36-42 credits over 6-8 semesters. Along with 2 short, 3-day intensives or face-to-face courses, this cohort-based online program has been developed to promote learning communities. Course work includes evidence translation, systems leadership, nursing practice and health and disease theories, social and healthcare policy, and informatics. Along with the course work, there is a clinical component that consists of a practice-focused change project. Residencies are those class experiences dedicated to the completion and delivery of the practice project. The exact hours needed to complete the clinical or practice project component are determined by the student’s post BSN mentored or supervised clinical hours.

The DNP is designed for masters prepared nurses who desire to further their education and professional development with a terminal degree.

Career Opportunities

The DNP is a clinical degree offering a focus in specialty nursing or advanced practice leadership. Students will be prepared to actively engage in processes for improving healthcare outcomes.

The degree is a terminal professional degree and offers advanced leadership opportunities depending on the specialty or advanced practice area of the graduate student.

Advanced Practice Nursing, in the State of Michigan, includes nurse practitioner, clinical nurse specialist, and nurse midwife and is designated with graduate level education, licensure and certification. Specialty nursing includes graduate level education in nursing education, nursing administration, and nursing informatics.

Advanced practice and specialty nursing requires leaders grounded in the theory and practice of translating evidence to create sustainable change in healthcare systems.
More Information

The Doctor of Nursing Practice degree at Ferris State University is a new applicant pursing initial accreditation by the Commission on Collegiate Nursing Education, 655 K Street NW, Suite 750, Washington DC 20001, (202) 887-6791. New applicant status is neither a status of accreditation nor a guarantee that accreditation will be granted.

For further information please contact:

Stephanie Gustman, DNP, MSN, RN
Associate Professor
DNP Program Coordinator
School of Nursing
Ferris State University
VFS 305
Phone: (231) 591-2258
Fax: (231) 591-2325
Nursing: RN Program

Program Requirements

Nursing RN, BSN Program Checksheet

Includes:

- Major Courses and General Education Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Nursing?

Nursing is the largest health care profession with workforce shortages anticipated for the next two decades. Earnings are above average, particularly for advanced practice nurses who have additional education and certifications. Graduates of the Bachelor of Science in Nursing (BSN) program at Ferris are eligible to write the National Council Licensure Exam (NCLEX-RN) to become a registered nurse.

Registered Nurses (RNs) with the BSN degree are preferentially hired in a variety of health care settings because they are prepared to provide nursing care for a wide variety of patient populations. The Registered Nursing BSN program at Ferris prepares nurses to promote health, prevent disease and to help patients cope with a variety of health problems. RNs with a BSN degree can anticipate opportunities in hospital nursing with positions to include medical, surgery, obstetrics, pediatrics, psychiatric, emergency or intensive care units. RNs can also work in a variety ambulatory care settings such as clinics, emergency medical centers, surgicenters and health maintenance organizations (HMOs) or in long-term care settings. In addition, BSN prepared RNs can also expand their clinical practice to community settings such as Public Health, home care, hospice or school nursing. BSN prepared RNs are also educated to assume entry level management positions in the health care system.

Students in the Ferris Nursing program engage in a learner-centered approach to the study of nursing theory and skills in the classroom, online and state of the art nursing skills laboratories while also having the opportunity to practice direct patient care in hospital and community settings under the guidance of clinically expert faculty. The nursing program at Ferris is a five semester professional sequence that follows the equivalent of one year of pre-requisite coursework and is intended for traditional students who have not earned a college degree. Graduates are eligible to write the licensure exam to become a Registered Nurse. In addition, graduates of the BSN program can continue their education in the Master of Science in Nursing (MSN) program at Ferris or at another University setting.

Career Opportunities
Due to the current and projected nursing shortage, faster than average growth is expected through the year 2020 and beyond. This increased need is based on industry growth and the projected replacement of existing practicing nurses.

Average full-time RNs earn $22 - $50 per hour nationally. The median annual salary for a full-time staff RN in 2018 was $71,730. Advanced practice nurses with education beyond the BSN can earn salaries up to $115,000 per year, depending on the specialty and location of employment.

More Information

College of Health Professions
Ferris State University
200 Ferris Drive
Big Rapids, MI 49307
231-591-2270
CHP@ferris.edu

This program is accredited by the Accreditation Commission for Education in Nursing (ACEN.)
http://acenursing.org

The Accreditation Commission for Education in Nursing publishes a variety of nursing and nursing education materials, including a list of nursing programs and information on student financial aid. For a complete list of ACEN publications, please direct your request to:

Communications Department
Accreditation Commission for Education in Nursing
3343 Peachtree Road NE, Suite 850
Atlanta, GA 30326
Phone: 404-975-5000
FAX: 404-975-5020
www.acenursing.org
Nursing: RN to BSN Completion Program

Program Requirements

Nursing Rn to BSN Completion, BSN Program Checksheet

Includes:

- Major Courses and General Education Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose the RN to BSN Completion Degree?

There are many opportunities for nurses with experience and a BSN degree. Traditionally a field that provided a constant number of nursing career opportunities, health care is now growing at an unprecedented rate. Driven by technological developments, rapid advancements in disease prevention and health promotion, increased public awareness of health concerns, and a booming, aging population, this field offers you a wide variety of job openings, ranging from traditional but expanded patient care to health care administration.

Students with a diploma or associate degree in nursing and a RN license can complete Ferris' Bachelor's degree (BSN) on a part or full time basis.

The BSN completion program is based upon a learner-centered instructional approach and builds upon your prior learning. The program reduces unnecessary repetition to minimize your investment of time and money. Designed expressly for associate degree and diploma RNs who want to further their educational growth and development.

Career Opportunities

The Ferris BSN degree equips you with the theory-based knowledge and skills to work in many of the new and expanding fields of nursing. It increases your understanding of illness prevention, health promotion and maintenance, counseling and education and rehabilitative services as they apply to a wide range of patient populations and health care delivery settings.

You will acquire the skills and the self-assurance that will qualify you for diverse career opportunities when you graduate. You will be prepared to lead health care teams, coordinate and plan nursing care for a variety of clients, collaborate with other health professionals, and make confident, independent decisions.

Nurses with BSN degrees typically earn higher salaries than ADN or diploma nurses with the additional opportunities to assume leadership roles in community and health care institutions.
The BSN degree also provides the foundation for graduate nursing programs. Advanced practice nurses with education beyond the BSN can earn salaries up to $115,000 per year, depending on the specialty and location of employment.

**More Information**

Lori Jenema, On-line RN to BSN Advisor  
College of Health Professions  
Ferris State University  
200 Ferris Drive  
Big Rapids, MI 49307  
231-591-2733  
CHP@ferris.edu

This program is accredited by the Accreditation Commission for Education in Nursing (ACEN.)  
http://www.acenursing.org

The Accreditation Commission for Education in Nursing publishes a variety of nursing and nursing education materials, including a list of nursing programs and information on student financial aid. For a complete list of ACEN publications, please direct your request to:

Communications Department  
Accreditation Commission for Education in Nursing  
3343 Peachtree Road NE, Suite 850  
Atlanta, GA  
Phone: 404-975-5000  
FAX: 404-975-5020  
www.acenursing.org
Operations and Supply Management

Program Requirements

Operations and Supply Management, BS Program Checksheet

Includes:

- Major Courses, General Education Courses, and Concentration Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Operations and Supply Management?

For the serious business student, operations and supply management enables the individual to not only manage the business, but the ability to improve it. The degree includes a lean systems focused curriculum. The classes prepare individuals to lead, manage, and evaluate a continuous improvement system within an organization and with its suppliers. Students will acquire the skills to apply the lean principles in a complex work environment.

The Operations portion of the program focuses on integrating the core Lean principles (process efficiency, value stream mapping, kaizen, PDCA, 5S, pull, leveling process stability, standardized work, root-cause problem resolution and A3 Reporting), Six Sigma (process quality), Lean culture (skills development), Lean cost management (value stream performance measurement), and 5) Leadership techniques (employee centric) to assist the organization in achieving and sustaining optimal employee and organization/operational performance.

The Supply Management section of the program concentrates on how to extend the lean system to the organization's suppliers. Collaboration with an organization’s suppliers and service providers is essential in achieving the lean goal – delivering the right product/service at the right time, in the right quantity, to the right customer, at the right cost. Managing the flow of incoming and outbound goods, services, and related information involved provide valuable tools for turning logistics problems into a competitive advantage. The emphasis will be directed on supplier selection, reducing logistics costs, improving logistics service, and removing impediments as well as bottlenecks to achieve efficient and effective operations.

This cutting edge approach will provide graduates with highly sought-after capabilities to improve operational & financial performance and monitor growth within any type of organization - e.g. banks, nonprofits, offices, hospitals, restaurants, manufacturing.

Career Opportunities

Students who feel they are driven to make things better and see structure in business end up in
middle to upper management positions with this degree. To put it simply, graduates of this program are in demand. Business and industry need people with combined technical and business backgrounds for positions in areas such as quality, purchasing, supply chain management, global logistics, human relations, materials, production control and technical support. The Operations and Supply Management program prepares students for these positions.

College graduates are gaining entry-level positions in production control, purchasing, supply chain management, supplier development engineer, plant layout, inventory control, materials manager, traffic management, distribution management and management training.

In fact, Ferris' placement service reports that requests for individuals with operations and supply management training are usually in greater demand than the number of available graduates. Companies that have hired Ferris graduates in the past range from Fortune 500 manufacturing firms to the growing service industry.

More Information

Management Department, BUS 212
119 South Street
Big Rapids, MI 49307-2284
Phone: (231) 591-2427
Email: MGMT@ferris.edu

The College of Business is accredited by the Accreditation Council for Business Schools and Programs (ACBSP.)
http://www.acbsp.org
Operations and Supply Management

Program Requirements

Operations and Supply Management, Minor Program Checksheet

Includes:

- Minor Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose an Operations and Supply Management Minor?

The Operations and Supply Management Minor is designed to complement the student's existing major and expand their career objectives. Having an Operations and Supply Management Minor adds skills that are highly sought after by employers in areas like Purchasing, Materials and Logistics Management, and Quality Management.

Student's enrolled in the Operations and Supply Management Minor courses will learn current theories and gain experience by applying them. This includes opportunities to network with major corporations, visit plants and facilities, and practice the tools learned in the classroom at specific companies.

The objective of the Operations and Supply Management program is to provide students with a hands-on experience under real conditions with participating companies. The integrated course requirements with the College of Engineering Technology make the Operations and Supply Management Minor unique within the College of Business and University.

More Information

Ferris State University
College of Business Room 212
Management Department
119 South Street, Big Rapids, MI 49307-2284
phone: (231)591-2427
email: MGMT@ferris.edu
Optometry

Program Requirements

Optometry, OD Program Checksheet

Includes:

- Major Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Optometry? - Program Spotlight

Doctors of optometry offer services including the medical treatment of eye diseases such as glaucoma, management of the ocular consequences of diabetes, refractive care for myopia, hyperopia, astigmatism, and presbyopia with contact lenses and eyeglasses, and rehabilitation for visual disorders caused by brain injury or developmental disorders. Optometrists are valued members of the health care team who own private practices throughout the United States and Canada and also work in interdisciplinary settings such as hospitals, veterans' health facilities, community health centers, and military bases.

The curriculum at the Michigan College of Optometry at Ferris State University is designed to produce doctors of optometry who are qualified to practice full-scope optometric care in any state and practice setting. This includes classroom, laboratory, and clinical training under the supervision of an outstanding, nationally recognized faculty. The college, which is a member institution of the Association of Schools and Colleges of Optometry and is accredited by the Accreditation Council on Optometric Education and the Higher Learning Commission, offers its four-year, doctoral-level professional education program in an outstanding, modern facility that includes an on-campus clinic which serves patients from the community and around the state. There are also multiple off-campus clinical assignments, assuring a comprehensive, full-scope experience in a variety of practice settings.

Career Opportunities

The Michigan College of Optometry at Ferris State University was established in 1975 and remains the only institution in Michigan (one of only 21 fully accredited in the United States) to offer a doctor of optometry program. The profession is one of the top five income-earning professions in the country and is dedicated to maximizing the visual efficiency, ocular and overall health, and quality of life of patients. It encompasses the prevention and remediation of disorders of the eyes and visual systems through the examination, diagnosis, treatment and management of visual problems and eye diseases.
Doctors of Optometry are primary health care providers who enjoy favorable working conditions, regular hours, and a minimum of emergency calls. The profession offers many career options and great freedom in choosing a location to live and practice. Career options include private practice, group practice or institutional practice in hospitals, health centers, health maintenance organizations or corporate offices. Career options may also include one-year post-graduate residency training in various optometric specialties. Graduates of the program report a high level of satisfaction with the career choice, income, and lifestyle.

More Information

Ferris State University  
Michigan College of Optometry  
1124 S. State Street  
Big Rapids, MI 49307  
Phone: 231-591-3703
Performance Machining

Program Requirements

Performance Machining, Certificate Program Checksheet

Includes:

- Certificate Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Performance Machining Certificate?

The Performance Machining Certificate program includes studies in engine disassembly, machining, performance modifications, and precision rebuilding. Lathes, crankshaft grinders, camshaft grinders, boring bars, hones, valve grinders, valve seat grinders, surface grinders, engine balancing, engine blueprinting, milling machines, align honing, align boring performance engine rebuilding, performance header selection, and camshaft indexing.

More Information:

School of Automotive and Heavy Equipment

Automotive Engineering Technology Programs

708 Campus Drive, AUT 101
Big Rapids, MI 49307
Phone: 231-591-2655
Email: auto@ferris.edu
https://www.ferris.edu/CET/auto-heet/

Ferris State University

College of Engineering Technology

1009 Campus Drive, JOH 200
Big Rapids, MI 49307-2280
Phone: 231-591-2890
Email: technology@ferris.edu
www.ferris.edu/technology
Performance Motorsports

Program Requirements

Performance Motorsports, Certificate Program Checksheet

Includes:

- Certificate Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Performance Motorsports?

This Certificate Program will allow students to be able to integrate principles of engine design and testing with principles of forced induction. Studies include design, disassembly, machining, performance modifications, and precision rebuilding. Flow bench analysis, dynamometers, performance header selection, and camshaft indexing.

More Information

School of Automotive and Heavy Equipment
Automotive Engineering Technology Programs
708 Campus Drive, AUT 101
Big Rapids, MI 49307
Phone: 231-591-2655
Email: auto@ferris.edu
https://www.ferris.edu/CET/auto-heet/

Ferris State University
College of Engineering Technology
1009 Campus Drive, JOH 200
Big Rapids, MI 49307-2280
Phone: 231-591-2890
Email: technology@ferris.edu
www.ferris.edu/technology
PGA Golf Management

Program Requirements

PGA Golf Management, BS Program Checksheet

Includes:

- Major Courses and General Education Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose PGA Golf Management?

The origins of golf date back to the 1400s, but the United States has been a significant catalyst in popularizing the sport and expanding the business into nearly an eighty billion dollar industry, offering more than 2 million jobs. Today, more than 24 million Americans play the game with many segments growing quickly. In Michigan alone, there are more than 800 golf courses and 60 resorts.

For more than 45 years, the PGA Golf Management program has produced quality graduates who are today’s golf industry leaders. PGA Golf Management students learn all facets of golf shop operations (marketing, merchandising, accounting and small business management), customer service, golf course maintenance, public relations, tournament operations, instruction and player development, club repair and fitting, and much more. The PGA Golf Management program includes 16 months of required internship providing real world experience at golf facilities throughout the United States and even abroad. Our 100 percent career placement rate reflects the value of the combined business education, skill development and knowledge gained from extensive hands-on experience.

On campus as a PGA Golf Management student, you have unlimited access to Ferris State's Katke Golf Course, the proud home of the PGA Golf Management program's learning laboratory and nationally ranked men's and women's golf teams. Our students make the facility their second home with more than 225 acres that include a 21-hole golf course with an award winning outdoor practice facility. Also at the Golf Course is the recently opened Ken Janke, Sr. Golf Learning Center, which houses four indoor golf simulators and other practice areas, as well as serving as the home of the Michigan Golf Hall of Fame.

The program was the first of its kind sanctioned by The PGA of America in 1975 and integrates PGA membership requirements with learning objectives in Ferris’ accredited College of Business. Through this partnership, you will earn both a B.S. in Business and complete all requirements for direct election to membership to the PGA of America upon graduation.

Career Opportunities
Our graduates enjoy careers as a Head or Assistant Golf Professional, Teaching Professional, Director of Golf, General Manager, Sales Representative, Tournament Director and more.

Whether it is on the course, the lesson tee, the clubhouse or behind the scenes of a televised event, Ferris State PGA Golf Management graduates are professionals working to expand the game’s popularity and accessibility to millions of diverse players.

More Information

PGA Golf Management
1506 Knollview Drive
Big Rapids, MI 49307-2290
Phone:(231) 591-2380
Email: PGM@ferris.edu

The College of Business is accredited by the Accreditation Council for Business Schools and Programs (ACBSP.) Next Accreditation Review is February 2028.
http://www.acbsp.org

The PGA Golf Management Program is also accredited by the Professional Golf Association. Next Accreditation Review is February 2021.
www.pga.org
Pharmacy

Program Requirements

Pharmacy, PD Program Checksheet

Includes:

- Major Courses and Elective Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose the College of Pharmacy? - Program Spotlight

Graduates are well prepared for the North American Pharmacists Licensure Examination (NAPLEX), which is required for licensure in Michigan and most other states.

Ferris offers a pre-pharmacy/professional program leading to a Doctor of Pharmacy (Pharm.D.) degree. Pre-Pharmacy consists of approximately three full-time academic years of study which can be completed in the College of Arts & Sciences at Ferris State University. Application guides are also available which outline pre-pharmacy courses that can be completed at most of the state's two and four-year institutions. The four-year professional degree program is then completed in the College of Pharmacy at Ferris State University. (First two years - Big Rapids, 3rd year - Grand Rapids, 4th year in clinical sites located in Grand Rapids, Kalamazoo, Lansing, Flint/Saginaw, Traverse City, Marquette and several other cities in Michigan).

Pre-Pharmacy subjects include general biology, anatomy & physiology, microbiology, genetics, general and organic chemistry, biochemistry, calculus, statistics, physics, economics, English, communication skills, psychology or sociology, and cultural enrichment. All course work designated as pre-pharmacy must be completed in order to finalize admission. Prospective students should familiarize themselves with the University's General Education Guidelines.

Career Opportunities

Since its inception in 1893, the College of Pharmacy has adapted its programming to meet the challenges and complex demands of an ever-changing profession. Current emphasis is on clinical practice and the provision of medication therapy management to ensure that the patient's drug therapy is appropriate, safe, effective for the condition being treated and cost-effective. Graduates of the College will be prepared to deliver care to patients in a wide range of practice settings.

Some of the many fields of specialization open to the pharmacist include:
Community pharmacy: most pharmacists are engaged in this type of professional practice in either independently owned or chain pharmacies.

Hospital pharmacy: this field offers a variety of assignments in support of physicians, nurses and other members of the health care team in dealing with the medication needs of patients.

Industrial pharmacy: opportunities include those related to production, quality control, research, administration and sales promotion.

Long term care: This includes many settings such as nursing home, hospice, psychiatric, rehabilitation, and substance abuse care.

Other: Nuclear pharmacy, drug information, poison control, public health, home health care, long-term care, law and areas of pharmacy education and specialization.

The Application Process

Information on the pre-pharmacy curriculum as well as contact information on pre-pharmacy advisors can be found by clicking on link below: https://ferris.edu/arts-sciences/index.htm

Information on the Doctor of Pharmacy professional degree program can be found at the College of Pharmacy website below: http://www.ferris.edu/HTMLS/colleges/pharmacy/admissions/homepage.htm

For students interested in applying to the College of Pharmacy after completing the pre-pharmacy courses at another State of Michigan college or university should consult the appropriate guide below:
http://www.ferris.edu/HTMLS/colleges/pharmacy/admissions/guides/AppguidesTxPage.htm

Other students should contact the College of Pharmacy Office at: College of Pharmacy, 220 Ferris Drive, Big Rapids, MI 49307; Phone: 231-591-2249.

Accreditation

The College of Pharmacy is recognized by the Michigan Board of Pharmacy and is accredited by the American Council of Pharmaceutical Education, the national accrediting agency for all colleges of pharmacy. Ferris is a member of the American Association of Colleges of Pharmacy.

More Information

College of Pharmacy
Ferris State University
220 Ferris Drive
Big Rapids, MI 49307-2740
Phone: (231) 591-2249
Philosophy

Program Requirements

Philosophy, Minor Program Checksheet

Includes:

- Minor Courses and Elective Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose the Philosophy Minor? - Program Spotlight

Philosophy is the basis of any discipline, whether it is science, math, medicine, literature, legal studies, history or technology. As a result, philosophy allows students the opportunity to discover the intellectual history and cultural context to any area of study. In addition, the minor allows students to develop writing and critical thinking skills that are essential to job placement and advancement.

More Information

ADVISOR: Dr. John Gray
PHONE: 231-591-3515
EMAIL: JohnScottGray@ferris.edu

Department of Humanities
Ferris State University
1009 Campus Drive/JOH 119
Big Rapids, MI 49307-2280
Phone: 231-591-3675
Physical Education Teaching

Program Requirements

Physical Education Training, Minor Program Checksheet

Includes:

- Minor Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Teaching Minors for Secondary Education Majors?

The Secondary Education program highly recommends the completion of a teaching minor.

More Information

School of Education
Bishop Hall Room 421
Ferris State University
1349 Cramer Circle
Big Rapids, MI 49307-2737
Telephone: (231) 591-5361
Plastics and Polymer Engineering Technology

Program Requirements

Plastics and Polymer Engineering Technology, AAS Program Checksheet

Includes:

- Major Courses and General Education Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Plastics and Polymer Engineering Technology?

The plastics and rubber programs at Ferris State University are among the largest in the United States. The Plastics Engineering Technology and the Rubber Engineering Technology four-year degree programs are fed by this common first two-year curriculum which introduces the student to the world of polymer materials. Plastics and rubber employment continue to grow yearly. The graduates out of each of the two bachelor degree programs gain immediate status as successful technical leaders.

The innovative two-year curriculum of study provides students with a background in such topics as materials testing, processing, tooling, product development, and an exploration of the career possibilities within this vast industry. Classes emphasize hands-on learning, using similar equipment that is currently used in industry. Most students continue their education past the first two years to receive their Bachelor's degree in either Plastics Engineering Technology or Rubber Engineering Technology.

Partnership with Industry

Both the plastics and rubber industries have long shown support for the polymer programs here at Ferris. They have sponsored the construction of the National Elastomer Center (NEC), the building that houses these programs. The National Elastomer Center contains state-of-the-art laboratories, equipment, and classrooms. Many companies actively support these programs by donating equipment and materials, making on-campus presentations, and sponsoring field trips to their facilities.

Students also serve a paid industry internship. This experience gives the student valuable, first-hand experience before graduation. Some internships occur out-of-state, and some assist with room and board accommodations to attract students to their facilities. This summer experience helps students determine what type of position they want to pursue after graduation.

Career Opportunities
After completing the two-year program, students are immediately employable within the polymer industry. Or, if they choose, they are prepared to enter the Bachelor degree program in Plastics Engineering Technology or in Rubber Engineering Technology. Associate degree students usually start employment in first-level salaried positions such as manufacturing technician, laboratory technician, or foreman/supervisor. Salaries typically start at approximately $45,000 per year. Bachelor degree graduates begin at approximately $52,000 to $80,000 per year and can accelerate at a rapid pace in the years that follow.

More Information

School of Design and Manufacturing
Plastics and Rubber Engineering Technology Programs
919 Campus Drive, NEC 211
Big Rapids, MI 49307
Phone: 231-591-2640
Email: plasticsandrubber@ferris.edu
https://www.ferris.edu/CET/design-mfg/Plastics/homepage.htm

Ferris State University
College of Engineering Technology
1009 Campus Drive, JOH 200
Big Rapids, MI 49307-2280
Phone: 231-591-2890
Email: technology@ferris.edu
www.ferris.edu/technology
Plastics Engineering Technology

Program Requirements

Plastics Engineering Technology, BS Program Checksheet

Includes:

- Major Courses and General Education Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Plastics Engineering Technology?

The Ferris Plastics program is one of the largest and most respected undergraduate programs in the United States. The Bachelor Degree program was started in 1982 and continues to fill a great need in the growing plastics industry for technically trained personnel. About 1.3 million people across the country work in plastics, making it our third-largest industry. Ferris graduates gain immediate status as recognized technical leaders.

This innovative program provides students with a background that includes topics such as plastics processing, polymer material testing and properties, and product development. Classes emphasize hands-on learning using equipment that is currently used in the industry. An exceptional 80 percent of the entering students receive their degrees.

Partnership with Industry

The plastics industry has long shown support for the polymer programs here at Ferris. They have sponsored the construction of the National Elastomer Center (NEC), the building that houses these programs. The National Elastomer Center contains state-of-the-art laboratories, equipment, and classrooms. Many companies actively support these programs by donating equipment and materials, making on-campus presentations, and sponsoring field trips to their facilities.

Students also serve a paid internship in the industry for a minimum of ten weeks each, gaining valuable firsthand experience before graduation. Several out-of-state companies pay room and board in addition to salary to attract our interns. The internship experience helps students decide what type of position they would most enjoy after graduation.

Career Opportunities

After completing the Plastics Engineering Technology program, students are immediately employable by the plastics industry. There is consistent virtually 100 percent placement of our graduates. Bachelor Degree graduates usually start in engineering positions such as process, product or project engineer, quality control engineer or technical sales representative. Many
graduates have attained management positions throughout the plastics industry. Bachelor Degree graduates should make approximately $66,500 per year at graduation and with ten years' experience can make $100,000 per year or more.

More Information

School of Design and Manufacturing
**Plastics and Rubber Engineering Technology Programs**
919 Campus Drive, NEC 211
Big Rapids, MI 49307
Phone: 231-591-2640
Email: Plasticsandrubber@ferris.edu
https://www.ferris.edu/CET/design-mfg/Plastics/homepage.htm

Ferris State University
**College of Engineering Technology**
1009 Campus Drive, JOH 200
Big Rapids, MI 49307-2280
Phone: 231-591-2890
Email: technology@ferris.edu
www.ferris.edu/technology
Political Science

Program Requirements

Political Science, BS Program Cheesheet

Includes:

- Major Courses and General Education Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Political Science? - Program Spotlight

Political Science as an academic discipline historically developed from the interrelationships between political science and law. Today, political science is multi-disciplinary in both substance and methodology and borrows heavily from economics, sociology, psychology, business administration, social work and criminal justice. In this major you will take coursework in these related disciplines.

As a leading career-oriented institution, Ferris offers you valuable training not found elsewhere. Because of our strong technical programs, you can broaden your academic credentials to include coursework and training in numerous technological fields. The Political Science program at Ferris combines for you multi-disciplinary scholarship with practical training in government, business and technology.

Career Opportunities

Are you concerned with improving the quality of life in your local community, the state of Michigan, the nation? Do you like to work with people? A political science degree will open numerous career paths for you to make a difference.

As a graduate of Ferris with a Bachelor of Science degree in Political Science, you will have developed the intellectual and practical skills to find entry-level employment in federal, state, regional, and local governmental agencies. Numerous positions exist in the private sector for persons knowledgeable about government policy and procedures. Nonprofit community and social service organizations also will find your credentials appealing.

As a Ferris graduate, you will have the scholarly training necessary to enter graduate and professional programs in Political Science, public administration, the social sciences, management, public policy, social work, criminal justice, law or technology.

More Information
Political Science

Program Requirements

Political Science, Minor Program Checksheet

Includes:

- Minor Courses and Elective Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose the Political Science Minor? - Program Spotlight

Students in this minor learn how the American political system works from the local through the national levels of government, and how our political decision making process differs from other countries. Current public policy issues such as social security reform, health care legislation, and campaign finance regulations are analyzed. Students also learn how public opinion generated through the media, interest groups, political parties, and elections affects government. This minor complements majors that involve participation in public affairs, such as communication, criminal justice, education, law, public relations, and social welfare.

More Information

ADVISOR: Dave Schrock
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E-MAIL: DaveSchrock@ferris.edu

Department of Social and Behavioral Sciences
Ferris State University
820 Campus Drive/ASC 2108
Big Rapids, MI 49307
Phone: 231-591-2735
Political Science Education

Program Requirements

Political Science Education, BS Program Checksheet

Includes:

- Major Courses and General Education Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Political Science Education?

The Political Science Education program prepares prospective teachers for the challenges of teaching students from a broad range of cultural backgrounds in such diverse educational settings as traditional high and middle schools, vocational-technical centers, alternative and magnet schools and tech-prep programs.

Current vocational studies predict growing opportunities for teachers at all levels, both to replace retiring teachers and to provide lower student-teacher ratios in classrooms.

High school graduates, whether they plan to attend college or not, need to be contributing members of society. Understanding their role in the political systems of the world is necessary in order to help them meet the demands of their future careers. The FSU program prepares prospective teachers with the knowledge and skills essential to provide effective Political Science instruction for students in Michigan and throughout the nation.

Career Opportunities

The Political Science education program prepares students to teach in middle or high school, as well as in vocational-technical centers, alternative and magnet schools, tech-prep programs and other non-traditional educational settings. With additional study, students may also teach in post-secondary schools. The program focuses on preparing prospective teachers for the challenges of teaching students from a broad range of educational and cultural backgrounds. Political Science teachers are in high demand and the employment outlook is excellent. A teaching minor is required. You cannot have a Political Science teaching minor with this teaching major.

Teacher Certification Requirements

As required by the State of Michigan to receive teacher certification, all teacher candidates must: (1) meet the MDE (CAEP) cohort requirements, (2) pass the pedagogy tests in their subject area majors, and (3) have a 2.75 minimum GPA to receive teacher certification in Michigan. These state requirements are in addition to the FSU graduation requirements of your
individual program.

**More Information**

School of Education  
Bishop Hall Room 421  
Ferris State University  
1349 Cramer Circle  
Big Rapids, MI 49307-2737  
Telephone: (231) 591-5361
Political Science Teaching

Program Requirements

Political Science Teaching Minor Program Checksheet

Includes:

- Minor Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Teaching Minors for Secondary Education Majors?

The Secondary Education program highly recommends the completion of a teaching minor.

More Information

School of Education
Bishop Hall Room 421
Ferris State University
1349 Cramer Circle
Big Rapids, MI 49307-2737
Telephone: (231) 591-5361
Polymer Materials Technology

Program Requirements

Polymer Materials Technology, Minor Program Checksheet

Includes:

- Minor Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose to Minor in Polymer Materials Technology?

The polymer materials technology minor is intended for non-Plastics/Rubber majors who are interested in the polymer industry. This minor is intended to complement existing degrees within FSU. Affording students a technical focus which could result in employment opportunities in the third-largest industry in the United States.

Students will:

- Understand and learn the terminology in the plastics and rubber industry
- Know the most used polymer materials and their significant properties and applications
- Learn how to measure and evaluate polymer materials by their physical and mechanical properties
- Know the major polymer suppliers associated with the industry
- Know and understand the typical rubber and plastics fabrication techniques
- Understand polymer materials selection as it relates to materials and product design

Career Opportunities

This minor is intended to complement existing degrees within FSU. Affording students a technical focus which could result in employment opportunities in the third-largest industry in the United States.

More Information

School of Design and Manufacturing
Plastics and Rubber Engineering Technology Programs
919 Campus Drive, NEC 211
Big Rapids, MI 49307
Phone: 231-591-2640
Email: plasticsandrubber@ferris.edu
https://www.ferris.edu/CET/design-mfg/Plastics/homepage.htm
Positioning for Hydrographic Surveying

Program Requirements

Positioning for Hydrographic Surveying, Certificate Program Checksheet

Includes:

- Certificate Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose a Surveying Engineering Certificate?

This certificate is a collaborative effort between the Surveying Engineering Program at Ferris State University and the Freshwater Studies Institute at Northwest Michigan College. Aims of the certificate are:

- To explore the fundamental principles of Geographic Information Systems (GIS) and their applications.
- To investigate the basic principles of remote sensing as they relate to engineering and environmental problems.
- To understand the basics of how enabling hydrographic surveying technology components are used including Research Vessels, Remotely Operated Vehicles (ROV), SONAR systems (single beam, multi-beam, side-scanning) while gaining first-hand experience operating these systems and collecting information.

This certificate is geared toward:

- Practicing Professionals interested in gaining additional competencies.
- Students of surveying or related disciplines who wish to explore an additional subject.
- Those who have an interest in underwater exploration by remote sensing.

Career Opportunities

Hydrographic surveying falls under the definition of “surveying” in both Michigan’s Occupational Code and the National Council of Examiners for Engineering and Surveying (NCEES) Model Law. The Hydrographic Surveyor is a specialist in precise positioning and data acquisition in marine environments; expected to work in a wide range of different situations and applications from inland waters and rivers, to ports and the deep oceans. Navigation, oil, gas mineral resource exploration and recovery, dredging, coastal works, bridge and port construction, submarine telephone cables and pipelines, environmental monitoring, aquaculture, and oceanographic research are all crucially dependent on the hydrographic surveyor for accurate, reliable information.
The employment of surveying and mapping technicians is expected to grow 16 percent from 2010 to 2020. The demand for Hydrographic Survey Technicians (Marine Surveying) is expected to grow faster.

**More Information:**

School of Engineering and Computing Technology

**Survey Engineering Technology Programs**

915 Campus Drive, SWN 312
Big Rapids, MI 49307-2291
Phone: 231-591-2633
Email: surveying@ferris.edu
https://www.ferris.edu/CET/ceems/surveying/index.htm

Ferris State University

**College of Engineering Technology**

1009 Campus Drive, JOH 200
Big Rapids, MI 49307-2280
Phone: 231-591-2890
Email: technology@ferris.edu
www.ferris.edu/technology
Pre-Engineering

Program Requirements

Pre-Engineering, AS Program Checksheet

Includes:

- Major Courses and General Education Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Pre-Engineering?

This program was developed to give students a broad overview of the engineering field. Students take general education courses as well as pre-engineering courses to give them the required knowledge and skills necessary to gain entrance to an engineering college.

Pre-Engineering is designed for students who intend to transfer to an engineering college to earn a bachelor's degree in engineering or a related field. The program is based on courses that are fundamental to all engineering disciplines.

Career Opportunities

The Pre-Engineering program at Ferris is a great place to begin a career in the well-paid engineering field, a field that grows larger every year.

More Information

ADVISOR: Dr. Kent Sun
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E-MAIL: MathDepartment@ferris.edu

Department of Mathematics
Ferris State University
820 Campus Drive, ASC 2021
Big Rapids, MI 49307-2225
Phone: 231-591-2565
Pre-Pharmacy

Program Requirements

Pre-Pharmacy, AS Program Checksheet

Includes:

- Major Courses and General Education Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Pre-Pharmacy? - Program Spotlight

The Pre-Pharmacy program at Ferris is designed to give you all the tools necessary to gain admission into the College of Pharmacy. Because of the stringent requirements and extensive educational background needed to become a pharmacist, the courses in the Pre-Pharmacy program give you a broad overview and strong beginning to the Pharmacy program.

A path to a career in pharmacy begins with the three-year Pre-Pharmacy program, which is designed to prepare students to meet the competitive admission requirements of the College of Pharmacy. Upon admission to the College of Pharmacy, you will continue your studies for four years to complete the doctor of pharmacy degree.

Career Opportunities

As a professional pharmacist, you will be the most accessible member of the health care team and the most knowledgeable about the effects of drugs on people. You will serve as an essential link between the patient and the prescribing physician, advising both about drug interactions, dosages and possible side effects.

Your knowledge of drugs and drug functions will provide job opportunities as a community pharmacist, hospital pharmacist or industrial pharmacist. Other opportunities include pharmaceutical journalism, advertising, public health, research, law enforcement, pharmacy education and positions with pharmaceutical associations. Ferris graduates enjoy 100 percent job placement, and the financial awards can be abundant.

More Information

PROFESSIONAL ADVISOR: Emily Beard
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Department of Physical Sciences
to receive teacher certification in Michigan. These state requirements are in addition to the FSU graduation requirements of your individual program.

More Information

School of Education
Ferris State University
Bishop Hall 421
1349 Cramer Circle
Big Rapids, MI 49307-2737
Phone: 231-591-5361
Pre-Science

Program Requirements

Pre-Science, AS Program Checksheet

Includes:

- Major Courses and General Education Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Pre-Science?

Pre-Science is intended for students who have a general interest in science but who are not ready to choose a specific field of study. The program also is intended to provide students with preparatory course work if previous academic experiences require fundamental improvements.

During the first year, you take coursework necessary to fulfill the general education requirements common to all college degrees. You also choose courses in mathematics, biology, chemistry, physics and other sciences to build fundamental skills in these disciplines. During the second year, you continue selecting similar courses to assist you in focusing on an appropriate career direction. Coursework is extremely flexible and advisors work with you to plot a program of courses that suits your interests, goals and needs.

Get a Great Background in Science

Do you enjoy studying the biological and physical sciences? Have you done well in your science and math courses in high school? Are you considering a career in a science-related field but are uncertain of which specific one? The Pre-Science program at Ferris provides you with the solid foundation in mathematics and science necessary to pursue these careers. We also encourage you to consider the Natural Science associate degree program.

More Information

PROFESSIONAL ADVISOR: Jenice Winowiecki
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EMAIL: JeniceWinowiecki@ferris.edu

Department of Biological Sciences
Ferris State University
820 Campus Drive/ASC 2004
Big Rapids, MI 49307
Phone: 231-591-2550
Pre-Teaching Elementary

Program Requirements

Pre-Teaching Elementary, AA Program Checksheet

Includes:

- Major Courses and General Education Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Pre-Teaching Education?

Students who plan to major in a curriculum for elementary education may wish to prepare with the pre-teaching program, which includes fundamental education courses and individually broadening classes such as English, mathematics, music and social awareness.

During your freshman year in pre-teaching, you will take courses in English, speech, history, humanities, mathematics, natural sciences, behavioral sciences and other electives. As a sophomore, additional electives are needed, including government, literature, economics, sociology, psychology and other required general courses.

Students who plan to transfer into a B.S. degree program should be sure to select general education courses that satisfy the B.S. degree requirements. After discussion with the academic advisor from the appropriate curriculum, students can choose electives from a variety of subject areas.

Career Opportunities

The pre-teaching program allows students to begin the general education requirements common to all teaching degrees. The Ferris elementary pre-teaching program leads to an associate in arts degree and typically involves transfer to the elementary teaching degree for the third and fourth years.

Teacher Certification

If a pre-teaching student wishes to continue in teacher education to complete a teaching degree and obtain certification, the State of requires that all candidates: (1) meet the MDE (CAEP) cohort requirements, (2) pass the pedagogy tests in their subject area major, and (3) have a 2.75 minimum GPA to receive teacher certification in Michigan. These state requirements are in addition to the FSU graduation requirements of your individual program.
Pre-Teaching Secondary

Program Requirements

Pre-Teaching Secondary, AA Program Checksheet

Includes:

- Major Courses and General Education Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Pre-Teaching Education?

Students who plan to major in a curriculum for secondary education may wish to prepare with the pre-teaching program, which includes fundamental education courses and individually broadening classes such as English, mathematics, music and social awareness.

During your freshman year in pre-teaching, you will take courses in English, speech, history, humanities, mathematics, natural sciences, behavioral sciences and other electives. As a sophomore, additional electives are needed, including government, literature, economics, sociology, psychology and other required general courses.

Students who plan to transfer into a B.S. degree program should be sure to select general education courses that satisfy the B.S. degree requirements. After discussion with the academic advisor from the appropriate curriculum, students can choose electives from a subject area.

Career Opportunities

The pre-teaching program allows students to begin the general education requirements common to all teaching degrees. The Ferris secondary pre-teaching program leads to an associate in arts degree and typically involves transfer to a secondary teaching degree for the third and fourth years.

Teacher Certification

If a pre-teaching student wishes to continue in teacher education to complete a teaching degree and obtain certification, the State of Michigan requires that all candidates: (1) meet the MDE (CAEP) cohort requirements, (2) pass the pedagogy tests in their subject area majors, and (3) have a 2.75 minimum GPA to receive teacher certification in Michigan. These state requirements are in addition to the FSU graduation requirements of your individual program.

More Information
Pro-Mo-Ted Technical Education

Program Requirements

Pro-Mo-Ted Technical Education, BS Program Checksheet

Includes:

- Major Courses and General Education Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Pro-Mo-Ted Technical Education?

Rapid technological changes have generated strong demand for Pro-Mo-Ted Education in Michigan. Graduates can expect excellent career opportunities in industry, secondary and vocational education. This program is designed for a person teaching in a career and technical education classroom who has not received a bachelor degree.

The Pro-Mo-Ted program develops skills and gives the training to teach them to others which are a valuable combination in education today. If you relate well to others and enjoy working with your hands and mind, you are well suited for a worthwhile and rewarding career in Technical Education. Pro-Mo-Ted is an alternative means for gaining the Interim Occupational Certificate required to teach in a Career and Technical Education setting.

The Ferris State University Pro-Mo-Ted education program provides a balanced mix of courses in three major areas: professional education, field experience and liberal arts education. About a third of the courses required for graduation will be in the major's chosen field. Pro-Mo-Ted education students also must complete occupational work experience. Field experiences in which students work with young people in public schools is required, along with a full-time directed teaching assignment in a vocational/technical program at an area vocational center or high school.

Career Opportunities

Known for its technical, hands-on programs, Ferris State University offers technical education students diverse opportunities including automotive, electronics, welding, industrial and HVACR technology or computer assisted design and manufacturing.

Teacher Certification Requirements

As required by the State of Michigan, to receive teacher certification, all teacher candidates must: 1. Meet the MDE (CAEP) cohort requirement; 2. Pass the Michigan Test for Teacher Certification content area tests in their major (if appropriate); and 3. Have a 2.75 minimum GPA.
Product Design

Program Requirements

Product Design, Certificate Program Checksheet

Includes:

- Certificate Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose the Product Design Certificate?

The Product Design Certificate will enhance the design capabilities of students within their respective field of study.

Career Opportunities

This certificate will allow the student to transition into careers in the Design/Engineering Departments in their respective field.

More Information

School of Engineering and Computing Technology
Product Design Engineering Technology Program
915 Campus Drive, SWN 405
Big Rapids, MI 49307-2291
Phone: 231-591-2755
email: pdet@ferris.edu
https://www.ferris.edu/CET/ceems/pdet/homepage.htm

Ferris State University
College of Engineering Technology
1009 Campus Drive, JOH 200
Big Rapids, MI 49307-2280
Phone: 231-591-2890
Email: technology@ferris.edu
www.ferris.edu/technology
Product Design Engineering Technology

Program Requirements

Product Design Engineering Technology, BS Program Checksheet

Includes:

- Major Courses and General Education Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Product Design Engineering Technology?

The Product Design Engineering Technology program at Ferris offers intensive instruction and practical experience in all facets of product design. Students are prepared to effectively participate in a design environment, generate conceptual design sketches and drawings, create complex design layouts, perform static and dynamic analysis, create models and prototypes, create and define complex surfaces and shapes, and understand and integrate manufacturing principles into design.

Studies also emphasize communication, mathematics, and analytical skills. Students receive extensive hands-on experience through labs and internships to give them real-world experience.

Career Opportunities

A product designer begins with a concept, then transforms it into a working design that specifies the size, shape, style, dimensions, and materials needed. Because this skill is needed for the production of millions of industrial and consumer goods, designers are in great demand.

Their knowledge of design, engineering analysis, manufacturing processes, and communication techniques are valued in industries across the United States. Employment opportunities exist across the spectrum of the product design field wherever products are produced, designers will be found.

Specific job titles include Product Designer, Layout Drafter, Project Manager, Product Developer, Computer-Aided Designer, Mechanical Designer, Project Engineering, and Design Engineer.

More Information

School of Engineering and Computing Technology
Product Design Engineering Technology Program
915 Campus Drive, SWN 405
Big Rapids, MI 49307-2291
Professional Digital Marketing

Program Requirements

Professional Digital Marketing, Certificate Program Checksheet

Includes:

- Certificate Courses
- Admission Requirements
- Graduation Requirements

Why Choose a Professional Digital Marketing Certificate?

If you are employed (or hope to be employed) in a field where you need a good working knowledge of Internet-based marketing activity, the Professional Digital Marketing Certificate may be ideal for you. You will learn both the theory and practice of Digital Marketing, and the Professional Digital Marketing Certificate will enhance your skills through courses of your choice focused on:

- Multi-channel marketing
- Selling online, and saving money and time for your company and your customers
- Managing databases in a digital world
- Mastering best practices in business-to-consumer digital marketing, business-to-business digital marketing, and direct marketing
- Creation and execution of Internet marketing/advertising and social media plans and campaigns including the basics of Web site design and implementation

You will be provided with the latest cutting edge Internet-based marketing skills that will help you, not only in Digital Marketing but also in careers such as direct marketing, advertising, and professional selling.

This certificate is structured for experienced professionals who wish to choose Digital Marketing-related courses to enhance their career development.

More Information

Marketing Department
119 South Street, BUS 212
Big Rapids, MI 49307-2426
Phone: 231-592-2426
E-mail: MKTG@ferris.edu
Professional Tennis Management

Program Requirements

Professional Tennis Management, BS Program Checksheet

Includes:

- Major Courses and General Education Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Professional Tennis Management? - Program Spotlight

Tennis is truly “the sport of a lifetime,” which can be played by anyone ages 4–95 and there is a high demand for competent and qualified tennis professionals. With more than 20,000 types of tennis facilities in the U.S., from resorts, parks & rec., commercial and private clubs, and an estimated 19,800 tennis specific businesses and organizations, there are boundless viable career opportunities within the tennis industry.

In 1986, the Ferris Professional Tennis Management (PTM) program was the first four-year bachelor’s degree program to combine tennis and business. It remains the largest and the model bachelor’s degree program of its kind in the nation, with a nearly 100% of its graduates receiving job opportunities since its inception and producing graduates that are tennis industry leaders.

PTM students receive a Bachelor’s degree in Business coupled with their choice of a minor selected from the many available at the University. Its combined emphasis on tennis skills, training, and the management of tennis as a business, uniquely prepares its students to excel in the tennis industry and business. This program truly merges theory with practice by including three paid internships where PTM students receive on-the-job training at beautiful clubs, resorts, and facilities all over the United States. PTM courses are held at the university-owned and operated 19 court indoor/outdoor Racquet and Fitness Center, which serves as a laboratory for PTM students and contains the PTM classroom and racquet repair/customization room on its upper floor. With its significantly high job placement rate, the PTM program is a gateway to great career opportunities.

Career Opportunities

Our graduates enjoy careers as Head or Assistant Tennis Professionals, Directors of Tennis, Managers, Business Owners, Sales Representatives, and more.

The program encourages excellence in all aspects of the sport and provides a solid, well-rounded business foundation in addition to the student's choice of approved minor. PTM graduates leave the program as both USPTA and USTA certified tennis professionals.
Due to the support from key tennis industry organizations that include; the United States Tennis Association and USTA University, United States Professional Tennis Association, Wilson Sporting Goods, and the United States Racquet Stringers Association, graduates from the PTM program at Ferris State can look forward to exciting careers within the tennis industry.

More Information

Professional Tennis Management  
14342 Northland Drive  
Big Rapids, MI 49307-2290  
Phone: (231) 591-2219  
Email: mikejanz@ferris.edu  
Website: www.ferris.edu/ptm

The College of Business is accredited by the Accreditation Council for Business Schools and Programs (ACBSP.)
http://www.acbsp.org

The PTM Program is also accredited by the USPTA.
Project Management

Program Requirements

Project Management, Certificate Program Checksheet

Includes:

- Certificate Courses
- Admission Requirements
- Graduation Requirements

Why Choose the Project Management Certificate?

Project management is a profession that consists of planning and executing projects within an organization. It is a discipline that is needed in many types of businesses including information technology, construction, health care, finance, marketing, supply chain, manufacturing and others. The Project Management Certificate is a 12 credit hour certificate designed to prepare individuals for careers in project management in technical and non-technical disciplines. An in-depth examination of project management practices, processes, tools and techniques, and knowledge areas is explored.

The first course in the certificate program examines the foundations of project management as defined by the Project Management Institute, which is considered the global standard for project management best practices and is the certifying organization for both the PMP (Project Management Professional) and the CAPM (Certified Associate Project Management) designations. Completion of this certificate will lead to understanding of the project management life cycle and knowledge areas using the Project Management Body of Knowledge, course textbooks, and case studies. Agile practices, scrum, and visual management systems are introduced as emerging project management frameworks.

Additional courses will focus in detail on specific aspects of project management including project scheduling, budgeting, risk management, communication, team management, and the procurement process.

The final course places emphasis on preparation for project management certification.
exams including both the PMP (Project Management Professional) and the CAPM (Certified Associate in Project Management). Completion of the project management certificate satisfies the number of contact hours required to take the CAPM and PMP exams.

**Career Opportunities**

The Project Management certificate is designed to service one of the fastest growing and largest job classifications in both technical and non-technical fields. According to the Bureau of Labor Statistics (BLS), employment as a project manager is expected to continue to increase at a fast rate for the foreseeable future. Several surveys of job outlooks have also rated project management within the top five career paths today and into the future. Certified project managers (PMP, CAPM) earn, on average, 15.6% more than their non-credentialed colleagues who have similar experience.

**More Information**

Accountancy, Finance & Info Systems  
119 South Street, BUS 212  
Big Rapids, MI 49307-2284  
231-591-2434  
AFIS@ferris.edu
Project Management

Program Requirements

Project Management, BS Program Checksheet

Includes:

- Major Courses and General Education Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Project Management?

Project management is a profession that consists of initiating, planning, executing, monitoring and controlling, and closing projects within an organization. Project management is needed in many types of industries including information technology, construction, health care, finance, marketing, supply chain, manufacturing, and government. The Project Management major is designed for students wishing to pursue a career as a Certified Project Management Professional in technical and non-technical disciplines.

The courses in the Project Management major are aligned to best practices as defined by the Project Management Institute, which is considered the global standard for project management and is the certifying organization for the Project Management Professional (PMP), Certified Associate in Project Management (CAPM), and Agile Certified Practitioner (PMI-ACP) designations.

The Project Management Body of Knowledge (PMBOK) and the PMI Agile Framework are the guiding principles for the coursework. An in-depth examination of project management practices, processes, tools and techniques, and knowledge areas are explored. The initial courses in the Project Management major will lay a foundation for students to be successful project managers.

Following the initial courses, the core project management courses focus on the specific aspects of project scope, schedule, cost, quality, resource, communication, risk, stakeholder, and procurement management. Agile practices and visual management systems are introduced as emerging project management frameworks with emphasis on SCRUM.

The final project management courses focus on preparing for the PMP and CAPM exams by taking practice exams and completing a project management internship or completing a capstone project. Completion of the project management major satisfies the contact hours required to take the CAPM and PMP exams.

Career Opportunities
Psychology

Program Requirements

Psychology, AA Program Checksheet

Includes:

- Major Courses, General Education Courses, and Elective Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Psychology? - Program Spotlight

The Psychology Associate in Arts degree is designed for students who intend to transfer into the B.S. in Psychology program at Ferris State University, or a related field. The Psychology Associate in Arts provides students with a solid base of psychological knowledge and its application.

More Information

Program Coordinator: Dr. Christopher Redker
PHONE: 231-591-2576
EMAIL: ChristopherRedker@ferris.edu

Department of Social Sciences
Ferris State University
820 Campus Drive/ASC 2108
Big Rapids, MI 49307-2225
Phone: 231-591-2735
Project managers add business value to organizations by delivering projects on time and on budget. Through 2027, the project management-oriented labor force is expected to grow by 33%, or nearly 22 million new jobs. According to the Bureau of Labor Statistics (BLS), certified project managers earn an average annual salary of $135,800. The Project Management major is designed to serve one of the fastest growing and largest job classifications in technical and non-technical fields. According to the BLS, employment as a project manager is expected to continue increasing at a fast rate for the near future. Several job outlook surveys have rated project management in the top five career paths today and into the future. Certified project managers earn an average of 15.6% more than their non-credentialed colleagues with similar experience.

For More Information

Accountancy, Finance, & Info Systems
119 South Street, BUS 212
Big Rapids, MI 49307-2284
231-591-2434
AFIS@ferris.edu

The College of Business is accredited by the Accreditation Council for Business Schools and Programs (ACBSP). The next accreditation review is February 2028.
http://www.acbsp.org
Psychology

Program Requirements

Psychology, BS Program Checksheet

Includes;

- Major Courses, General Education Courses, and Concentration Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Psychology? - Program Spotlight

Psychology, the scientific study of behavior, emotion, and thought, is the second most popular academic major in the United States. This makes sense when one considers the subject matter of psychology: You and those around you. Very few of us will live in a world or have a job that does not involve regular contact with others. Therefore, there is nothing more interesting and important than learning about yourself and the people with whom you interact.

Career Opportunities

Psychology addresses a range of topics, including learning and memory, drug addiction, IQ and personality testing, counseling issues, research design and data analysis, social and emotional development, etc. The best careers in psychology (therapist, professor, researcher, business consultant) require an advanced degree (i.e., a Ph.D., Psy.D., or a master's degree). Your undergraduate psychology degree at Ferris is an important first step on that career path. However, many students elect to enter directly into the labor force with their bachelor's degree. There are a wide variety of job areas for which psychology graduates are well suited, including human resources, research and development, marketing and sales, special needs casework, and human services program coordination. The psychology program at Ferris provides the ancillary courses and internships to maximize the effectiveness of your degree in preparing you for such careers.

The Psychology Major

Psychology is the science of thought, emotion and behavior. As a student of psychology, you will learn how scientists settle controversial questions about how people act, think, feel, and change. In fact, you will become a part of the scientific process yourself. Find out what is and what is not yet known on a topic of interest to you, and learn how to conduct your own original research to answer some of the unanswered questions. You will develop a set of interdisciplinary studies to broaden your experience and increase your marketability. At the end of your senior year, you will complete either a research project or an internship culminating your studies in psychology.
More Information

Program Coordinator: Dr. Christopher Redker
PHONE: 231-591-2576
EMAIL: ChristopherRedker@ferris.edu

Department of Social and Behavioral Sciences
Ferris State University
820 Campus Drive/ASC 2108
Big Rapids, MI 49307-2225
Phone: 231-591-2735
Psychology

Program Requirements

Psychology, Minor Program Checksheet

Includes:

- Minor Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose the Psychology minor? - Program Spotlight

The psychology minor will enable you to see how psychological variables play an important role in our daily interactions with other people. You will learn how perceptions influence decision-making, how psychological forces shape our opinions and behavior.

Employers list the following skills as extremely important: Interpersonal, teamwork, analytical, oral communications, flexibility, written communications, leadership, and co-op experience. Completing a minor in Psychology will teach you these skills as well as organizational skills, research skills, problem solving skills, environmental skills, and social skills. Graduating with a minor in psychology will make you more effective in your chosen profession, and therefore more marketable.

More Information

ADVISOR: Dr. Meral Topcu
PHONE: 231-591-2751
MAIL: MeralTopcu@ferris.edu

Social and Behavioral Sciences Department
Ferris State University
820 Campus Drive, ASC 2108
Big Rapids, MI 49307
Phone: 231-591-2735
Public Advocacy

Program Requirements

Public Advocacy, Certificate Program Checksheet

Includes:

- Certificate Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Public Advocacy? - Program Spotlight

In the workplace or in the community, we are faced with issues that require people to take position and to advocate for better solutions. Advocacy is a key communication skill for all careers, but especially for careers in law, government and social services. The ability to advocate appropriately and effectively for personal needs contributes to life satisfaction.

More Information

Advisor: Dr. Stephanie Thomson
Phone: 231-591-3504
Email: StephanieThomson@ferris.edu

Department of Humanities
Ferris State University
1009 Campus Drive, JOH 113
Big Rapids, MI 49307
Phone: 231-591-3675
Public Advocacy

Program Requirements

Public Advocacy, Minor Program Checksheet

Includes:

- Minor Courses and Elective Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose a Public Advocacy Minor? - Program Spotlight

In the workplace or in the community, we are faced with issues that require people to take a position and to advocate for better solutions. Advocacy is a key communication skill for all careers, but especially for careers in law, government and social services. The ability to advocate appropriately and effectively for personal needs contributes to life satisfaction. Students select elective courses from an array of disciplines to build a knowledge base for the workplace or community for which they will advocate.

More Information

Advisor: Dr. Stephanie Thomson  
Phone: 231-591-3504  
Email: StephanieThomson@ferris.edu

Department of Humanities  
Ferris State University  
1009 Campus Drive, JOH 119  
Big Rapids, MI 49307-2280  
Phone: 231-591-3675
Public Health

Program Requirements

Public Health, Minor Program Checksheet

Includes:

- Minor Courses and Elective Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose the Public Health Minor? - Program Spotlight

According to the U.S. Department of Labor Bureau of labor Statistics, employment of health educators and community health workers is projected to grow 21 percent from 2012 to 2022, faster than the average for all occupations. Growth will be driven by efforts to improve health outcomes and to reduce healthcare costs by teaching people about healthy habits and behaviors and utilization of available health care services. Importantly, the Public Health Minor will meet a need that has been identified within the College of Health Professions as an additional area of expertise that could complement other programs within the College. In addition, it is noted that there may be students in programs outside of CHP who would find a Public Health minor to be a value-added component to support their field of practice. With the growing interest in public health with the Affordable Care Act enactment and the increasing emphasis on health promotion, this minor would fit well with a wide variety of other disciplinary programs.

More Information

Emmanuel D. Jadhav, DrPH, MHM, MSc
Program Coordinator, Bachelor of Science in Public Health (BSPH) Program
Ferris State University
College of Health Professions
200 Ferris Drive, VFS 428
Big Rapids, MI 49307-2740
Phone: 231-591-3134
Email: jadhav@ferris.edu
Public Health

Program Requirements

Public Health, BS Program Checksheet

Includes:

- Major Courses and General Education Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Public Health? - Program Spotlight

Public health is the science and art of preventing illness and disease and promoting evidence-based health practices with the goal of improving the quality of life. It is concerned with threats to health based on population health analysis. The population in question can be as small as a handful of people, or as large as all the inhabitants of several continents. The dimensions of health can encompass a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity, as defined by the United Nations World Health Organization (WHO). Public health incorporates the interdisciplinary approaches of epidemiology, biostatistics and a vast array of health services. A host of specialists including educators, journalists, researchers, administrators, environmentalists, demographers, social workers, laboratory scientists and more, work to protect the health of the public. Public health professionals serve local, national and international communities in settings such as environmental health, community health, behavioral health, health economics, public policy, insurance and occupational health. Public health is a very rewarding field offering great personal fulfillment in serving others.

According to Healthy People 2010 (a study of the U.S. Public Health Infrastructure), there is growing demand for public health professionals, which will exponentially increase with the advent of recently passed health care reform legislation known as the Affordable Care Act. Historically, public health education existed as a professional degree program with training at the graduate level only. In 2003, the Institute of Medicine (IOM) recommended that public health education be accessible to all undergraduates.

The theme of the Ferris Public Health program is “rural public health” which is intended to focus on populations that are underserved by virtue of their geographic location in rural settings. The BSPH program includes both traditional and accelerated tracks, with the accelerated track culminating in a Master of Public Health (MPH) degree within 5 years (See the MPH program catalog page for further information about this track).
The Bachelor of Science in Public Health (BSPH) prepares students to pursue entry level careers in public health within governmental, private or non-profit sectors in areas such as public health education, health promotion, environmental health, community health, epidemiology, nutrition, health informatics, biostatistics, global health, maternal and child health, health economics, health services research, health policy and health planning and assessment. Because public health professionals work in such a wide variety of settings and often work in multi-disciplinary capacities, the salaries vary significantly from job to job. An estimated salary range for BSPH graduates is $37,000 to $50,000 and can then range from $60,000 to $150,000 for MPH graduates, depending on the area of specialization. 
(Source for this and other information: Association of Schools of Public Health website: https://www.apha.org/what-is-public-health)

According to the U.S. Department of Labor-Bureau of labor Statistics, employment of health educators and community health workers is projected to grow 21 percent from 2012 to 2022, faster than the average for all occupations. Growth will be driven by efforts to improve health outcomes and to reduce healthcare costs by teaching people about healthy habits and behaviors and utilization of available health care services (source: http://www.bls.gov/ooh/community-and-social-service/health-educators.htm).

More Information

College of Health Professions
Ferris State University
200 Ferris Drive
Big Rapids, MI 49307
231-591-2270
CHP@ferris.edu

The College of Health Professions Website:
http://www.ferris.edu/HTMLS/colleges/alliedhe/

For More Information about Public Health Careers, Programs and Accreditation, please refer to the Association of Schools of Public Health (ASPH) website: http://www.aspph.org
Public Health

Program Requirements

Public Health, MPH Program Checksheet

Includes:

- Major Courses and Concentration Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Public Health? - Program Spotlight

Public health is the science and art of preventing illness and disease and promoting evidence-based health practices with the goal of improving the quality of life. It is concerned with threats to health based on population health analysis. The population in question can be as small as a handful of people, or as large as all the inhabitants of several continents. The dimensions of health can encompass a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity, as defined by the United Nations World Health Organization (WHO). Public health incorporates the interdisciplinary approaches of epidemiology, biostatistics and a vast array of health services. A host of specialists including educators, journalists, researchers, administrators, environmental scientists, demographers, social workers, laboratory scientists and more, work to protect the health of the public. Public health professionals serve local, national and international communities in settings such as environmental health, occupational health, community health, behavioral health, health economics, public policy and insurance. Public health is a very rewarding field offering great personal fulfillment in serving others.

The FSU Master of Public Health (MPH) program focuses on the preparation of public health and health care practitioners to better serve the community’s health needs. Graduates of this program will be able to help improve the health status of the communities in which they live and work, most notably in the underserved, rural population areas. The theme of the FSU Public Health programs at both the undergraduate and graduate levels is to address the need for an emphasis on “Public Health for Rural, Underserved Populations”.

Career Opportunities

With a Master of Public Health degree, one can work in the fields of health services administration, biostatistics, biomedical laboratory work, health and behavioral science education, environmental health, global health, nutrition, public health practice and program management, and epidemiology. Those with an MPH often work in public and private organizations, such as the Centers for Disease Control and Prevention, the Red Cross, American
Cancer Society, federal health departments, food safety agencies, university systems in teaching and research, insurance companies, and pharmaceutical companies. Medical and health service managers (also called health care executives or health care administrators) plan, direct, and coordinate medical and health services.

In contrast to the entry level preparation of the graduate of the BSPH program, the MPH graduate is a member of the upper-level management team. Therefore, the MPH graduate should be able to perform advanced level job responsibilities of the public health professional. Such job responsibilities differentiate the entry-level professional from upper-level management staff and include:

- Administration & Management of Programs and Staff
- Policy Development
- Grant Proposal Writing and Fund-Raising
- Budget Management
- Program Planning, Development and Assessment
- Research Design and Evaluation

According to the U.S. Department of Labor, Bureau of labor Statistics, employment of health educators and community health workers is projected to grow 21 percent from 2012 to 2022, faster than the average for all occupations. Growth will be driven by efforts to improve health outcomes and to reduce health care costs by teaching people about healthy habits and behaviors and utilization of available health care services (source: http://www.bls.gov/ooh/community-and-social-service/health-educators.htm). Depending on the area of public health practice, annual salaries can range from $40,000 to $160,000 (source: https://www.apha.org/what-is-public-health).

**More Information**

College of Health Professions
Ferris State University
200 Ferris Drive
Big Rapids, MI 49307

231-591-2270

chp@ferris.edu

The College of Health Professions Website:
http://www.ferris.edu/HTMLS/colleges/alliedhe/

For more Information about public health careers, programs and accreditation, please refer to the Association of Schools & Programs of Public Health (ASPPH) website: http://www.aspph.org.
Public Relations PURE

Official Program Checksheet

Why Choose Public Relations?

The Public Relations major at Ferris is one of the only programs in the nation offered as a business curriculum; a distinction not lost on employers who consider the combination both logical and highly desirable. Additionally, Ferris has the only nationally certified PR program (CEPR) in the state of Michigan, and one of only 27 in the nation. The solid business curriculum is combined with eight PR-specific courses, more than any program in the state. Our faculty bring both real-world experience and professional certification (APR) to the classroom, where students are required to work on real projects for real clients. The program’s proven excellence and distinctive offerings give our graduates a real competitive advantage in the workplace.

Career Opportunities

Public Relations is cited as one of the fastest growing professions, with anticipated growth of more than 24% through 2018 (US Dept. of Labor). According to the Public Relations Society of America, the average practitioner’s salary is $69,000, with starting salaries ranging from $35-50,000. Top PR executives can make well into the six-figure salary range. Our program requires students to start the career search process early by making excellent contacts through job shadows, business networking, and internships. Graduates land jobs with corporate, nonprofit, and governmental organizations throughout the United States (and beyond).

Admission Requirements

New Students: 2.5 high school GPA (on a 4.0 scale) and two of the three criteria below: (1) English ACT score of 16 or higher, or SAT Writing score of 370 or higher; (2) Math ACT score of 19 or higher, or SAT Math score of 460 or higher; (3) Reading ACT score of 19 or higher, or SAT Reading score of 430 or higher.

Transfer Students: Combined college or university GPA of 2.35 (on a 4.0 scale) from all institutions attended. GPA is based on completion of 12 credit hours or more. Transfer equivalency for FSU ENGLISH 150 or placement during the first semester at FSU which would require an ACT English score of 16 or higher; Compass score 70 – 100. Transfer equivalency for FSU MATH 115 or placement during the first semester at FSU which would require an ACT Math score of 19 or higher; Compass Algebra score 46 - 74 and HS Algebra with 2.0.

Exceptions for New and Transfer Students: Applicants not meeting the above criteria but having a 2.35 High School GPA and at least a 16 ACT in Math or Reading (2.00 Overall GPA for Transfer Students) can be considered for conditional admission in a College of Business Pre-Program. Any mitigating circumstances will be considered on an individual basis by the College
of Business Dean’s Office.

Pre-Program students must complete a minimum of 12 FSU credits (excluding developmental courses) with a 2.35 GPA; courses must include ENGL 150 and MATH 115 before being considered for admission into their program of choice. Students must meet admission criteria for their chosen degree program by the time they have earned 30 credits.

More Information:
Additional guidance can be found on the College of Business Webpage under the Admissions tab.

**Graduation Requirements**

The Public Relations program at Ferris leads to a bachelor of science degree in business with a major in Public Relations. Graduation requires a minimum 2.0 GPA in the core courses, in the major and overall.

**More Information**

Marketing Department  
119 South Street/BUS 212  
Big Rapids, MI 49307-2284  
Phone: 231-591-2426  
Email: MKTG@ferris.edu

The College of Business is accredited by the Accreditation Council for Business Schools and Programs (ACBSP.) Next Accreditation Review is February 2018.  
http://www.acbsp.org
Public Relations PURE

Official Program Checksheet

Why Choose a Public Relations Certificate?

As the only nationally certified Public Relations program in the state of Michigan (and one of 27 in the U.S.), Ferris State’s Public Relations program will give you the skills and knowledge to excel. The four courses required for the certificate provide students with more content and experience than many programs offer in their entire major. With employment growth rates in public relations projected to be more than 24% through 2018, gaining additional skills in PR will significantly enhance your current major.

Research shows that excellent written and verbal communication skills are the most sought after trait of potential employers. A certificate in PR from Ferris will help give you these skills. You will learn how to build positive relationships with an organization’s key target groups to improve long-term reputation, goodwill, and the bottom line. You will learn to create and implement strategic communication material such as press releases, speeches, events, videos, social media, and interviews. A certificate in public relations from Ferris will give you a solid foundation in business communication and will be a strong asset in your career.

Admission Requirements

Any person admitted to a Ferris State University degree program may enroll in courses for undergraduate COB certificates. No more than 50% of the credits in a certificate may be transferred from another institution. If a student is in a FSU degree-seeking program, the certificate will not be granted if more than 50% of the certificate credits are required in the program/major.

Individuals wanting to advance their career, but not admitted to an FSU degree program, may also earn undergraduate COB certificates through the non-degree program.

Admission/registration process for individuals seeking only a certificate:

- Individuals wishing only to complete a COB certificate may enroll as a non-degree student restricted to a maximum of 9 credits per semester and a total of 15 credits.
- Unless it is determined that regular program admission criteria should be met in order to
complete the certificate successfully and be a contributing member of the course, non-degree students need only show proof of a 2.35 high school GPA where competency is required and complete the simple non-degree application process by accessing the FSU website. FSU provides part-time non-degree students with a streamlined method to register early for day or evening courses on the FSU campus through the Educational and Career Counseling Center located in Starr 313.

- An advisor can be assigned by the College of Business in the certificate program.

Admission process for non-degree certificate students wishing to pursue a bachelor or associate's degree:

- If the student decides to pursue a bachelor or associate's degree, admission criteria for the College of Business is initiated when the “Program Change Form” request is processed.
- The student will then complete the regular admission process for FSU.

Any mitigating circumstances will be considered on an individual basis by the College of Business Dean’s Office.

More Information:
Additional guidance can be found on the College of Business Webpage under the Admissions tab.

Graduation Requirements

You will receive the Public Relations Certificate after completion of the requirements for the certificate with a minimum 2.0 grade point average.

No more than 50% of the credits in this certificate may be transferred from another institution, nor will the certificate be granted if more than 50% of the certificate credits are specifically required in the students major.

More Information

Marketing Department
119 South Street, Business 212
Big Rapids, MI 49307-2284
Phone: 231-591-2426
Email: MKTG@ferris.edu
Public Relations

Program Requirements

Public Relations, Minor Program Checksheet

Includes:

- Minor Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Public Relations Minor? - Program Spotlight

PR professionals communicate with a wide variety of audiences in their role as advocates for an organization. PR specialists excel in all areas related to communication and relationship building, such as writing, public speaking, event planning, social media, publicity, storytelling, branding, and reputation management. Our PR minor will give you a solid foundation in real-world tools of the trade. You will be trained in one of the best programs in the nation, learning how to communicate effectively to meet executive-level expectations.

Career Opportunities

At its core, PR is business communication in the service of reputation management, therefore, PR can be found in literally every organization, making it a high-demand job. A PR minor will supplement your major with practical knowledge, skills, and abilities desired by employers. Trained PR specialists start out earning between $35-50,000, with seasoned professionals at the executive level making well into six-figure salaries. The real-world training in this curriculum gives students a foundation for creating material in corporations, agencies, nonprofit, and government organizations. Job titles include work in media relations, sales promotion, public advocacy, human resources, speech writing, account executive, event planning, and broadcasting.

More Information

Marketing Department
119 South Street, BUS 212
Big Rapids, MI 49307-2284
Phone: 231-592-2426
E-mail: MKTG@ferris.edu
Quality Leadership

Program Requirements

Quality Leadership, Certificate Program Checksheet

Includes:

- Certificate Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose a Quality Leadership Certificate?

The field of Quality is increasingly important in manufacturing, medical, and all aspects of a business. This certificate emphasizes quality systems and a managerial approach to quality.

Offered part-time at the Ferris Statewide Grand Rapids location.

Career Opportunities

Your understanding of quality systems and management will increase your value and employability in such areas as marketing, engineering, sales, human resources, and general management.

More Information

School of Design and Manufacturing

Quality Leadership Certificate @ Ferris Statewide Grand Rapids, MI
151 Fountain Street, NE
Grand Rapids, MI 49503
Phone: 616-451-4777 or 800-998-3425
Email: ferrisgr@ferris.edu
https://www.ferris.edu/HTMLS/statewide/qualityleadership_cert.htm

Ferris State University

College of Engineering Technology
1009 Campus Drive, JOH 200
Big Rapids, MI 49307-2280
Phone: 231-591-2890
Email: technology@ferris.edu
www.ferris.edu/technology
Quality Technology

Program Requirements

Quality Technology, Certificate Program Checksheet

Includes:

- Certificate Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose a Quality Technology Certificate?

The field of Quality is increasingly becoming more important in manufacturing, medical, and in all aspects of a business. This certificate allows you to increase your technical skills and experience with an understanding of the fundamentals of data analysis and experiment design.

Offered part-time at the Ferris Statewide Grand Rapids location.

Career Opportunities

Your quality expertise will increase your value and employability in such areas as marketing, sales, human resources, and general management. The program prepares you to take the Certified Quality Exam (CQE) administered by the American Society of Quality.

More Information

School of Design and Manufacturing
Quality Technology Certificate @ Ferris Statewide Grand Rapids
151 Fountain Street, NE
Grand Rapids, MI 49503
Phone: 616-451-4777 or 800-998-3425
Email: ferrisgr@ferris.edu
https://www.ferris.edu/HTMLS/statewide/qualityleadership_cert.htm

Ferris State University
College of Engineering Technology
1009 Campus Drive, JOH 200
Big Rapids, MI 49307-2280
Phone: 231-591-2890
Email: technology@ferris.edu
www.ferris.edu/technology

ADA compliant checksheets are being developed for the 2020-2021 Catalog. If you would like to
request an ADA compliant checksheet before the 2020-2021 catalog is published, please send your request to FSUCurriculum@ferris.edu.
Radiography

Program Requirements

Radiography, AAS Program Checksheet

Includes:

- Major Courses, General Education Courses, and Qualifying Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Radiography?

The Radiography program at Ferris is one of the largest and best-known programs in the country. The program is accredited by the Joint Review Committee on Education in Radiologic Technology. Ferris graduates are highly sought after employees in hospitals, doctors' offices, forensic medicine and other health care organizations. Graduates of the program are eligible to take the national certifying examination of the American Registry of Radiologic Technologists.

Perhaps the most familiar use of the x-ray is the diagnosis of broken bones. However, medical uses of radiation go far beyond that. Radiographers produce x-ray films (radiographs) of parts of the human body to assist a physician in the diagnosis of disease and trauma. Experienced radiographers may perform more complex imaging tests, such as CT, MRI, mammography, angiography and surgical procedures.

Students enter the program in the fall semester and spend the first three semesters on the Big Rapids campus. Studies during this period include general education and technical courses. Ample laboratory periods provide an opportunity to apply the theory and principles learned in the lecture sessions. During the final three semesters students work with patients in an off-campus clinical education center. These sites are located throughout the state in hospitals affiliated with the University to provide clinical experience and continued academic instruction.

Career Opportunities

According to the Bureau of Labor and Statistics, employment growth through the year 2018 is expected to increase by 17.2%. Job prospects should be best for persons trained in multiple disciplines such as radiography and CT, MRI, or ultrasound. More than half of jobs for technologists are in hospitals; the rest being in physicians' offices and clinics, including diagnostic imaging centers.

According to the ASRT Wage and Salary Survey for 2010, the national median salary for a registered radiographer across the nation was $61,733, depending on discipline, position,
workplace, education, years in the profession and other demographic factors. Most graduates will earn a starting salary between $15 - $22 an hour.

**More Information**

College of Health Professions  
Ferris State University  
200 Ferris Drive  
Big Rapids, MI 49307-2740  
231-591-2270  
chp@ferris.edu

American Society of Radiologic Technologists  
15000 Central Avenue, S.E.  
Albuquerque, NM 87123-3917  
www.asrt.org

American Registry of Radiologic Technologist  
1255 Northland Drive  
St. Paul, MN 55120  
(651) 687-0048  
www.arrt.org

Information concerning the accreditation of radiography programs is available from:  
Joint Review Committee on Education in Radiologic Technology  
21 N. Wacker Drive, Suite 2850  
Chicago, IL 60606-3182  
Phone: (312) 704-5300  
www.JRCERT.org
Real Estate

Program Requirements

Real Estate, Certificate Course Checksheet

Includes:

- Certificate Courses
- Admission Requirements
- Graduation Requirements

Why Choose Real Estate?

*This program is under revision and is not available at this time.*

The Real Estate Certificate will give you a very broad and comprehensive knowledge to apply, not only to the real estate course and license examination, but it will also provide a good foundation to succeed once you become a real estate professional. This course will also prepare you with a knowledge set for other careers and areas of Real Estate

More Information

Management Department
119 South Street/BUS 212
Big Rapids, MI 49307-2284
Phone: 231-591-2427
Email: MGMT@ferris.edu
Respiratory Care

Program Requirements

Respiratory Care, AAS Program Checksheet

Includes:

- General Education Courses, Qualifying Courses, and Professional courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Respiratory Care?

The Respiratory Care field offers challenge and mobility. Working as a member of the health care team, you will participate in the diagnosis, treatment and rehabilitation of patients with diseases of the heart and lungs. You will be prepared to give patients both emergency and long-term life support in a continually changing environment.

The curriculum is designed to include a combination of theory, laboratory and clinical coursework. Among the areas of study are human anatomy and physiology, pathophysiology, chemistry, pharmacology and mathematics. Other courses deal with therapeutic and diagnostic procedures and tests, equipment, patient assessment, cardiopulmonary resuscitation, the application of clinical practice guidelines, patient care outside of hospitals, cardiac pulmonary rehabilitation, respiratory health promotion and disease prevention. The program is fully accredited by the Commission on Accreditation for Respiratory Care.

Students will have the opportunity to practice skills in a laboratory setting prior to clinical practicum experiences that will occur in a variety of health care settings. NOTE: The Ferris Respiratory Care Program has clinical internships in various semesters of the program and because of limited space, specific clinical site locations cannot be guaranteed. Travel and housing may be necessary to attend some clinical internship experiences.

Upon successful completion of the program, graduates are eligible to sit for the Therapist Multiple Choice (TMC) Exam administered by the National Board for Respiratory Care. Successful completion at the lower cut score level awards the graduate the Certified Respiratory Therapist (CRT) credential and eligibility to apply for the Michigan State license. Successful completion of the TMC at the higher cut score level makes the graduate eligible to sit for the Clinical Simulation Examination for the Registered Respiratory Therapist (RRT) credential.

Career Opportunities

Employment opportunities include critical ventilatory management, cardiopulmonary
rehabilitation, pulmonary function testing, neonatal and pediatric respiratory care as well as home care. Prospects for the future are excellent. Growing attention to heart diseases and their cause, new developments in treating and preventing disease as well as an aging population promise to broaden the field and provide more job opportunities. The average annual salary for a fully licensed and credentialed Respiratory Therapist is $50,070.

More Information

College of Health Professions
Ferris State University
200 Ferris Drive
Big Rapids, MI 49307
Phone: 231-591-2270 or
1-800-462-8553, ext. 2266
Respiratory Therapy

Program Requirements

Respiratory Therapy, BS Program Checksheet

Includes:

- Major Courses, General Education Courses, and Concentration Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Respiratory Therapy?

The baccalaureate program in respiratory therapy is designed for Registered Respiratory Therapists with an associate degree in respiratory therapy who want to earn a Bachelor of Science degree in Respiratory Therapy in a student-centered learning environment. Students engage in self-directed learning activities, advance their knowledge in the areas of critical thinking, exhibit values for lifelong learning, synthesize evidence based information and develop leadership skills.

Career Opportunities

This program is meant to advance the associate degreed Registered Respiratory Therapist into the next phase of education. It is focused on those who are interested in advanced care or leadership.

This fully on-line program is a self-paced program meant for the working individual.

More Information

Program Advising

Emily Zyla, MS, RRT, LRT
Clinical Coordinator
emilyzyla@ferris.edu

Currently seeking accreditation by the Commission on Accreditation for Respiratory Care (CoARC). CoARC can be contacted as follows:

CoARC, 1248 Harwood Rd., Bedford, TX, 76021-4244
Restaurant and Food Industry Management

Program Requirements

Restaurant and Food Industry Management, AAS Program Checksheet

Includes:

- Major Courses and General Education Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Restaurant & Food Industry Management?

With over $862 billion in sales in 2019, the restaurant industry is a fast-paced environment where innovation and customer experience rule. Over 1 million locations within the United States alone provide our graduates with limitless opportunity to pursue a career in an industry focused on food waste reduction and environmental sustainability. As simplicity and locally sourced products continue to gain momentum in the foodservice experience, our program opens doors for a career with the potential to impact your community and our world.

The curriculum at Ferris encompasses all aspects of food production and guest service with particular emphasis on fiscal responsibility, leadership functions, and regulatory compliance. A balance between theory and practice is achieved by hands-on experience and real-life application illustrated through our dynamic industry partnerships. Whether on a site visitation or through a professional development opportunity, students meet and interact with industry professionals to learn cutting-edge concepts and skills necessary for success in the industry. During their academic career, students will earn relevant nationally recognized certifications, including ServSafe, ServSafe Allergens, CPR with AED and First Aid, and TIPS.

Students wishing to continue their education may easily ladder into the Bachelor of Science in Business degree in Hospitality Management with a Food & Beverage Management Concentration.

Career Opportunities

Graduates of the Restaurant and Food Industry Management degree, with its business emphasis, are prepared to pursue careers within the food & beverage industry at the managerial level in a variety of different types of operations. Examples of such positions include:

- Dining Room Manager
- Bar Manager
- Catering Manager
- Food & Beverage Director
More Information

Hospitality Programs
1319 Cramer Circle/WCO 106
Big Rapids, MI 49307
Phone: (231) 591-2382
Email: hospitality@ferris.edu
Restaurant and Food Industry Management

Program Requirements

Restaurant and Food Industry Management, Certificate Program Checksheet

Includes:

- Certificate Courses and Elective Courses
- Admission Requirements
- Graduation Requirements

Why Choose Restaurant and Food Industry Management?

The Restaurant and Food Industry Management certificate is designed to complement any degree by providing the fundamental knowledge necessary to successfully manage a food service operation. Required courses focus on essential financial skills and service leadership critical to ensuring profitability and achieving high levels of guest satisfaction. Electives allow students the option of selecting a course to fit their particular needs and interests such as bar management, nutrition, culinary skills, or purchasing. Throughout their studies students will have the opportunity to earn several nationally recognized certifications including ServSafe, ServSafe Allergens, CPR with AED and First Aid as part of their required courses.

Undergraduate Certificate Programs' Admission Criteria

Any person admitted to a Ferris State University degree program may enroll in courses for undergraduate COB certificates. No more than 50% of the credits in a certificate may be transferred from another institution. If a student is in a FSU degree-seeking program, the certificate will not be granted if more than 50% of the certificate credits are required in the program/major. The certificate will be granted upon completion with an average GPA of 2.0 or higher in the courses designated for the certificate.

Individuals wanting to advance their career, but not admitted to an FSU degree program, may also earn undergraduate COB certificates.

Admission process for individuals seeking only a certificate:

- Applicant should show proof of high school graduation with a 2.35 GPA. If it is determined by the COB Dean’s Office/SAA that regular program admission criteria should be met in order to complete the certificate successfully and be a contributing member of the course, all college transcripts should be submitted to the Admissions Office. Once admitted, an advisor will be assigned by the College of Business in the certificate program.
- Dual enrolled/concurrent students must complete the high school degree (provide...
transcript) before the certificate will be granted from FSU.

- Students wishing to pursue a bachelor or associate's degree must meet the admission criteria for the program. This criteria review is initiated when the “Program Change Form” request is processed through the COB Dean’s Office/SAA.

Any mitigating circumstances will be considered on an individual basis by the College of Business Dean’s Office/SAA.

**More Information**

For more information, contact:

Hospitality Management Program  
West Commons 106  
1319 Cramer Circle  
Big Rapids, MI 49307  
Phone: 231-591-2382  
Email: hospitality@ferris.edu
Retailing

Program Requirements

Retailing, Certificate Program Checksheet

Includes:

- Certificate Courses
- Admission Requirements
- Graduation Requirements

Why Choose Retailing?

If you are interested in a dynamic, fast-moving career with potential for early responsibility and advancement, a retailing certificate will provide you with a route to success by providing you with skills in the following:

- Merchandise buying for profitability
- Inventory management
- Understanding buyer behavior to meet customer needs

You will be exposed to a powerful set of concepts that will serve you, not just in a retailing career pathway, but in any business field you choose that requires serving customers and successfully meeting corporate goals.

Career Opportunities

By itself the Retail Certificate provides students with the industry-specific skills to support careers in merchandising, store operations, or independent shop ownership. Taken as part of a four-year degree program, students with this certificate also qualify for executive training, buyer or management development programs with major retail chains.

More Information

Marketing Department
119 South Street, Business 212
Big Rapids, MI 49307-2284
phone: 231-591-2426
email: MKTG@ferris.edu
Risk Management and Insurance

Program Requirements

Risk Management and Insurance, BS Program Checksheet

Includes:

- Major Courses and General Education Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose the Risk Management and Insurance BS Degree? - Program Spotlight

The Risk Management and Insurance program offers students a wide array of career choices in a dynamic and growing industry. The goals of this program are to provide students with a well-rounded, broad based business education, complemented with a carefully designed risk management and insurance concentration that includes flexibility for students to create their own area of emphasis. Areas of study include: personal and commercial insurance, risk management, marketing, sales, customer service, employee benefits, law, insurance company operations, probability, life insurance, health insurance and annuities. Students will also be able to obtain practical, on the job experiences by experiencing an internship as part of their course of study. In addition, students can earn exam waivers toward the coveted Chartered Property & Casualty Underwriter (CPCU) designation, and may also obtain their property and casualty producers license.

The Risk Management and Insurance faculty have solid academic credentials, and years of practical experience within the industry. The business faculty adds to this exciting field of study by combining their corporate, consulting, and academic experience that will enable them to deliver the courses in a practical and understandable fashion.

Career Opportunities

Employers are eager to hire qualified graduates. Opportunities include positions as agents, field representatives, underwriters, claims representatives, loss control professionals, and risk managers. There are also a wide variety of positions in technology, finance, accounting, marketing, and statistics. Graduates have demonstrated a very high level of job satisfaction, opportunities for creativity, advancement, and excellent growth of income. With the recognition of this program by many national and global insurance organizations, graduates will also have the opportunity to work in various areas of America, and in other countries.

This degree will prepare students for an exciting career within the insurance industry, and it will
also provide students with the balance of managerial courses that will prepare them for supervision, management, and leadership roles.

**More Information**

Ferris State University  
College of Business  
Management Department  
119 South Street, BUS 212  
Big Rapids, MI 49307  
Phone: 231-591-2427  
Email: MGMT@ferris.edu
Risk Management and Insurance

Program Requirements

Risk Management and Insurance, Minor Program Checksheet

Includes:

- Minor Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose the Risk Management and Insurance Minor? - Program Spotlight

The Risk Management and Insurance minor offers students in any major the knowledge and skills necessary to combine insurance acumen as a complement to their major. Students will experience the most important aspects of the risk and insurance concentration. Areas of study include: principles of risk management, personal insurance, commercial insurance, insurance company operations, insurance law, and employee benefits. The Risk Management and Insurance minor will help prepare students for exciting careers within their major, by providing additional depth and expertise within the risk management and insurance field.

More Information

Ferris State University
College of Business Room 212
Management Department
119 South Street, Big Rapids, MI 49307-2284
Phone: 231-591-2427
Email: MGMT@ferris.edu
Risk Management and Insurance

Program Requirements

Risk Management and Insurance, Certificate Program Checksheet

Includes:

- Certificate Courses
- Admission Requirements
- Graduation Requirements

Why Choose the Risk Management and Insurance Certificate? - Program Spotlight

The Risk Management and Insurance certificate provides students in any major the basic knowledge and skills in the field of insurance. Topics covered in this certificate are essential foundational courses. This certificate will enhance any degree and provide graduates with distinctiveness.

Career Opportunities

Career opportunities in risk management and insurance management have never been stronger. Almost half of insurance industry professionals are over age 45, with 25% of the industry expected to retire in the next few years. Possible risk and insurance positions include helping people and businesses put their lives back together after disasters (claims professionals), finding ways to minimize risks (loss prevention engineers), managing an organization’s risk program (risk managers or risk analysts), matching customers with appropriate insurance products for their needs (insurance agents), and analyzing/pricing insurance applications according to their risk levels (underwriters).

More Information

Ferris State University
College of Business Room 212
Management Department
119 South Street, Big Rapids, MI 49307-2284
Phone: 231-591-2427
Email: MGMT@ferris.edu
Rubber

Program Requirements

Rubber, Minor Program Checksheet

Includes:

- Major Courses and General Education Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose a Minor in Rubber?

The Rubber industry is currently seeing a tremendous need for technologists and engineers. Ferris State holds a unique position of being the only school in the country with a Bachelor of Science in Rubber Engineering Technology. Our program and facilities provide hands-on experience in a laboratory setting that mimics the material development and processing labs utilized in industry.

Students completing a Minor in Rubber will possess a set of skills that will ease the transition from college to the workforce, and help them to make an immediate contribution.

Students completing the Rubber Minor:

- Identify major components of a rubber compound and its impact on compound properties.
- Demonstrate proficiency in operating common rubber compounding and processing equipment.
- Operate standard testing equipment, interpret results, and generate reports.

Career Opportunities

Students that pursue this Minor will add a very marketable skill set that will make them more attractive to companies in the Rubber industry. This will enhance their ability to find jobs in the manufacturing and product development sector.

For More Information

School of Design and Manufacturing
Plastics and Rubber Engineering Technology Programs

Ferris State University
Rubber Engineering Technology

Program Requirements

Rubber Engineering Technology, BS Program Checksheet

Includes:

- Major Courses and General Education Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Rubber Engineering Technology?

The Rubber Engineering Technology program was started in 1998 based on an urgent need in the rubber industry for technically trained personnel. It is the ONLY Rubber Engineering Technology bachelor's degree program in the United States, so many companies are competing for these graduates. Approximately one million people across the country work in the rubber industry, making it one of our largest employers.

This innovative program provides students with a diversified background that includes advanced coursework in the mixing and testing of rubber compounds for industry standards, the processing of rubber compounds into finished products that meet customer requirements, product and mold design, and materials selection and properties. Classes emphasize hands-on learning, using equipment that is currently used in the industry.

Partnership with Industry

The rubber industry, working with the State of Michigan, generated more than $7,000,000 to create the National Elastomer Center, a building on campus with state-of-the-art laboratories and classrooms. Many companies actively support us by donating equipment and materials, making on-campus presentations, and sponsoring field trips to their facilities.

Students also serve a ten-week paid internship at a rubber company gaining valuable firsthand experience before graduation. Some out-of-state companies pay room and board in addition to salary to attract our interns. The experience helps the students decide what type of position they would most enjoy after graduation.

Career Opportunities

After completing the Rubber Engineering Technology program, students are immediately employable by the rubber industry. One hundred percent placement is expected in the foreseeable future. Bachelor degree graduates usually start in engineering positions such as process, product or project engineer, quality control engineer, or technical sales representative.
The rubber industry is looking for graduates of this Ferris program to become their senior engineers and managers of the future. Bachelor degree graduates should make approximately $65,000 per year at graduation and with ten years' experience can make $100,000 per year or more.

More Information

School of Design and Manufacturing
Plastics and Rubber Engineering Technology Programs
919 Campus Drive, NEC 211
Big Rapids, MI 49307
Phone: 231-591-2640
Email: plasticsandrubber@ferris.edu
https://www.ferris.edu/CET/design-mfg/Rubber/homepage.htm

Ferris State University
College of Engineering Technology
1009 Campus Drive, JOH 200
Big Rapids, MI 49307-2280
Phone: 231-591-2890
Email: technology@ferris.edu
www.ferris.edu/technology
Ski Resort Management

Program Requirements

Ski Resort Management, Certificate Program Checksheet

Includes:

- Certificate Courses
- Admission Requirements
- Graduation Requirements

Why Choose Ski Resort Management Certificate

The Ski Resort Management certificate is designed to prepare students with the prerequisite technical skills and knowledge necessary for successful employment in entry-level management positions within the ski industry. Emphasis is placed on understanding the functions of lift operations, snowmaking, trail grooming, equipment rental, and repair facilities. Additional coursework focuses on providing high levels of guest service, managing retail operations, and risk management.

Ski resorts are large operations and require a large workforce. The certificate in Ski Resort Management can lead to opportunities such as:

- Ski Operations Manager
- Business Operations Manager
- Lift Operations Supervisor

Undergraduate Certificate Programs' Admission Criteria

Any person admitted to a Ferris State University degree program may enroll in courses for undergraduate COB certificates. No more than 50% of the credits in a certificate may be transferred from another institution. If a student is in a FSU degree-seeking program, the certificate will not be granted if more than 50% of the certificate credits are required in the program/major. The certificate will be granted upon completion with an average GPA of 2.0 or higher in the courses designated for the certificate.

Individuals wanting to advance their career, but not admitted to an FSU degree program, may also earn undergraduate COB certificates.

Admission process for individuals seeking only a certificate:

- Applicant should show proof of high school graduation with a 2.35 GPA. If it is determined by the COB Dean’s Office/SAA that regular program admission criteria should be met in order to complete the certificate successfully and be a contributing member of
the course, all college transcripts should be submitted to the Admissions Office. Once admitted, an advisor will be assigned by the College of Business in the certificate program.

- Dual enrolled/concurrent students must complete the high school degree (provide transcript) before the certificate will be granted from FSU.
- Students wishing to pursue a bachelor or associate’s degree must meet the admission criteria for the program. This criteria review is initiated when the “Program Change Form” request is processed through the COB Dean’s Office/SAA.

Any mitigating circumstances will be considered on an individual basis by the College of Business Dean’s Office/SAA.

**More Information**

Hospitality Management Program  
West Commons 106  
1319 Cramer Circle  
Big Rapids, MI 49307  
Phone: 231-591-2382  
Email: hospitality@ferris.edu
Small Business and Entrepreneurship

Program Requirements

Small Business and Entrepreneurship, Minor Program Checksheet

Includes:

- Minor Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose the Small Business and Entrepreneurship Minor?

The Small Business Entrepreneurship minor is a practical preparation for individuals interested in starting an entrepreneurial venture or managing a small business, particularly as it relates to their major field of study. The six-course sequence will guide students through the process of conceptualizing and testing business ideas, developing a business plan, and navigating legal and government requirements. Students will be instructed in small business accounting principles and will learn how to incorporate managerial metrics into their business decision-making. Students will engage in hands-on activities and simulations, guided by faculty with actual small business management and entrepreneurial experience. Students will be introduced to promotion and marketing strategies to grow the business. Students will also be introduced to the various methods of raising capital including an understanding of pro forma preparation, entrepreneurial funding, risk management, and exit strategy design. Finally, students will complete an internship within the entrepreneurial industry (e.g. small business, start-up company, small business incubator, venture fund, etc.)

More Information

Management Department
119 South Street/BUS 212
Big Rapids, MI 49307-2284
Phone: 231-591-2427
Email: MGMT@ferris.edu
Small Business Management

Program Requirements

Small Business Management, Certificate Program Checksheet

Includes:

- Certificate Courses
- Admission Requirements
- Graduation Requirements

Why Choose the Small Business Management Certificate?

The Small Business Management certificate is a practical preparation for individuals interested in starting an entrepreneurial venture or managing a small business. The four-course sequence will guide students through the process of conceptualizing business ideas, developing a business plan, and navigating legal and government requirements. Students will be instructed in small business accounting principles, and will learn how to incorporate managerial metrics into their business decision-making. Students will engage in hands-on activities and simulations, guided by faculty with actual small business management experience. Finally, students will be introduced to promotion and marketing strategies to grow the business.

Career Opportunities

According to the Small Business Administration, small business makes up 99.7% of all employer firms. No matter what discipline you specialize in, chances are high that you will work in, manage, or own a small business at some point in your career. This certificate prepares students for career roles in management, day-to-day operations, and entrepreneurial start-up of small business organizations. Career opportunities include small business supervisors, managers, and company founders.

More Information

Management Department
119 South Street/BUS 212
Big Rapids, MI 49307-2284
Phone: 231-591-2427
Email: MGMT@ferris.edu
Social Studies Elementary Education

Program Requirements

Social Studies Elementary Education, BS Program Checksheet

Includes:

- Major Courses and General Education Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Social Studies Elementary Education

Social Studies Elementary Education involves the study of history, geography, political science, and economics. In today's society, social studies elementary education is especially relevant. Trained social studies elementary educators are able to help young people develop the ability to make informed and reasoned decisions for the public good as citizens of a culturally diverse, democratic society in an interdependent world (NCSS, 1994.) These educators are well rounded in the various aspects of Social Studies and will play an important role in helping future generations understand the world around them. These educators can assist students in gaining knowledge in anthropology, archaeology, economics, geography, history, law, philosophy, religion, and sociology and to make global connections. Students in this program must also complete a planned program in addition to professional education course work.

Career Opportunities

Current employment opportunities in the field of social studies education is based on two key factors. Both on a national and state level there is a common theme of the extreme need for teachers and adequately prepared elementary social studies teachers. Concerns at the beginning of the decade focused primarily on the issue of the retirement for a significant number of educators, in the Michigan Education Report of 2001. Teacher shortages in Michigan are predicted to be most severe at the secondary education level. The issue of teacher shortage due to retirement has been redress a major issue - teachers who teach in content areas where they have little or no formal training. This issue is especially relevant to the field of social studies. With the cuts in funding for education, school districts are relying on hiring teachers who can teach in multiple areas. Social study teachers have broad-based education in multiple content areas which makes them highly marketable in the current economic times.

Teacher Certification Requirements

As required by the State of Michigan, to receive teacher certification, all teacher candidates must: 1. Meet the MDE (CAEP) cohort requirements; 2. Pass the Michigan Test for Teacher Certification content area tests in their major; and 3. Have a 2.75 minimum GPA to receive
teacher certification in Michigan. These state requirements are in addition to the FSU graduation requirements of your individual program.

More Information

School of Education
Ferris State University
Bishop Hall 421
1349 Cramer Circle
Big Rapids, MI 49307-2737
Phone: 231-591-5361
Social Studies Secondary Education

Program Requirements

Social Studies Secondary Education, BS Program Checksheet

Includes:

- Major Courses and General Education Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Social Studies Education

Social Studies Education involves the study of history, geography, political science and economics. In today's society, social studies education is especially relevant. Trained social studies educators are able to help young people develop the ability to make informed and reasoned decisions for the public good as citizens of a culturally diverse, democratic society in an interdependent world (NCSS, 1994.) These educators are well rounded in the various aspects of Social Studies and will play an important role in helping future generations understand the world around them. These educators can assist students in gaining knowledge in anthropology, archaeology, economics, geography, history, law, philosophy, religion, and sociology and to make global connections.

Career Opportunities

Current employment opportunities in the field of social studies education is based on two key factors. Both on a national and state level there is a common theme of the extreme need for teachers and adequately prepared social studies teachers. Concerns at the beginning of the decade focused primarily on the issue of the retirement for a significant number of educators, in the Michigan Education Report of 2001. Teacher shortages in Michigan are predicted to be most severe at the secondary education level. The issue of teacher shortage due to retirement has been redress a major issue - teachers who teach in content areas where they have little or no formal training. This issue is especially relevant to the field of social studies. With the cuts in funding for education, school districts are relying on hiring teachers who can teach in multiple areas. Social study teachers have broad-based education in multiple content areas which makes them highly marketable in the current economic times.

Teacher Certification Requirements

As required by the State of Michigan, to receive teacher certification, all teacher candidates must: 1. Meet the MDE (CAEP) cohort requirements; 2. Pass the Michigan Test for Teacher Certification content area tests in their major; and 3. Have a 2.75 minimum GPA to receive teacher certification in Michigan. These state requirements are in addition to the FSU graduation
requirements of your individual program.

More Information

School of Education
Ferris State University
Bishop Hall 421
1349 Cramer Circle
Big Rapids, MI 49307-2737
Phone: 231-591-5361
Social Work

Program Requirements

Social Work, AA Program Checksheet

Includes:

- Major Courses and General Education Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose an Associate's Degree in Social Work? - Program Spotlight

The Social Work Associate in Arts degree is designed for students who intend to transfer into the BSW program at Ferris State University. The Social Work Associate in Arts provides students with a solid base of social work knowledge and its application.

More Information

PROFESSIONAL ADVISOR: Dave Schrock
PHONE: 231-591-3705
E-MAIL: DaveSchrock@ferris.edu

Social Work Department
Ferris State University
820 Campus Drive, ASC 2108
Big Rapids, MI 49307
Phone: 231-591-2225
Social Work

**Program Requirements**

Social Work, BSW Program Checksheet

Includes:

- Major Courses and General Education Courses
- Admission and Transfer Requirements
- Graduation Requirements

**Why Choose Social Work? - Program Spotlight**

The social work curriculum includes a strong liberal arts foundation, consisting of courses in communication, biology, natural sciences, math, history, politics, psychology and sociology. These general education courses are integrated with the social work foundation curriculum that develops knowledge, skills and values relating to interviewing, problem solving, social research, and understanding the complexities of social welfare policies and services.

Social work majors complete 600 hours of field instruction in two different social work agencies. The first field placement requires 120 hours and is scheduled in the summer between the student's first and second years in the program. It is usually completed in the student's hometown. The second field placement requires 480 hours over the senior year and is usually located in the region surrounding Ferris. The Ferris Social Work program has been fully accredited by the Council on Social Work Education since 1989. Social workers at both the Baccalaureate and Master's level are licensed in the State of Michigan.

**Career Opportunities**

Social workers help to bring about individual and social change in a wide variety of settings. Veterans facilities, hospitals, schools, mental health clinics, substance abuse agencies, foster care and adoption centers, nursing homes, and are just a few of the settings where social workers practice. Social Workers also have opportunities to practice internationally and in public office.

There are over 700,000 social workers in the US with substantial growth forecasted over the next 8 years. Social workers are therapists, executive directors of nonprofit organizations, community organizers, and professors. They are corporate leaders and members of Congress. If you see yourself in any of these roles, you may consider joining the social work profession.

More Information

PROGRAM COORDINATOR: Michael Berghoef
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EMAIL: MichaelBerghoef@ferris.edu

PROFESSIONAL ADVISOR: Dave Schrock
PHONE: 231-591-3705
EMAIL: DaveSchrock@ferris.edu

Department of Social Work
Ferris State University
820 Campus Drive/ASC 2108
Big Rapids, MI 49307-2225
Phone: 231-591-2737
Social Work

Program Requirements

Social Work, MSW Program Checksheet

Includes:

- Traditional Year and Advanced Year Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Social Work?

Social Workers serve individuals, families and communities. It is the helping profession. With an advanced degree in social work, you will have more employment doors opened and have the ability to make a greater difference in people's lives.

The curriculum includes study in Human Behavior in the Social Environment, Clinical Practice, Research and Policy. Ferris has a clinical concentration in the MSW program. As such, the emphasis will be on clinical theory and practice as well as the policy contexts of practice. You will be trained to treat behavioral, mental and emotional issues and be prepared to work as counselors, therapists and clinical supervisors.

Full time students typically complete their MSW degree in two years. For students with a BSW from an accredited university, the Advanced Standing program enables students to complete their degree in three semesters.

Students complete 900 hours of field instruction in one or two different social work agencies. Advanced Standing students' BSW field education counts toward the total number of hours. The capstone project gives students an opportunity to engage in research or program development.

An MSW degree is considered a terminal practice degree in the field of social work. Ferris State University's MSW program is currently in candidacy for accreditation by the Council on Social Work Education. All students entering the program in fall 2014 will be graduated from an accredited program retroactively.

Career Opportunities

The Bureau of Labor Statistics forecasts a 25% employment growth for social workers, faster than the average for all occupations. With an MSW, graduates will have a higher earning capacity as well as be in positions of greater influence. The wide range of clinical positions includes mental health and substance abuse therapists, behavioral health counselors, medical
social workers, school social workers, marital counselors and child and family clinicians.

**More Information**

Advisor: Dr. Janet Vizina-Roubal  
Office: ASC-2102  
Phone: 231-591-2846  
Email: JanetVizinaRoubal@ferris.edu

Department of Social Work  
Ferris State University  
820 Campus Drive, ASC 2108  
Big Rapids, MI 49307-2225  
Phone: 231-591-2737
Sociology

Program Requirements

Sociology, BA Program Checksheet

Includes:

- Major Courses, General Education Courses, and Elective Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Sociology?

Sociology, the study of human society, gives students the ability and knowledge to understand social systems and their influence on individuals. It gives students the tools and knowledge they need to do social research, to identify and devise solutions to social problems, to identify group influences, and to understand group dynamics. Above all, it gives students the ability and knowledge they need to understand the complexities of modern life in an ever-changing swirl of economic, political, and cultural dynamics, and to take positive action on behalf of their employer, community, or interests.

Students in the Sociology major complete core courses in social theory and research methods. They also choose from an array of courses dealing with different topics such as marriage and family, minority groups, health and illness, social change, deviant behavior, and urban sociology. Advanced students often participate in undergraduate research projects or internships.

Career Opportunities

The Sociology major is excellent preparation for a variety of career paths. These include careers in law, government, human services, marketing research, education, health-related systems, management, and the mass media. Many graduates continue their education in graduate or professional school in a variety of fields, while others use their analytic, research, and organizational skills to find immediate employment in a variety of settings.

More Information

LEAD ADVISOR: Dr. Bonnie Wright
PHONE: 231-591-2791
E-MAIL: BonnieWright@ferris.edu

PROFESSIONAL ADVISOR: Dave Schrock
PHONE: 231-591-3705
E-MAIL: DaveSchrock@ferris.edu
Sociology

Program Requirements

Sociology, Minor Program Checksheet

Includes:

- Minor Courses and Elective Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose the Sociology Minor?

The Sociology minor enables students to see the 'big picture' of human society. Each of us lives out our life within a complex web of social relationships at many levels, from small groups such as the family and peers to giant organizations that span the globe, such as the United Nations and multinational corporations. Sociology students learn to look at this intricate mosaic of life with a perspective that helps them to understand their places in it, and to cope with a changing world and workplace.

The Sociology minor will help prepare you for the world of work and the lifelong changes you will encounter in your careers. Sociologists study all human institutions and levels of social systems and how they interact in the modern world. Sociology helps us understand the motivations and aspirations of those with whom we deal on a daily basis. This helps us function more easily and effectively in the workplace and in the larger society, which is becoming ever more diverse. Employers seek those who have skills dealing with people. Whatever major you are pursuing, a Sociology minor will add a human social dimension with a breadth not available in other disciplines.

More Information

ADVISOR: Dave Schrock
PHONE: 231-591-3705
E-MAIL: DaveSchrock@ferris.edu

Social and Behavioral Sciences Department
Ferris State University
820 Campus Drive, ASC 2108
Big Rapids, MI 49307
Phone: 231-591-2735
Spanish

Program Requirements

Spanish, Minor Program Checksheet

Includes:

- Minor Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose a Spanish Minor? - Program Spotlight

The fastest-growing population in the U.S. is Spanish-speaking Americans, and some of our most important trade partnerships are in Mexico and Latin America. In the coming years, a demonstrated fluency in Spanish is sure to be an asset in any career, whether it is education, health care, business, governmental service, technology, or tourism and leisure activities. The Spanish minor allows students to develop their skills in written and conversational Spanish and also to study the cultures of Spain, Mexico, and Latin America. Summer study-abroad programs are available when there is sufficient demand.

While all careers are enhanced by knowledge of a second or third language, specific majors at Ferris lend themselves to this intercultural awareness including:


Spanish today is the second language of the United States. In virtually all major metropolitan areas, as well as in many agricultural regions, a knowledge of Spanish provides a distinct professional and cultural advantage. Students with this minor enhance their opportunity for employment in a variety of careers throughout the country.

This academic minor prepares students for careers requiring effective communication, cultural understanding, intensive technical and professional reports, interpretive and critical thinking skills, formal proposals for funding, advanced writing abilities, and methods of research, analysis, and interpretation.

More Information

Advisor: Eric Warner
Phone: 231-591-5049
Spanish for the Professions

Program Requirements

Spanish for the Professions, BS Program Checksheet

Includes:

- Major Courses, General Education Courses, and Elective Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Spanish for the Professions? - Program Spotlight

This Bachelor of Science in Spanish for the Professions degree program at Ferris will have a distinct purpose and approach: it will focus on Spanish for the professions and on Spanish in the Americas, including Spanish language and Hispanic/Latino culture in the United States.

The major has been constructed considering the most current needs of a diverse community; that is, it will prepare students with the right tools to expand their professional service abilities to a wider community in the areas of education, medical professions, social work and criminology.

With a B.S. in Spanish for the Professions students will have several advantages. They will have the opportunity to participate in community-based experiences. They will complete an internship with Spanish-speaking populations either locally or abroad. Students will also complete a Senior Capstone course to culminate their experiences in the classroom with their experiences in the professional arena.

Career Opportunities

With today’s competitive job market, students with the Spanish for the Professions B.S. degree will have greater opportunities and will be better prepared for their job search as evidenced by the growing frequency of job market offerings that seek bilingual and culturally aware employees. Employers in fields such as education, criminal justice, health care, social work and engineering recognize the importance of hiring bilingual personnel.

More Information

ADVISOR: Dr. Eric Warner
PHONE: 231-591-5049
EMAIL: EricWarner@ferris.edu

Department of English, Literature, and World Languages
Ferris State University
820 Campus Drive/ASC 3080
Spanish Teaching

Program Requirements
Spanish Teaching, Secondary Education Minor Program Checksheet

Includes:

- Minor Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Secondary Education Spanish?

This program is not accepting students at this time.

The Spanish Education Minor prepares future teachers to communicate with prospective students in the target language in a simple, but efficient way, the basics of the language grammar, vocabulary, culture, and important aspects of the Hispanic world. A highlight of the program is the Spanish pedagogy class, which entails a variety of examples and classroom like scenarios where students have hands-on experiences to become familiar with the current trends and approaches of a second language acquisition.

The Secondary Education program highly recommends the completion of a teaching minor.

More Information

School of Education
Bishop Hall Room 421
Ferris State University
1349 Cramer Circle
Big Rapids, MI 49307-2737
Telephone: (231) 591-5361
Special Education Endorsement Only

Program Requirements

Special Education Endorsement Only, Certificate Program Checksheet

Includes:

- Major Courses

Why Choose the Special Education Endorsement?

This program is designed for persons with a MDE Teacher Certificate in elementary or secondary education who are seeking a Special Education Endorsement or adding an additional endorsement. This program does not lead to a master's degree.

More Information

School of Education
Bishop Hall Room 421
Ferris State University
1349 Cramer Circle
Big Rapids, MI 49307-2737
Telephone: (231) 591-5361
Speech Communication Teaching

Program Requirements

Speech Communication Teaching, Secondary Education Minor Program Checksheet

Includes:

- Minor Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Teaching Minors for Secondary Education Majors?

The Secondary Education program highly recommends the completion of a teaching minor.

More Information

School of Education
Bishop Hall Room 421
Ferris State University
1349 Cramer Circle
Big Rapids, MI 49307-2737
Telephone: (231) 591-5361
Sports Communication

Program Requirements
Sports Communication, BS Program Checksheet

Includes:
- Major Courses and General Education Courses
- Admission and Transfer Requirements
- Graduation Requirements

How to Enter a Career Working in the Sports Industry - Program Spotlight

Did you know it takes 30 people doing all kinds of jobs to make every professional athlete's job happen? I am one of those 30: I plan the sports event, I advertise the event and market the tickets and other products sold at the event, I broadcast and report the event, I manage the sports facility, I coach the athletes and I manage the development of their careers from prep school through college on to the pros. I am a Sports Communication specialist.

What Will I Study?

Students in Sports Communication develop a strong set of "soft" communication skills working with people one on one, on teams and in formal settings in the core Major courses. They identify one of five Content Specialties in which they acquire the "hard" skills to complete their jobs: Management and Leadership concentration, Multimedia Journalism minor, Event Management minor, Integrated Marketing Techniques minor, or Sports Science minor. They finish their curriculum with an additional academic minor chosen to expand their interests and marketability. The Sports Communication course (COMM 389) features a team project to plan, execute and assess a "value-added" activity at a Ferris sports event or a fund-raising event hosted by Sports Careers RSO.

Why Choose This Major?

Sports Communication students not only earn a degree but they also build their resume with experiences working in the sports industry. Majors have held paid jobs with the Athletic Department, including Marketing and Sponsorship Coordinator, Creative (Media) Intern, and Game Day Manager, who is responsible for setting up 17 intercollegiate sports facilities and managing a staff of 30+ student workers, many of whom are Sports Communication majors. Through guest speakers in class and community events (such as the Sports Speakers Series), students can network into internships and career tracks in sports from the amateur/recreational level to professional and from K-12 to the major leagues. Student athletes find the major accommodating to their schedules and career goals. Sports Careers RSO supports major coursework with program activities ranging from travel to conferences and career fairs to
community service outreach in partnership with Special Olympics College Club.

**What are Sports Communication Graduates Doing Now?**

Job titles of our graduates include athletic director, professional athlete, coach, summer camps coordinator, sports editor of a local newspaper, news reporter for a major city TV station, and director of education for a women’s sports administrators association. Graduates have earned advanced degrees in communication, higher-education student-affairs and sports studies. Graduates have pursued careers in sports law and sports psychology.

**More Information**

ADVISOR: Dr. Sandy Alspach  
EMAIL: SandraAlspach@ferris.edu  
PHONE: 231-591-2779

Department of Humanities  
Ferris State University  
1009 Campus Drive/JOH 119  
Big Rapids, MI 49307-2280  
Phone: 231-591-3675
Sports Communication

Required Courses

**Why Choose the Sports Communication Certificate? - Program Spotlight**

The sports industry has become a major player in the national and world economy. Beyond the obvious competition events involving players, coaches and spectators, the industry requires many support personnel to administer, market, and broadcast events. At every level of involvement, appropriate and effective communication is required. This certificate offers students pursuing careers in the sports industry an opportunity to acquire knowledge and develop skills and attitudes for achieving competent 'sports communication.'

**Admission Requirements**

This Sports Communication certificate is open to any student admitted to Ferris State University except those pursuing a major in B.S. in Applied Speech Communication or B.S. in Sports Communication. The certificate is designed to complement any Ferris major program.

**Graduation Requirements**

This certificate requires a minimum of 12 credits. This certificate requires a minimum GPA of 2.0 in these courses. At least 50 percent of the credits for this certificate must be Ferris State University credits. No more than three credits from this certificate may count towards completion of an academic major. English 250 with a C or higher is required.

**More Information**

ADVISOR: Dr. Sandy Alspach  
PHONE: 231-591-2779  
EMAIL: SandraAlspach@ferris.edu

Department of Humanities  
Ferris State University  
1009 Campus Drive/JOH 119  
Big Rapids, MI 49307-2280  
Phone: 231-591-3675
Sports Communication

Required Courses

Why Choose the Sports Communication Minor? - Program Spotlight

The sports industry has become a major player in the national and world economy. Beyond the obvious competition events involving players, coaches and spectators, the industry requires many support personnel to administer, market, and broadcast events. At every level of involvement, appropriate and effective communication is required. This minor offers students pursuing careers in the sports industry an opportunity to acquire knowledge and develop skills and attitudes for career success.

Admission Requirements

This Sports Communication minor is open to any student admitted to Ferris State University and pursuing a baccalaureate degree except those pursuing a B.S. in Applied Speech Communication or B.S. in Sports Communication. The minor is designed to complement any Ferris major program. A maximum of 1/3 of the credits, but no more than 7 credits, in a minor may overlap with the student's major. Students may apply 6 credit hours of overlap between minors.

Graduation Requirements

An academic minor may only be awarded upon completion of a baccalaureate degree at Ferris State University. The Sports Communication minor requires a minimum of 18 credits of course work in communication, nine of which are at the 300 level or above, and a minimum of 2.0 grade average in all communication course work comprising the minor. Also, 50% of the credits for a minor must be taught by Ferris State University.

More Information

ADVISOR: Dr. Sandy Alspach
PHONE: 231-591-2779
EMAIL: SandraAlspach@ferris.edu

Department of Humanities
Ferris State University
1009 Campus Drive/JOH 119
Big Rapids, MI 49307-2280
Phone: 231-591-3675
Surveying

Program Requirements
Surveying, Certificate Program Checksheet
Includes:

- Certificate Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose a Certificate in Surveying?
The student completing this program should be able to:

- Perform basic differential leveling in the field
- Reduce differential leveling observations
- Recognize the concept of field data collection using conventional and modern electronic data collection instruments such as an electronic total station
- Recognize the concept of field data collection using global positioning systems (GPS) instruments
- Recognize the basic concept of how to prepare a topographic map from actual survey data
- Perform traverse computations and simple traverse adjustment
- Develop an appreciation for establishing horizontal and vertical control for a small to medium size surveying project

Career Opportunities
The objective of the certificate program in surveying is simply to give the program completers a general exposure to the surveying practice and the capacity for employment with a real surveying degree.

More Information:
School of Engineering and Computing Technology
Survey Engineering Technology Programs
915 Campus Drive, SWN 312
Big Rapids, MI 49307-2291
Phone: 231-591-2633
Email: surveying@ferris.edu
https://www.ferris.edu/CET/ceems/surveying/index.htm
Surveying and Mapping

Program Requirements

Surveying and Mapping, Minor Program Checksheet

Includes:

- Minor Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Surveying and Mapping Minor?

The objective of the minor program in surveying and mapping is to give the students a general understanding of how surveying measurements are performed and to gain familiarity with knowing how to use the field surveying instruments. The students completing this program should be able to:

- Perform basic differential leveling in the field
- Reduce differential leveling observations
- Understand the concept of field data collection using conventional and modern electronic data collection instruments such as an electronic total station
- Understand the concept of field data collection using the global positioning system (GPS) instruments
- Understand the basic concept of how to prepare a topographic map from actual survey data
- Perform traverse computations and simple traverse adjustment
- Develop an appreciation for establishing horizontal and vertical control for a small to medium size surveying project
- Have a basic understanding of the State Plane Coordinate System - Lambert conic projection in particular

Depending on the student's selection of the optional courses, the student completing this minor will demonstrate:

- Performing simple circular curve calculations
- Performing the field layout of a basic circular curve
- An appreciation for the basic photogrammetric concepts such as photo scale, flying height, overlap, side lap
- An understanding of the public land surveying systems
- An appreciation for the basic concepts of Geographic Information Systems (GIS)
Career Opportunities

The knowledge gained through this minor will enable the student who completes the program to function as a surveying technician within an organization.

More Information

School of Engineering and Computing Technology
Survey Engineering Technology Programs
915 Campus Drive, SWN 312
Big Rapids, MI 49307-2291
Phone: 231-591-2633
Email: surveying@ferris.edu
https://www.ferris.edu/CET/ceems/surveying/index.htm

Ferris State University
College of Engineering Technology
1009 Campus Drive, JOH 200
Big Rapids, MI 49307-2280
Phone: 231-591-2890
Email: technology@ferris.edu
www.ferris.edu/technology
Surveying Engineering

Program Requirements

Surveying Engineering, BS Program Checksheet

Includes:

- Major Courses and General Education Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Surveying Engineering?

Instruction in this program emphasizes theoretical principles as well as practical applications of advanced surveying techniques and related computational procedures, geodesy, map compilation and photogrammetry, business aspects of operating a surveying firm, geographic information systems (GIS) and planning and conducting surveys.

Students in the Surveying Engineering program must complete advanced mathematics, have an aptitude for physical science and have the ability to work effectively as a team member.

The Bachelor of Science program in Surveying Engineering is designed to meet the needs of all students in the program. The Surveying Engineering program educational objectives are as follows:

- Program graduates will apply communication skills, lifelong learning attitude, and the knowledge of mathematics and basic science to attain advancement within the surveying profession.
- Program graduates will exhibit creativity, leadership and team-building abilities, cultural appreciation and an understanding of global, societal, and environmental context consistent with the principles of sustainable development.
- Program graduates will be engaged in the professional practice of surveying engineering with high ethical and professional responsibilities.
- Program graduates will strive for professional licensure.

In-depth objectives for the Bachelor of Science in Surveying Engineering are available at https://www.ferris.edu/CET/ceems/surveying/objectives.htm.

The Bachelor of Science in Surveying Engineering at Ferris State University is accredited by the Engineering Accreditation Commission of ABET, https://www.abet.org/eac/.

Career Opportunities

Surveying engineering is the science of making precise measurements of the Earth's surface...
with the aid of sophisticated electronic instruments. A challenging and satisfying profession, surveying engineering is of vital importance for national defense, exploration, conservation, preservation of natural resources, and land development.

There is a very high demand for surveying engineers with five to six job opportunities for every graduate. Professional surveyors can choose to join existing surveying and/or civil engineering firms or enter private practice following completion of licensing requirements. Graduates may also find employment with local, state and federal governmental agencies. In addition, surveying engineers are needed in resource recovery, oil and mineral exploration, and other high-tech industries.

More Information

School of Engineering and Computing Technology
Survey Engineering Technology Programs
915 Campus Drive, SWN 312
Big Rapids, MI 49307-2291
Phone: 231-591-2633
Email: surveying@ferris.edu
https://www.ferris.edu/CET/ceems/surveying/index.htm

Ferris State University
College of Engineering Technology
1009 Campus Drive, JOH 200
Big Rapids, MI 49307-2280
Phone: 231-591-2890
Email: technology@ferris.edu
www.ferris.edu/technology

The Bachelor of Science in Surveying Engineering at Ferris State University is accredited by the Engineering Accreditation Commission of ABET, https://www.abet.org/eac/. The next accreditation review is scheduled for 2022-2023.
Surveying Technology

Program Requirements

Surveying Technology, AAS Program Checksheet

Includes:

- Major Courses and General Education Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Surveying Technology?

The Surveying Technology program at Ferris is designed to provide students with the skills and knowledge necessary to function as an effective member of the surveying field crew. Graduates have the ability to operate equipment and perform basic surveying calculations and create maps using different computer-assisted mapping software.

Courses cover the use of basic surveying instruments, evaluation of the accuracy of field data, production of computer drawings using surveying and mapping software, use of advanced electronic total stations, an inspection of basic civil engineering materials such as soils, aggregates, portland cement, and bituminous concrete, the study of laws and history of past judgments pertaining to boundary establishment, conformance with established survey standards, and effective communication with clients and colleagues.

Career Opportunities

Surveying technicians assist surveyors in making precise measurements of the earth's surface for the purpose of establishing property boundaries, subdividing land parcels, creating maps of land and water forms for planning, navigation and general use, and the layout and control of construction projects. Technicians are familiar with the operation of sophisticated optical and electronic surveying instruments needed for compiling this information.

Surveying technicians work for private engineering and land surveying firms assisting in the construction of roads, bridges, buildings, and dams as well as making measurements to determine the location of property boundaries. They also may find jobs with local, state, and federal government agencies.

Prospects for advancement are excellent. There are numerous job opportunities for each graduate. Students who possess strong technical skills, management abilities, and a desire for increased responsibilities can rise to supervisory positions.

More Information
School of Engineering and Computing Technology
Survey Engineering Technology Programs
915 Campus Drive, SWN 312
Big Rapids, MI 49307-2291
Phone: 231-591-2633
Email: surveying@ferris.edu
https://www.ferris.edu/CET/ceems/surveying/index.htm

Ferris State University
College of Engineering Technology
1009 Campus Drive, JOH 200
Big Rapids, MI 49307-2280
Phone: 231-591-2890
Email: technology@ferris.edu
www.ferris.edu/technology
Technical and Professional Communication

Program Requirements

Technical and Professional Communication, BS Program Checksheet

Includes:

- Major Courses and General Education Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Technical & Professional Communication? - Program Spotlight

Technical and Professional Communication students learn the history and future of writing, edit technical manuals, understand the elements of writing technical documents, and develop project planning skills. In addition, they analyze technical journals, books, magazines, and speeches.

All TPC students identify a content specialty concentration, a 21-credit grouping of courses that builds on their interest in a specific career area. While many TPC students enter the program with an associate degree in a technical area - for example, electronics or plastics technology - many develop their technical specialty based on an established area of expertise in the field of technical communication.

A wide variety of content specialty concentrations are possible, including electronics, automotive technology, computer information systems, plastics technology, medical writing, applied mathematics, visual communication, technical training, and applied biology. These concentrations are not, however, the only areas of specialty allowed by the program; students are encouraged to work with their advisor to select the best grouping of courses for their professional interests. The content specialty gives students a specialized background and typically opens the door to their first professional job.

Career Opportunities

Technical and professional communication is a combination of writing, organizing, and communicating information. Students gain an understanding of communication media, technical and expository writing, desktop publishing, verbal communication, and a chosen technical or professional specialty.

Job opportunities continue to grow for graduates of this program. Nearly every industry needs employees who can communicate technical and professional information effectively to its customers and clients. Jobs also are expanding into marketing, advertising, and public relations fields.
More Information

Program Advisor/Coordinator: Dr. Zac Wendler
E-mail: ZacharyWendler@ferris.edu

Department of English, Literature, and World Languages
Ferris State University
820 Campus Drive/ASC 3080
Big Rapids, MI 49307-2225
Phone: 231-591-3988
Technical Education

Program Requirements

Technical Education, BS Program Checksheet

Includes:

- Major Courses and General Education Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Technical Education?

Rapid technological changes have generated strong demand for technical teachers in Michigan. Graduates can expect excellent career opportunities in industry, secondary and vocational education.

Technical skills and the training to teach them to others are a valuable combination in education today. If you relate well to others and enjoy working with your hands and mind, you are well suited for a worthwhile and rewarding career in technical education.

The Ferris State University technical education program provides a balanced mix of courses in three major areas: professional education, field experience and liberal arts education. About a third of the courses required for graduation will be in the major's chosen field. Technical education students also must complete occupational work experience. A field experience in which students work with young people in public schools is required, along with a full-time directed teaching assignment in a vocational/technical program at an area vocational center or high school.

Career Opportunities

Known for its technical, hands-on programs, Ferris State University offers technical education students diverse opportunities including automotive, electronics, welding, industrial and HVACR technology or computer assisted design and manufacturing.

Teacher Certification Requirements

As required by the State of Michigan to receive teacher certification, all teacher candidates must: (1) meet the MDE (CAEP) cohort requirements, (2) pass the pedagogy tests in their subject area majors (where appropriate), and (3) have a 2.75 minimum GPA to receive teacher certification in Michigan. These state requirements are in addition to the FSU graduation requirements of your individual program.
THIS DEGREE LEADS TO AN INTERIM OCCUPATIONAL CERTIFICATION THROUGH MICHIGAN DEPARTMENT OF EDUCATION.

THIS DEGREE DOES NOT LEAD TO SECONDARY TEACHER CERTIFICATION UNLESS YOU HAVE AN ACADEMIC MAJOR AND MINOR (i.e. Math, English, etc.).

More Information
School of Education
Bishop Hall Room 421
Ferris State University
1349 Cramer Circle
Big Rapids, MI 49307-2737
Telephone: (231) 591-5361
Technical Writing

Program Requirements

Technical Writing, Certificate Program Checksheet

Includes:

- Certificate Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Technical Writing?

A certificate is a concentration of coursework in a designated area. The certificate in technical writing provides students the opportunity to highlight the concentration of writing courses on a résumé thus making their writing abilities obvious to prospective employers. A concentration in technical writing is an asset to almost any major since employers in all fields are looking for people who can write competently and express themselves in a professional manner.

More Information

Advisor/Coordinator: Dr. Zac Wendler
email: ZacharyWendler@ferris.edu

Department of English, Literature, and World Languages
Ferris State University
820 Campus Drive/ASC 3080
Big Rapids, MI 49307
Phone: 591-3988
Television and Digital Media Production

Program Requirements

Television and Digital Media Production, BS Program Checksheet

Includes:

- Major Courses and General Education Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Television and Digital Media Production?

Within the Television and Digital Media Production (TDMP) program at Ferris, students learn to be effective storytellers. Through applied learning and the completion of assigned projects, students acquire skills in film, audio, and video production; interactive media production, authoring, and online media content distribution; instructional design; video editing and advanced effects creation; script writing; and graphic design for video. These skills are practiced through the planning, scripting, directing, and producing of film and television programs and related content. Most of the program's courses are hands-on, using state of the art facilities and equipment. The curriculum is under continuous review to assure that it remains current with the industries where our graduates are employed.

After completing the necessary requirements, the student will further perfect their skills in an internship experience within the industry. This internship will take place at a production facility in Michigan, the Midwest, or across the Country. This exciting course allows the student to gain experience in a real-world setting working full-time with industry professionals.

For examples of content creation that TDMP students have completed through their learning, visit: www.YouTube.com/FerrisStateTDMP

Career Opportunities

Students learn communication skills in visual media that apply to a wide range of careers. Alumni have been employed in television and digital media production positions in:

- Broadcasting
- Film and Television Content Creators
- Professional sports venues
- Cable corporations
- Manufacturing facilities
- Hospitals
- Independent production companies
Click here for a link to a few of the locations that our graduates are employed: https://www.ferris.edu/COEHS/DigitalMedia/alumni.htm

**Equipment and Facilities**

The TDMP Program at Ferris engages students in the storytelling process, through applied projects and assignments that allow students to create content.

Students are provided with the equipment, computer labs, and software needed to successfully complete required projects and learning experiences. Production projects engage students with Sony, JVC and Cannon cameras - both DSLR and traditional Video models. Camera’s, tripods, audio and lighting equipment are available for checkout to students via Media Supply, an on-campus and department-run facility.

Students will learn and engage with the Adobe Creative Cloud software suite, and with AVID video editing software, among other software titles - which are available to TDMP students in each of the designated computer labs for the program on a 24-hour a day, seven-day-a-week schedule.

Live production is another skill that students will experience through their completion of the TDMP program. Using fully HD facilities, students will produce live content in a studio, and on-location - providing live coverage and streaming of athletic events.

**More Information**

Ferris State University
Television and Digital Media Production
BIS 303, 1349 Cramer Circle
Big Rapids, MI 49307-2748
Phone: 231-591-2712

www.ferris.edu/tdmp
Vascular Ultrasound

Program Requirements

Vascular Ultrasound, Certificate Program Checksheet

Includes:

- Certificate Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Vascular Ultrasound?

This certificate is intended for working sonographers already logging vascular ultrasound hours and exams as part of their employment who want to continue their education in the field of vascular ultrasound by adding a didactic foundation to their cross-training. This certificate along with the clinical experience working sonographers have will prepare them to pass the ARDMS Registered Vascular Technology (RVT) certification exam. It will NOT provide the clinical hours to fulfill the ARDMS RVT requirement. This certificate is intended for practicing sonographers.

The Vascular Certificate is offered in a student centered learning environment. Students engage in self-directed learning activities to advance their knowledge of vascular ultrasound.

Career Opportunities

In May 2012, the median annual wage for cardiovascular technologists and technicians, including vascular technologists, was $52,070. Employment of cardiovascular technologists and technicians, including vascular technologists is projected to grow 30 percent from 2012 to 2022, much faster than the average for all occupations.


Since 2010, Medicare has required that all non-invasive vascular studies be performed by a RVT sonographer in at least 44 states. For others, all non-invasive vascular diagnostic studies must be performed under at least one of the following settings:

a. performed by a physician who is competent in diagnostic vascular studies or under the general supervision of physicians who have demonstrated minimum entry level competency by being credentialed in vascular technology, or

b. performed by a technician who is certified in vascular technology, or

c. performed in facilities with laboratories accredited in vascular technology.

More Information

Department of Dental Hygiene and Medical Imaging
Welding Engineering Technology

Program Requirements

Welding Engineering Technology, BS Program Checksheet

Includes:

- Major Courses and General Education Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Welding Engineering Technology?

Established in 1984, the nationally recognized Welding Engineering Technology program is the largest of its kind in the United States. The program is designed to produce plant-level welding engineering technology graduates who are involved in the concept, design, and engineering of weldments and implementation of welding processes. This overall knowledge of weldments and the ability to engineer welding and joining systems produces graduates who are in great demand and highly compensated. As recognition of academic excellence and program quality, in August 2008 the Welding Engineering Technology program was granted *TAC-ABET Accreditation from the Technology Accreditation Committee (TAC) of ABET. Accreditation for the program was received again in 2016 until 2022.

Ferris provides several welding instructional areas including laboratories dedicated to inspection, mechanical testing, robotics, laser processing, resistance welding and material preparation/fabrication in our newly renovated $30,000,000 facility. In addition to core Welding Engineering Technology classes, courses in material science, mechanical, electronics, and manufacturing disciplines are required and are taught by faculty specialists in those departments.

Career Opportunities

With one out of two products that comprise the gross domestic product containing a weld, the welding profession is prevalent in all areas of our economy. Graduates of the Welding Engineering Technology program currently hold over fifty different job titles. The most common include welding engineer, manufacturing engineer, application engineer, sales engineer, and project engineer or manager. Graduates find employment opportunities in all sectors of the construction, fabrication and manufacturing economy. The most common employers include the automotive industry, agricultural and construction equipment producers, oil & gas industry suppliers, welding equipment manufacturers, and robotics and welding automation firms. Employment has been procured in more than 40 states across the country, with Michigan, Wisconsin, Iowa, Illinois, Ohio and Texas having the highest concentrations. Alumni have
enjoyed international assignments ranging from a few weeks to multiple years in over 30
countries on six different continents around the world. The average starting salaries are more
than $70,000 per year.

More Information:

School of Design and Manufacturing
Welding Engineering Technology Programs
915 Campus Drive, SWN 220
Big Rapids, MI 49307
Phone: 231-591-2511
Email: WELDINGDEGREES@FERRIS.EDU
https://www.ferris.edu/CET/design-mfg/welding/homepage.htm

Ferris State University
College of Engineering Technology
1009 Campus Drive, JOH 200
Big Rapids, MI 49307-2280
Phone: 231-591-2890
Email: technology@ferris.edu
www.ferris.edu/technology

*Accreditation: The College of Engineering Technology Welding Engineering Technology program
is an accredited program of the Technology Accreditation Commission of the Accreditation Board
for Engineering and Technology (TAC-ABET).  http://www.abet.org
Welding Technology

Program Requirements

Welding Technology, AAS

Includes:

- Major Courses and General Education Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose Welding Technology?

Established in 1972, the Welding Technology program produces welding technicians and prepares students for admission into the Bachelor of Science program in Welding Engineering Technology. Students receive hands-on laboratory experience in welding processes, metallurgy, mechanical testing, inspection and fabrication of weldments. Graduates become technicians involved in testing and improving welding processes, procedures, and equipment. Welding Technology graduates hold job titles as welding technicians, welding supervisors, inspectors, and sales representatives.

Ferris provides several welding instructional areas including laboratories dedicated to inspection, mechanical testing, robotics, laser processing, digital radiography testing, resistance welding and material preparation/fabrication in our newly renovated $30,000,000 facility. In addition to core Welding Technology classes, courses in material science, electronics, and machine tool disciplines are required and are taught by faculty specialists in those departments.

Career Opportunities

Due to the fact that welding is a basic element in the production of a vast array of items, jobs as welding technologists are abundant. In the United States, welding is utilized in approximately fifty percent of the industrial and commercial products that make up the Gross National Product (GNP.)

Welding Technicians also select and maintain quality control procedures throughout the welding process and perform destructive and non-destructive tests to ensure the quality and reliability of weldments.

The demand for skilled technicians will continue to grow as the use of automated systems in the metals fabrication industry increases. A wide variety of employment positions are found in the manufacturing and construction industries.

More Information
School of Design and Manufacturing
Welding Engineering Technology Programs
915 Campus Drive, SWN 220
Big Rapids, MI 49307
Phone: 231-591-2511
Email: WELDINGDEGREES@FERRIS.EDU
https://www.ferris.edu/CET/design-mfg/welding/homepage.htm

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www.ferris.edu/technology
Women and Gender Studies

Program Requirements

Women and Gender Studies, Minor

Includes:

- Major Courses and General Education Courses
- Admission and Transfer Requirements
- Graduation Requirements

Why Choose the Women and Gender Studies Minor?

The Women and Gender Studies minor is designed to allow students the opportunity to study the history and cultural contributions of women through an interdisciplinary approach. Study includes the political and theoretical issues related to woman and to the construction of gender. In addition, the minor allows students to develop writing and critical thinking skills that are essential to job placement and advancement.

More Information

ADVISOR: Dr. Grant Snider
PHONE: 231-591-3615
EMAIL: GrantSnider@ferris.edu

Department of Humanities
Ferris State University
1009 Campus Drive/JOH 119
Big Rapids, MI 49307-2280
Phone: 231-591-3675
ACCT200  Accountancy  BU  Undergraduate  3  
This course covers the principles of financial and managerial accounting for non-business students, including the framework that underlies financial and managerial accounting and how accounting information should be used by external as well as internal parties of an organization. Students are taught how to prepare, read, and analyze corporate financial statements. Additionally, students are taught the tools and techniques necessary for managerial planning, control, and decision making. Prerequisites: MATH 114 or MATH 115 or MATH 117 and ISYS 104 or ISYS 105, or equivalent. Typically offered Fall, Spring Summer

ACCT201  Accountancy  BU  Undergraduate  3  
Introduction to accounting principles with an external reporting emphasis on the preparation and use of financial statements. Includes recording and adjusting accounts, the accounting cycle, accounting for merchandising operations, internal control and cash, receivables, inventories, assets, liabilities, corporate organization, stock transactions, dividends, and retained earnings and investments. Pre-Requisites: MATH 109 or 110 with a grade of C- or better, or 19 on ACT or 460 on pre 2016 SAT or post 2016 SAT MATH 500 or one of the following MATH courses: 114, 115, 116, 117, 118, 119, 120, 126, 130, 132, 135. Meets General Education requirements for Problem Solving. Typically Offered Fall, Spring, Summer

ACCT202  Accountancy  BU  Undergraduate  3  
Continuation of ACCT 201. Introduction to management decisions in reliance on systems that provide historical and projected data to guide present and future operations. Includes managerial accounting, job-order costing, process costing, cost behavior, cost-volume-profit relationship, variable costing, activity based costing, profit planning, standard costing, flexible budgets, segment reporting, profitability analysis and decentralization, capital budgeting, service department costing, statements of cash flows and financial statement analysis. Pre-Requisites: ACCT 201 and MATH 114 or MATH 115 and ISYS 104 or ISYS 105 all with grade of C- or better. Meets General Education requirements for Quantitative Skills, and new Fall 2017 Quantitative Literacy and Problem Solving. Typically Offered Fall, Spring, Summer

ACCT205  Accountancy  BU  Undergraduate  3  
Designed for non-accounting majors who need or desire an understanding of how financial information is used in management decision making. Emphasis is on the uses of accounting data rather than its preparation. Not open to accounting majors. Pre-Requisites: ACCT 202; non-Accountancy majors. Typically Offered Fall, Spring
ACCT221  Accountancy  BU  Undergraduate  3
An introductory course for construction management major to learn the design, analysis, and output of construction accounting systems. Students also learn how to report the results of operations, analyze the financial statements produced and use the analysis to bid and budget future projects. Pre-Requisites: MATH 115 with C-/better or ACT 24 or pre 2016 SAT 560 or post 2016 SAT MATH 580; & Construction Mgmt students. Typically Offered Fall Only

ACCT231  Accountancy  BU  Undergraduate  3
An elective course to learn how to prepare a payroll for a company. Students will also study the various tax rules and tax reports that form the core of a payroll accountant's responsibilities. Pre-Requisites: ACCT 201 with a grade of D- or better. Typically Offered Fall Only

ACCT241  Accountancy  BU  Undergraduate  3
An elective course to learn how to use application software systems on the microcomputer that provide experience in computerized office accounting functions, including preparing payroll for a company. Develops problem resolution skills in the automated office using microcomputer and application software packages and an understanding of automated applications and their relation to other office systems. Students will also study the various tax rules and tax reports that form the core of a payroll accountant's responsibilities. Pre-Requisites: ACCT 201 and ISYS 105 with a grade of D- or better in each course. Typically Offered Spring, Fall

ACCT301  Accountancy  BU  Undergraduate  3
Introduces Federal tax law and its impact on financial decision making: income concept, taxable entities, tax aspects of selecting a business form, accounting method options, capital gains and losses, compensation considerations, non-taxable transactions, common tax traps, and family tax planning. Computer modeling to assist in choosing between tax alternatives. Pre-Requisites: ACCT 202 with a grade of D- or better. Typically Offered Fall Only

ACCT305  Accountancy  BU  Undergraduate  3
The course covers Intermediate Accounting topics with the emphasis on understanding the account titles used, the formatting of account titles in financial statements, and the significance of the accounting information reported in the financial statements and footnotes. For non-accounting majors only. Pre-Requisites: MATH 114 that can also be a co-requisite. Typically Offered Fall Only

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ACCT310  Accountancy  BU  Undergraduate  3  Expands the student’s exposure to financial accounting concepts introduced in the Principles of Accounting sequence. Deals with authoritative pronouncements from FASB and generally accepted accounting principles concerning the income statement, balance sheet, current and long-term assets, plant assets and depreciation. Pre-Requisites: ACCT 202 with a grade of C- or better and MATH 114 or 122 with a grade of C- or better or ACT 24 or pre 2016 SAT 560 or post 2016 SAT MATH 580. Typically Offered Fall, Spring

ACCT312  Accountancy  BU  Undergraduate  3  A continuation of ACCT 310. Topics covered include current and long-term liabilities, pensions, leases, income tax accounting and the cashflow statement and stockholder equity. Pre-Requisites: ACCT 310 with a grade of C- or better. Typically Offered Fall, Spring

ACCT321  Accountancy  BU  Undergraduate  3  Deals with the manufacturing cycle and includes job-order and process costing, the control of material and labor costs, overhead standard costs, and variable costs. Pre-Requisites: ACCT 202 with a grade of C- or better. Typically Offered Spring only.

ACCT322  Accountancy  BU  Undergraduate  3  Covers advanced topics in managerial accounting. It will examine managerial decision making methods using quantitative and qualitative analysis and cover such topics as short-term and long-term decision models, distribution cost analysis, transfer pricing and multinational considerations. Strongly encouraged for those students seeking CMA certification. Pre-Requisite: ACCT 202 with a grade of C- or better. Typically offered Spring only.

ACCT350  Accountancy  BU  Undergraduate  3  Gross income, adjustments, itemized deductions, personal exemptions, capital gains and losses, passive activities, the individual tax computations and credits. Pre-Requisites: ACCT 202 with a grade of C- or better. Typically Offered Fall only

ACCT370  Accountancy  BU  Undergraduate  3  Topics covered include: principles and methodology of fraud detection and deterrence; ethical issues related to accounting and auditing; the nature of fraud and its effects on business organizations. Methods to prevent, detect, and investigate fraud will be explored in detail with a focus on management and financial statement fraud. Students will develop skills in preventing and detecting fraudulent activities. Prerequisites: Junior standing and completion of ACCT 202 with a C- or better. Offered Spring.
ACCT372  Accountancy  BU  Undergraduate  3
Students will focus on the financial aspects of business disputes and fraud. This includes an overview of the legal aspects of disputes from an expert witness perspective, quantification of financial damage techniques in areas such as breach of contract, lost profits and breach of fiduciary duty. Additionally, students will examine issues unique to contracts between private companies and government entities. Prerequisites: Junior standing and completion of ACCT 202 with a C- or better. Offered Fall.

ACCT410  Accountancy  BU  Undergraduate  3
Expands a student's exposure to financial accounting concepts and GAAP procedures. Topics include: dilutive securities, revenue recognition, accounting changes, statement interpretation, interim reporting, partnerships, insolvency, segment reporting and S.E.C. Pre-Requisites: ACCT 310 with a grade of C- or better. Typically Offered Fall Only

ACCT412  Accountancy  BU  Undergraduate  3
A continuation of ACCT 410. Estates and trusts, foreign currency, business combinations, consolidated statements, and intercompany transactions. Pre-Requisites: ACCT 312 with a grade of D- or better. Typically Offered Fall, Spring

ACCT414  Accountancy  BU  Undergraduate  3
A study of the background and present state of accounting theory with an emphasis on recent accounting pronouncements. The course considers the history and development of accounting principles with an intensive study of theoretical problems related to the determination of income and the presentation of financial position. Pre-Requisites: ACCT 312 with a grade of D- or better. Typically Offered Fall Only

ACCT431  Accountancy  BU  Undergraduate  3
The design and installation of accounting information systems and controls. Combines internal controls, financial reporting and flow charts of financial information with manual, mechanical, and electronic data processing techniques. The integration of financial and cost data into the information system and its relation to internal control is the objective of the course. Pre-Requisites: ACCT 310 with a grade of C- or better. Typically Offered Fall only

ACCT441  Accountancy  BU  Undergraduate  3
Generally accepted auditing standards, audit procedures and programs, internal control, statistical sampling, proper work paper techniques, AICPA industry audit guides, SEC releases, ethics and legal liabilities of the auditor and other specialized problems of the attest function. Meets General Education requirements for Collaboration. Pre-Requisites: ACCT 431 with a grade of D- or better. Typically Offered Fall, Spring
ACCT450 Accountancy BU Undergraduate 3
Continuing the federal income tax sequence, the course topics include the concepts of gross income, ordinary and necessary business expenses, property transactions, accounting periods and methods, and the alternative tax system for C-Corporations, S-Corporations, and Personal Service Corporations. In addition to income taxation, the course includes the tax consequences of corporate formation, distributions, and liquidations. Pre-requisites: ACCT 202 with a grade of C- or better. Typically Offered Spring Only

ACCT461 Accountancy BU Undergraduate 3
A study of the fundamental accounting principles related to the operations of governmental entities. The course considers the accounting and financial reporting practices of governmental entities, and examines the standards that affect their accounting and financial reporting systems. Pre-requisites: ACCT 312 with a grade of D- or better. Typically Offered Fall Only

ACCT491 Accountancy BU Undergraduate 1 TO 9
Work experience with cooperating employer organizations in business, industry, government, and education. The work experience is designed to be relevant to the student’s academic pursuits, personal development, and professional preparation. The work experience must last a minimum of 15 weeks with the total hours worked approved by the department head. Pre-requisites: Completion of 60 semester hrs & department approval. Typically Offered Fall, Spring, Summer

ACCT614 Accountancy BU Graduate 3
Accounting for Managers introduces accounting framework used in financial reporting (financial accounting) with emphasis on the interpretation of financial statements including how managers analyze financial data and economic events to assess and manage value creation activities (managerial accounting). Topics include an overview of the financial and Accounting for Managers environments; valuation of financial statement accounts; short and long-term budget preparation and analysis; standard costing and variance analysis; business combinations (mergers and acquisitions); and discussion of GAAP versus IFRS. Prerequisites: Accounting Foundation Competencies, and BUS graduate student. Typically offered Fall, Spring, Summer.

ACCT622 Accountancy BU Graduate 3
This course introduces ethical reasoning, integrity, objectivity, independence, core values and addresses standards of ethics for accountants and auditors at all levels. You will be taught the nature and scope of ethics standards and the need for them in business and society. During the course, you will review professional codes of conduct for principal governing bodies, discuss their application, and apply your learning by evaluating case studies. Prerequisite: ACCT 614 with C or better.
ACCT623  Accountancy  BU  Graduate  3
This course addresses the development of professional tax and accounting research techniques. Coursework includes methodology of accounting and tax research; sources and roles of legislative, executive, judicial and professional bodies; communication of research results; professional responsibilities of tax practice; online tax research databases and FASB codification. Prerequisite: ACCT 614 with C or better.

ACCT624  Accountancy  BU  Graduate  3
This course addresses accounting issues relevant to managers of a multinational company and to global investors. Topics include translation of foreign currency financial statements, accounting for foreign exchange derivatives, International Financial Reporting Standards (IFRS), comparative financial reporting, consolidated statements, and corporate governance systems. Prerequisites: ACCT 614 with C or better.

AFAM107  African American Studies  AS  Undergraduate  3
Introduction to African American Studies is designed for the person who is interested in subjects as diverse as African Civilizations, Diasporic Popular Culture, the Harlem Renaissance, African-Black American Religions, Theories of Development, the Black Arts Movement, and Africana Literature. This course meets General Education requirements: Cultural Enrichment and Race/Ethnicity/Gender Issues and new Fall 2017 Culture and U.S. Diversity. Typically Offered Fall Only

AIMC300  Advertise/Integrate Mktg Comm  BU  Undergraduate  3
Scope and purpose of Integrated Marketing Commutation, brand management and corporate image, consumer behavior, IMC planning, advertising management, advertising design, and message strategies; media e-commerce marketing, alternative marketing; database and direct response marketing; personal selling, sales promotion, public relations and sponsorship programs, IMC ethics, regulation, and evaluation. The course includes a final project that integrates and demonstrates learning. Prerequisites: ENGL 150 C- or better and Sophomore Standing. Typically Offered: Fall, Spring, Summer.

AIMC370  Advertise/Integrate Mktg Comm  BU  Undergraduate  3
This lecture/discussion/hands-on course will focus on the elements of social media marketing and content marketing. Topics covered will include strategy, planning, execution, media placement, and evaluation for today’s relevant social media channels including Facebook, Twitter, LinkedIn, Instagram, Snapchat, YouTube, Pinterest, and others as they are developed. Also covered will be strategy, planning, execution, media placement, and evaluation for content marketing methods including blogging, videos, white papers, infographics, podcasts, and ebooks. The course will culminate in a final project with a real-world client. Prerequisites: MKTG 321 with C- or higher. Typically offered Fall/Spring.
A study of business-to-business advertising/IMC strategies and techniques with an emphasis on its use in improving the salesperson's productivity. Explores business market places and industrial purchasing behavior, IMC department organization and integration with other marketing efforts, focusing on a detailed review of the creative and media functions performed in the context of business-to-business marketing and sales objectives. Prerequisite: AIMC 300 with C- or better. Typically Offered Spring and Summer.

A hands-on overview of Business-to-Business Digital Marketing. Provides proven strategies for increasing profits, customer communications, customer satisfaction, and customer loyalty by using the internet/intranet/extranet to supplement face-to-face sales in the Business-to-Business arena. Prerequisites: MKTG 321 with a C- or better. Typically offered Spring, Summer.

A hands-on overview of Business-to-consumer Digital Marketing. Places digital marketing in perspective as a growing part of the American and global economics how digital is being integrated into some going businesses, how it is becoming a complete way of doing business for others, and how to maximize opportunities for success in this fast-changing field. Prerequisites: MKTG 321 with a C- or better. Typically offered Spring, Summer.

This is a survey type course designed to give the student an overview of the materials, fuels, lubricants, and miscellaneous liquids used in the automotive, heavy equipment and trucking industries. Also included are topics covering environmental concerns and alternative energy sources. Typically Offered Fall Semester.

Focuses on evolution of automotive product distribution in the U.S., the development of aftermarket channels, marketing, demographics, and the global nature of the industry. Includes an overview of the evolution of management styles, manufacturing processes, and a discussion of current and future trends. PC software applications applicable to this industry are introduced, including operating systems (Windows), word processing (Word), E-Mail, and Internet access. Meets General Education requirements for Collaboration and Problem Solving Typically Offered Fall Semester.

Overview of wholesale and retail distribution practices, focusing on the OEM franchised dealer system. Includes introduction of wholesale financing, retail financing and leasing concepts used in the automotive industry. PC spreadsheet applications and presentation software are introduced as management tools. Typically Offered Spring Semester.
AMGT303 Automotive Management TE Undergraduate 4
Introduction to basic accounting fundamentals and the adaptation of them to a factory-dealership accounting system. Emphasis centers on the preparation of accounting statements and management reports along with an overview of computerized accounting and the importance of strong management control. Also introduces the concept of using accounting fundamentals to start a small industry related business. Typically Offered Spring Semester.

AMGT360 Automotive Management TE Undergraduate 3
This course examines the automobile's profound effect on Twentieth Century American culture. For Americans, the car has been this century's dominant symbol - representing freedom, affluence, and power - and the course examines this symbolism. The automobile is also an art form, and the course probes this dimension. Most significantly, the automobile has reshaped American society, and the course studies these effects while also looking at changes likely for the future. Typically Offered Fall Semester.

AMGT401 Automotive Management TE Undergraduate 4
This course introduces financial statement analysis as a key to automotive management. Major emphasis is placed on the parts, service, and body shop operations, including PC based dealership management software as a management tool. Includes the preparation of a comprehensive dealer business plan, outlining typical steps and procedures involved in the planning, building, staffing, and financing of a typical dealership. Prerequisites: AMGT 303. Meets General Education requirements for Collaboration. Typically Offered Fall Semester.

AMGT402 Automotive Management TE Undergraduate 4
This course contains an overview of automotive sales management, focusing on compensation plans, selling techniques, and proper motivation of employees. Team building exercises, presentation skills, and objection handling techniques are also explored, along with financial statement analysis and used vehicle management/marketing. Prerequisites: AMGT 303. Meets General Education requirements for Collaboration and Problem Solving. Typically Offered Spring and Summer Semesters.

AMGT404 Automotive Management TE Undergraduate 3
Identification of product failure and the interaction required between the customer, dealer, and the manufacturer to achieve acceptable solutions to field problems. Includes preparation of warranty and field reports. Typically Offered Spring and Summer Semesters.

AMGT460 Automotive Management TE Undergraduate 3
The identification and development of Internet marketing tools for automotive retailers focusing on the needs of sales, service, and parts. Special emphasis placed on the development of a comprehensive website to effectively market vehicles, service, and parts in the automotive retail environment. Typically Offered Spring and Summer Semesters.
<table>
<thead>
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<td>AMGT499</td>
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<td>ANTH121</td>
<td>Anthropology</td>
<td>AS</td>
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<td>ANTH122</td>
<td>Anthropology</td>
<td>AS</td>
<td>Undergraduate</td>
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</tbody>
</table>

**AMGT493 Automotive Management**

Work experience with manufacturers, distributors, or dealers. Written weekly progress reports by the student are required. Prerequisites: Senior Status. Typically Offered Fall, Spring and Summer Semesters.

**AMGT499 Automotive Management**

Students will create, assemble, and present a portfolio demonstrating successful completion of the degree. The portfolio will contain examples from each class - created and detailed in such a way as to demonstrate skills gained from the AMGT program to a potential employer. Students will give an in-class presentation with particular attention paid to the experiences and projects resulting from their internship. Typically offered Summer semester. Prerequisites: Senior status and completion of: AMGT 300, 301, 302, 303, 360, 401, 402, 404, 460.

**ANTH121 Anthropology**

Compares methods, investigates theoretical views and physical evidence about the origin of humans and culture. The evolution of animals, primates, humans and their culture is gained from fossils, artifacts, and studies of human and other animal behavior. This course meets General Education requirements: Social Awareness; Race/Ethnicity/Gender Issues; Social Foundations and new Fall 2017 Self and Society, Self and Society Foundations and U.S. Diversity. Pre-Requisites: Reading score of 17 ACT or Verbal 430 SAT or READ 106 with grade of C/better. Typically Offered Fall, Spring.

**ANTH122 Anthropology**

Examination of importance of culture for human adaptation and survival. The variations and uniformities within the lifeways of humankind demonstrate the richness of human responses to basic needs to subsist, order behavior, and adjust to change. Systems of meaning which allow humans to make sense of their efforts are studied. A holistic approach to the comparative study of human populations. This course meets General Education requirements: Global Consciousness, Social Awareness and Race/Ethnicity/Gender Issues; Social Foundations and new Fall 2017 Self and Society, Self and Society Foundations and U.S. Diversity. Typically Offered Fall, Spring.
ANTH300 Anthropology AS Undergraduate 3

Designed to provide the background for an understanding of the great diversity of cultures and lifeways which developed in North America following the migration of Asians both during and after the Wisconsin glaciations. These “Native Americans” were the ancestors of the peoples contacted by Europeans during the Post Columbian period. These early cultures can only be studied through the application of the theories, methods, and techniques of archaeology and careful assessment of the oral traditions of the native peoples. Also includes the earliest reports of Europeans who first made contact before widespread dispersion, war, and disease obliterated many of the records. This course meets General Education requirements: Social Awareness and Race/Ethnicity/Gender Issues. Pre-Requisites: ANTH 121 or 122 or SOCY 121 or 122 with a grade of D- or better in each course. Typically Offered Spring Only

ANTH310 Anthropology AS Undergraduate 3

An ethnohistorical survey of selected Indian groups north of Mexico from the time of in-migration by big game hunters via Beringia to the present. The adaptation of populations to culture areas and then adjustment to settlement and control by European powers and later by the United States and Canada are studied from the perspectives of the first Americans. This course meets General Education requirements: Social Awareness and Race/Ethnicity/Gender Issues. Pre-Requisites: ANTH 121 or 122 or SOCY 121 or 122 with a grade of D- or better in each course. Typically Offered Fall Only

ANTH320 Anthropology AS Undergraduate 3

A general survey of the issues, policies, problems, and people pertinent to the existence of American Indians in the United States in the 20th Century. This course meets General education requirements: Social Awareness; Race/Ethnicity/Gender Issues. Pre-Requisites: ANTH 121 or 122 or SOCY 121 or 122 with a grade of D- or better in each course. Typically Offered On Demand

ANTH321 Anthropology AS Undergraduate 3

This course will provide a historical, theoretical, and cultural context for studying women in developing countries. Western cultural conceptions of sex, gender, and women will be considered followed by a consideration of the ideology of patriarchy and the evolution of sexual stratification. Several Asian, African, Latin American constructions of femininity, sexuality and womanhood will be studied. The gendering of development and how women have organized and struggled for human and sexual rights will also be studied. This course meets General Education requirements: Social Awareness and Global Consciousness. Pre-Requisites: ANTH 122 or SOCY 121 or SOCY 122 or PSYC 150. Typically Offered Spring Only, Even Ye
Medical anthropology deals with illness and healing in cross-cultural perspective, and raises questions about the nature and cause of illness, the effectiveness of various forms of therapy, and the roles and attributes of different types of healers. Attention will also be directed to the relationship between classical medicine and the religious traditions of Hinduism, Islam, Buddhism and Taoism and to the modern revival of traditional medicine and its role in the health-care delivery. This course meets General Education requirements: Social Awareness and Global Consciousness and new Fall 2017 Global Diversity and Self and Society. Pre-Requisites: ANTH 122 or GEOG 112 or SOCY 121 with a grade of D- or better in each course. Typically Offered Fall Only

Health, healing and learning how their bodies work are issues of concern to women worldwide. In this class students will take a cross-cultural approach to understanding how pregnancy and reproduction are socially and culturally constructed and constrained. Students will experience a radically new way of considering and representing the body. Students will also examine reproductive rights concerns, birth control, and the relation of sexually transmitted diseases to fertility and women's perceptions of their bodies. This course meets General Education requirements: Social Awareness and Global Consciousness and new Fall 2017 Self and Society and Global Diversity. Pre-Requisites: ANTH 122 or GEOG 112 or SOCY 121 with a grade of D- or better in each course. Typically Offered On Demand

An introduction to the culture and society of Japan. Special emphasis will be given to the socio-psychological aspects of Japanese culture, especially in the areas of communication, child-rearing, male-female relationships, reciprocal obligations, persistence, and achievement motivation. Typically Offered Fall Only

A continuation of ANTH 385. The effects of prehistoric and historic factors on the cultural context of modern Japanese culture. Special attention will be given to American attitudes about Japanese culture and society. Typically Offered Spring Only

This course will introduce students to a range of automation processes used in several manufacturing industries. Students will learn how to utilize automation to optimize manufacturing processes, reduce costs, improve quality, and improve time to market. Students will also learn how to manage an automation project including such topics as project selection, project justification, managing the supply chain and managing new technologies. Typically Offered Fall, Spring
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<th>Course Title</th>
<th>Department</th>
<th>Type</th>
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<td>APPS351</td>
<td>Applied Science</td>
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<td>APPS401</td>
<td>Applied Science</td>
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<td>APPS420</td>
<td>Applied Science</td>
<td>TE</td>
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<td>APPS450</td>
<td>Applied Science</td>
<td>TE</td>
<td>Undergraduate</td>
<td>3</td>
</tr>
</tbody>
</table>

**APPS351 Applied Science**

Undergraduate 3

Participants will utilizes the five principles of lean thinking (Value, Value Stream, Flow, Pull, and Perfection) to design/redesign a company's production flow and physical layout. Students will learn ways to do more with less - less human effort, equipment, time, and space - while coming closer to providing customers with exactly what they want. Students will be challenged to identify and eliminate various forms of waste. Students will learn the 5S method of visual workplace layout. Recommended to have manufacturing experience. Pre-Requisites: Junior level status with some manufacturing experience. Typically Offered Fall, Spring

**APPS401 Applied Science**

Undergraduate 3

Course involves national, state and local contemporary issues that effect Industrial Management. Case studies will be used to show the impact on business and the economy. Course also explores competition, quality and cultural differences in industrial management. Typically Offered Fall, Spring

**APPS420 Applied Science**

Undergraduate 3

This course emphasizes the development, maintenance and management issues related to quality, standardization and formal certification, in order to acquaint the student with trends in business practices that assure marketplace acceptance of products and services. Fundamentals of quality management systems and methods used to implement these models will be emphasized. Special attention will be given to total quality management in conjunction with Deming, the Baldridge Award, ISO programs, and emerging trends driven by globalization. Prerequisites: PROJ 320 and APPS 350. Typically Offered Fall, Spring and Summer.

**APPS450 Applied Science**

Undergraduate 3

Participants will understand the need for, and practical application of, continuous improvement concepts by identifying and using appropriate tools to contribute to organizational goals. Prepares individuals for manufacturing operations leadership. Students learn cutting edge manufacturing processes including Lean and Agile Manufacturing, Total Quality Management and Continuous Improvement. Students will expand leadership skills and knowledge of essential manufacturing components including work and production system analysis, process and project management, quality systems, innovation management and employee involvement. Recommended to have prior industry experience. Pre-Requisites: MFGE 341, APPS 351 and APPS 401. Typically Offered Fall, Spring
This course is intended as both a review of concepts covered within the student’s course work and an applied analysis of a current work based problem or opportunity. Students will be expected to apply previously covered concepts as part of a managerial or technical strategic analysis. This analysis will be provided as a written research document. Prerequisites: Department permission; Minimum of 19 hours of core classes including MFGE 352 and MFGE 423 and MGMT 370 and ENGL 311 or ENGL 321 or ENGL 325. Typically Offered Fall, Spring, Summer

A foundation in the graphic methods used to plan and present buildings. Hard line and sketching techniques will be used to develop orthographic, axonometric, pictorial, and modeled representations of buildings. Emphasis will be placed on drawing layout, graphic communication, and visual enhancement. Prerequisites: Admission into Architecture program. Typically Offered Fall Only

Introduction to the use of digital graphic media as tools of architectural design, representation and documentation. Includes 2-D documentation and 3-D modeling and rendering techniques. Prerequisites: ARCH 101 and ARCH 112. Typically Offered Spring.

Development of architectural graphic concepts using microcomputer based CADD (Computer Aided Design/Drafting) systems. Typically Offered Fall, Spring.

Development of architectural graphic concepts using microcomputer based CADD (Computer Aided Design/Drafting) systems. For HVAC students only. Recommend basic keyboard skills and awareness of Windows and PC systems. Pre-Requisites: Basic keyboard skills and awareness of Windows and PC systems. Typically Offered Spring Only

Study of properties, characteristics, limitations, selection criteria and graphical interpretation of concrete, steel, masonry and wood used in foundation, substructure, and super-structure, building systems. Considers aesthetic, performance, maintainability and cost/benefit aspects. Introduces major building codes, material and industry standards, and utilization of manufacturers’ catalogs. Typically Offered Fall Only

Study of properties, characteristics, limitations, selection criteria and graphical interpretation of common interior and exterior finish materials and systems utilized in exterior closure, roofing, interior construction and conveying systems of buildings. Considers aesthetic, performance, code requirements, maintainability and cost/benefit aspects. Pre-Requisites: ARCH 112. Typically Offered Spring Only
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<th>Description</th>
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<tr>
<td>ARCH119</td>
<td>Architectural Technology</td>
<td>1</td>
<td>Undergraduate</td>
<td>An overview of the history of sustainability with an emphasis on the built environment. Lecture topics range from the roots of environmental thought to contemporary challenges. Prerequisites: Admission into the ARCH program or permission of instructor. Typically offered Spring.</td>
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<td>ARCH203</td>
<td>Architectural Technology</td>
<td>4</td>
<td>Undergraduate</td>
<td>Introduction to the graphic language, methods, and organizational principles of construction documents. Emphasis is placed on building materials, processes and assemblies and their graphic depiction in working drawings. Additional emphasis is placed on adaptation of standard practices in increase sustainability. Student projects area created in a digital environment following principles of standard practice in the architectural profession. Prerequisites: ARCH 101 and ARCH 112 and ARCH 115. Typically Offered Fall.</td>
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<td>ARCH204</td>
<td>Architectural Technology</td>
<td>4</td>
<td>Undergraduate</td>
<td>Introduction to the process of developing construction details and the assembly of materials that serve both functional and aesthetic requirements of architecture. Emphasis is placed on product research, performance evaluation, cost/benefit studies, and sustainability. Various methods of presentation will be employed to communicate understanding of material relationships and assemblies. Prerequisites: ARCH 203. Typically Offered Spring.</td>
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<td>ARCH216</td>
<td>Architectural Technology</td>
<td>2</td>
<td>Undergraduate</td>
<td>Overview of legal relationships between owner, architect and contractor, and a study of written contractual documents developed for an architectural project. Office procedures, A.I.A. standard documents and currently accepted formats and systems are discussed. Student develops the technical section content of a specification based upon a previously completed project. Pre-Requisites: Sophomore status. Typically Offered Spring Only.</td>
</tr>
<tr>
<td>ARCH223</td>
<td>Architectural Technology</td>
<td>3</td>
<td>Undergraduate</td>
<td>Provides an awareness of the primary structural systems, including wood, concrete and steel; and the appropriate use of each. Basic static and strength of material principles are introduced and students are familiarized with references such as the AISC Steel Handbook and the ACI code. Pre-Requisites: MATH 116 &amp; PHYS 211 &amp; ARCH 112. Typically Offered Fall Only.</td>
</tr>
<tr>
<td>ARCH241</td>
<td>Architectural Technology</td>
<td>3</td>
<td>Undergraduate</td>
<td>An exploration of the principles underlying arch design such as shape; form and space; pattern and texture; scale and proportion; function and circulation; color and light; environment, context and meaning. Students will develop a design vocabulary; skills in public presentation; advanced graphic and model-making skills; and an understanding of the integration of architectural form with complimentary disciplines. Prerequisites: ARCH 203. Typically Offered Spring. Typically Offered Fall Only.</td>
</tr>
</tbody>
</table>
ARCH242 Architectural Technology TE Undergraduate 3
An introduction to the principles of architectural design and the architectural design process. This course builds upon basic design principles applying them to architectural forms. Emphasis is placed on form, space, proportion, tectonics, and materiality as they apply to architectural design that meets basic programmatic requirements. Prerequisites: ARCH 241. Typically offered Spring.

ARCH244 Architectural Technology TE Undergraduate 3
An investigation of the primary styles and movements in Western and Non-Western architecture from the prehistoric period through the middle Ages. The course will examine cultural, architectural and technological developments during the periods of formation of civilizations, expansion of empires, and developments in religious and governmental structure. This course meets General Education requirements: Cultural Enrichment, and new Fall 2017 Culture. Prerequisites: ENGL 150 Typically Offered Fall, Spring

ARCH245 Architectural Technology TE Undergraduate 3
An investigation of the primary styles and movements in Western and non-Western architecture from the Renaissance through the 20th Century. The course will examine cultural, architectural and technological developments during the periods of modernization in world history, including the industrial and Technological revolutions. Meets general education requirements for Cultural Enrichment, and new Fall 2017 Culture. Prerequisites: ARCH 244. Typically Offered Spring only.

ARCH246 Architectural Technology TE Undergraduate 3
An investigation of the primary styles and movements in American and European architecture from the late 19th century to the late 20th century. The course will examine cultural and architectural changes wrought by the Industrial Revolution and responses to them through the Arts and Crafts Movement, the impact of the world wars, the International Style and Modernism, as well as the development of Post-Modern and Deconstructivist architectural theories. Prerequisites: ARCH 244 Typically Offered Spring.

ARCH250 Architectural Technology TE Undergraduate 3
Basic methodology of construction cost estimating based on a systems approach. Problems will include takeoff and preparation of estimates that would be appropriate for use during the design stage of a project. Prerequisites: MATH 116 or MATH 120 and ARCH 203. Typically Offered Spring Only
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
<th>Prerequisites</th>
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</thead>
<tbody>
<tr>
<td>ARCH270</td>
<td>Architectural Technology</td>
<td>3</td>
<td>ARCH 102 and ARCH 115 and ARCH 203. Typically Offered Spring Only</td>
</tr>
<tr>
<td>ARCH285</td>
<td>Architectural Technology</td>
<td>3</td>
<td>ARCH 203 and ARCH 241 and ARCH 245. Typically Offered Fall, Spring</td>
</tr>
<tr>
<td>ARCH323</td>
<td>Architectural Technology</td>
<td>3</td>
<td>ARCH 223. Typically Offered Fall only.</td>
</tr>
<tr>
<td>ARCH341</td>
<td>Architectural Technology</td>
<td>5</td>
<td>ARCH 341. Meets General Education requirements for Problem Solving. Typically Offered Spring only.</td>
</tr>
<tr>
<td>ARCH350</td>
<td>Architectural Technology</td>
<td>3</td>
<td>ARCH 204. Typically offered Spring.</td>
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<tr>
<td>ARCH361</td>
<td>Architectural Technology</td>
<td>Undergraduate</td>
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<tr>
<td>ARCH362</td>
<td>Architectural Technology</td>
<td>Undergraduate</td>
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<td>ARCH419</td>
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<td>ARCH421</td>
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<td>ARCH441</td>
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<tr>
<td>ARCH499</td>
<td>Architectural Technology</td>
<td>Undergraduate</td>
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</tbody>
</table>
ARTh110  Art History  AS  Undergraduate  3

This course introduces the discipline of Art History, which examines the communicative power of art and visual culture. This chronological survey of the art of the Western world examines cultures spanning from Prehistory through the Middle Ages. The cultures to be studied include those of the Ancient Near East, Egypt, Greece, Rome, Byzantium, and the global Middle Ages. Focusing on works of painting, sculpture, and architecture, students will examine art within its cultural and historical contexts. Students will also develop the skills and vocabulary to discuss works of art, paying careful attention to the formal elements of art and the principles of design. This course meets general education requirements: Cultural Enrichment and new Fall 2017 Culture. Typically Offered On Demand

ARTh111  Art History  AS  Undergraduate  3

This course introduces the discipline of Art History, which examines the communicative power of art and visual culture. This chronological survey covers the art of the Western world from the early Renaissance through the twenty-first century. Focusing on works of painting, sculpture, and architecture, students will examine art within its cultural and historical contexts. Students will also develop the skills and vocabulary to discuss works of art, paying careful attention to the formal elements of art and the principles of design. This course meets General Education requirements: Cultural Enrichment and new Fall 2017 Culture. Typically Offered On Demand

ARTh203  Art History  AS  Undergraduate  3

An introduction to visual art-sculpture, painting, drawings, pottery, textiles—produced by African Americans from the colonial era to the present. Attention will be given to the aesthetic links between African art forms and African American artistic expression. The course also exposes students to the social, political, and economic conditions that impacted the production of visual art by African Americans. This course meets the General Education requirements: Cultural Enrichment and Race/Ethnicity/Gender, and new Fall 2017 Culture and US Diversity. Typically Offered On Demand
This course examines the material, visual, and artistic culture of ancient Greece and Rome. The Greeks and Romans created monuments of architecture, sculpture, and painting to communicate their values, expressing ideas about society, politics, religion, and philosophy. This course will investigate important works of Greek and Roman art, as well as the source material that helps us to understand these works in their historical and cultural contexts. Within a chronological framework, thematic topics will include patronage, power, identity, memory, and religion, as well as the relationship between public and private art. This course meets General Education requirements: Cultural Enrichment; Global Consciousness, and new Fall 2017 Culture, Global Diversity. Typically offered: Fall, Spring, Summer.

This course examines the history of Modern Art, from the late nineteenth century through present day. Students will examine the historical, theoretical, and aesthetic issues often expressed in the art of the modern period. Topics include the avant-garde, abstraction, and non-representational art. Media studied include painting, sculpture, architecture, graphic arts, photography, and film. Students will also develop the skills and vocabulary to discuss works of art, paying careful attention to the formal elements of art and the principles of design. This course meets general education requirements: Cultural Enrichment, and new Fall 2017 Culture. Typically Offered On Demand.

A chronological survey of the development of graphic design from the advent of writing through printing, photography, and computer graphics. This course meets General Education requirement: Cultural Enrichment, and new Fall 2017 Culture. Pre-Requisites: ARTH 110 or 111. Typically Offered On Demand.

This course focuses on American art from the 1600’s through the present, with an emphasis on painting, sculpture, and architecture. Both Native American traditions and colonial, European interactions are studied, as well as the contributions of America’s many immigrant cultures. Topics include portraiture, Romantic landscape painting, history painting, and Modernism. Particular consideration will be given to ideas about “American” identity as it is expressed through art. This course meets General Education requirements: Cultural Enrichment, and new Fall 2017 Culture. Pre-Requisites: ENGL 250. Typically Offered On Demand.
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<td>Art History</td>
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<td>ARTS101</td>
<td>Art Studio</td>
<td>Undergraduate</td>
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<tr>
<td>ARTS102</td>
<td>Art Studio</td>
<td>Undergraduate</td>
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<tr>
<td>ARTS130</td>
<td>Art Studio</td>
<td>Undergraduate</td>
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<tr>
<td>ARTS131</td>
<td>Art Studio</td>
<td>Undergraduate</td>
<td>1</td>
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</tr>
</tbody>
</table>

This course explores the diverse roles women have played in the history of art, including that of artist, patron, critic, subject, and source of inspiration. Particular attention will be given to studying women artists and their work in a variety of media, including painting, sculpture, ceramics, printmaking, photography, and textiles. This course will also examine the underlying obstacles and oppression that women have faced within the art world. This course meets General Education requirements: Cultural Enrichment and Race/Ethnicity/Gender Issues and new Fall 2017 Culture and US Diversity. Typically Offered On Demand.

Fundamental art training, two dimensional art, introduction to various techniques and media. Pencil, pastel, ink, and watercolor will be explored while interpreting a variety of subject matter including still-life, landscape, and the figure. Creative problem solving will be stressed. This course meets general education requirements: Cultural Enrichment and new Fall 2017 Culture. Typically Offered On Demand.

Two dimensional art, drawing with various color media; includes color theory, mixing, and composition. Painting experiences range from representational to the abstract. This course meets General Education requirements: Cultural Enrichment and new Fall 2017 Culture. Typically Offered On Demand.

A studio course exploring the creative aspects of painting. Acquaints students with the media of oil and acrylic and encourages individualistic style in painting. This course meets general education requirements: Cultural Enrichment and new Fall 2017 Culture. Typically Offered Spring Only.

An introduction to visual art designed to provide the elementary classroom teacher with introductory art terminology, fundamental art knowledge and the basic hands-on art skills necessary to allow the incorporation of art into general classroom activities. Pre-Requisites: Elementary Education, Early Childhood Education and Social Studies Elementary Education students only. Typically Offered Fall Only.
ARTS220 Art Studio AS Undergraduate 3

3D Design/Beginning sculpture introduces the studio art student to the basic elements of 3D Design. This course also serves as a beginning sculpture course that introduces materials, fabrication techniques and content. This course will require the student to be prepared to engage in visual problem solving. This course studies the role of the artist and art in the quality and character of human life and our cultural existence. The challenge this course offers is to bring forth novel, innovative or imaginative visual solutions. The students in this 3D Design course will participate in the on-going projects of the Aesthetic Engineering concept being developed at FSU. This class is best suited for students with a strong personal work ethic. This course meeting the General Education Requirements for Cultural Enrichment, and new Fall 2017 Culture. Prerequisites: ARTS 101 or consent of instructor. Typically offered Spring.

ASTR110 Astronomy AS Undergraduate 1

Introductory astronomy involving various alignments of the sun and particular stars at special times of the year with buildings, temples and pyramids of ancient archaeological sites. Areas of study include the Egyptian pyramids and temples, Stonehenge, Teotihuacan, Monte Alban, Chichen Itza, and the Jai Singh observatories in India. Typically Offered On Demand

ASTR120 Astronomy AS Undergraduate 4

Introductory astronomy involving distance determination methods, radiation concepts, characteristics of our sun, star types and their evolution, Red Giants, White Dwarfs, Planetary Nebula, Pulsars, Black Holes, multiple and binary star systems, clusters, the Milky Way, other galaxies, and cosmology. Laboratory includes telescope observation. Laboratory contains exercises related to topics covered in lecture. This course meets General Education requirements: Scientific Understanding Lab. Pre-Requisites: MATH 010 with a grade of C- or better or minimum Math score of 15 on ACT or minimum score of 350 on pre 2016 SAT or post 2016 SAT MATH 400. Typically Offered Spring Summer

ASTR130 Astronomy AS Undergraduate 4

Introductory astronomy involving historical contributions of ancient and early astronomers, Kepler’s and Newton’s laws, ellipse properties and planetary motions, the sun-earth-moon system, geological and meteorological characteristics of each planet and its moons, comet characteristics, and asteroids. Laboratory includes telescope observation. Laboratory contains exercises related to topics covered in lecture. This course meets General Education requirements: Scientific Understanding Lab and new Fall 2017 Natural Sciences Lab. Pre-Requisites: MATH 010 with a grade of C- or better or minimum Math score of 15 on ACT or minimum score of 350 on pre 2016 SAT or post 2016 SAT MATH 400. Typically Offered Fall Only
Introducory astronomy involving ancient shadow and sun positional astronomy, evolution of our sun and similar stars, interior modeling of the sun involving its temperature, pressure and energy transport; magnetic properties associated with sun surface features as sunspots, prominences, and flairs; and the effects of the sun on the earth. Solar telescope observation to be arranged. This course meets General Education requirements: Scientific Understanding Lab and Natural Sciences Lab. Pre-Requisites: MATH 010 with a grade of C- or better or minimum Math score of 15 on ACT or minimum score of 350 on pre 2016 SAT or post 2016 SAT 400. Typically Offered On Demand

Concepts of physics will be reexamined in more detail to show how they apply to various areas of astronomy. Appropriate mathematics is used to describe the celestial phenomena observed. Topics include celestial mechanics, electromagnetic spectra, distance determination, binary system, stellar structure, and variable stars. Pre-Requisites: ASTR 120 or 130; and MATH 120. Typically Offered Summer Only

-designed to develop skills and knowledge in the area of manual transmissions/transaxles and driveline components. This includes the function, construction, operation, inspection, troubleshooting and servicing of front, rear, and four-wheel drive power transmission devices used in passenger cars and light trucks. Typically Offered Fall, Spring

Includes nomenclature, theory of operation and service procedures for conventional and electronic anti-lock brake systems and other related systems. Also included are basic shop practices such as tube flaring, honing operations, and tool application. Typically Offered Fall, Spring

Provides electrical fundamentals and practical lab activities. Includes electricity, Ohm's Law, magnetism, inductance, capacitance, basic electronic devices, schematic user's information, test procedures, test equipment, and batteries. A prerequisite for automotive electrical courses. Typically Offered Fall, Spring

In-depth study of design, operation, troubleshooting, and service procedures for modern gasoline and diesel engines. Procedure for disassembly and reassembly of engine units, service, and technical data are presented. Typically Offered Fall, Spring

Discusses nomenclature, theory of operation, and service procedures for passenger car and light truck suspensions and conventional and power steering systems. Includes instruction on two-wheel and four-wheel electronic systems. Typically Offered Fall, Spring
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Type</th>
<th>Degree</th>
<th>Credits</th>
<th>Description</th>
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<tbody>
<tr>
<td>AUTO117</td>
<td>Automotive Service Technology</td>
<td>TE</td>
<td>Undergrad</td>
<td>4</td>
<td>A study of automotive fuel and emission controls with particular emphasis placed on micro-processor control systems. Fuel injection and the operational theory of current emission control devices will be covered in detail. Also, tanks, lines, fuel rails, pumps, filters, and manifolds will be covered. Pre-Requisites: AUTO 113. Typically Offered Fall, Spring</td>
</tr>
<tr>
<td>AUTO200</td>
<td>Automotive Service Technology</td>
<td>TE</td>
<td>Undergrad</td>
<td>6</td>
<td>Includes field type service work in an instructional setting. Emphasizes vehicle service needs which are most frequently requested in modern commercial service centers. The diagnosis and repair of computerized vehicle systems will be performed. Pre-Requisites: AUTO 111, 112, 113, 114, 115 &amp; 117 with a grade of C- or better. Typically Offered Fall, Spring, Summer</td>
</tr>
<tr>
<td>AUTO201</td>
<td>Automotive Service Technology</td>
<td>TE</td>
<td>Undergrad</td>
<td>4</td>
<td>Engine machining with performance applications including cylinder reconditioning, main housing bore, reconditioning, resurfacing and crankshaft balancing. Pre-Requisites: AUTO 114. Typically Offered Fall Only</td>
</tr>
<tr>
<td>AUTO202</td>
<td>Automotive Service Technology</td>
<td>TE</td>
<td>Undergrad</td>
<td>4</td>
<td>Engine machining with performance applications including crankshaft reconditioning, rod reconditioning, and cylinder head reconditioning. Pre-Requisites: AUTO 114. Typically Offered Spring, Summer</td>
</tr>
<tr>
<td>AUTO211</td>
<td>Automotive Service Technology</td>
<td>TE</td>
<td>Undergrad</td>
<td>4</td>
<td>A detailed study of the function, construction, operation, servicing, and troubleshooting of rear wheel drive and transaxle automatic transmissions for passenger cars and light trucks. Typically Offered Fall, Spring</td>
</tr>
<tr>
<td>AUTO213</td>
<td>Automotive Service Technology</td>
<td>TE</td>
<td>Undergrad</td>
<td>4</td>
<td>An in-depth study of the theory, diagnosis, and repair of chassis electrical and electronic systems. Includes the study of lighting circuits, electronic dash circuits, inflatable restraint systems, and electronic cruise control. Pre-Requisites: AUTO 113. Typically Offered Fall, Spring</td>
</tr>
<tr>
<td>AUTO214</td>
<td>Automotive Service Technology</td>
<td>TE</td>
<td>Undergrad</td>
<td>4</td>
<td>In-depth study of automotive, heating, ventilation, and air conditioning systems. The course includes theory of operation, diagnosis, and repair of HVAC systems. Environmental safety issues are stressed including law and regulations, CFC recovery and recycling, ozone depletion, and new, environmentally safe systems. Computerized automatic temperature controlled systems are also covered. Typically Offered Fall, Spring</td>
</tr>
<tr>
<td>AUTO291</td>
<td>Automotive Service Technology</td>
<td>TE</td>
<td>Undergrad</td>
<td>1 TO 6</td>
<td>Cooperative work experience for students in the Automotive Service Technology program. Under special circumstances students will be allowed to substitute an appropriate number of AUTO 291 credits for AUTO 200 and/or AUTO 250. Work stations and assignments must be appropriate for the student's level of academic preparation and provide suitable &quot;hands on&quot; experience. Each work experience situation must have departmental approval. Typically Offered Fall, Spring, Summer</td>
</tr>
</tbody>
</table>
This course is designed to introduce students to the high performance segment of the automotive industry. This course will deal with the design factors that are unique on high output engines and how to modify engines to obtain the desired outcome. Pre-Requisites: AUTO 114 and AUTO 117 and MATH 116. Meets General Education requirements for Collaboration and Problem Solving. Typically Offered Spring Only

Introduction to dynamometer testing. This course will introduce students to dynamometer testing as an evaluation tool. This will allow the students to measure actual improvement in performance of the engine as different systems are changed. Pre-Requisites: AUTO 114, AUTO 117 and MATH 116. Meets General Education requirements for Collaboration and Problem Solving. Typically Offered Fall Only

Power output of an engine is determined by the pounds of fuel burned within the engine in a period of time. Fuel delivery is limited by the mass air flow through the engine. Mass air flow through a naturally aspirated engine is limited by the pressure differential between atmospheric pressure and cylinder pressure. Various methods exist to increase this pressure differential, but the currently preferred technology is forced induction. The use of forced induction in passenger cars and light trucks has skyrocketed and continues to grow in popularity as manufacturers seek to produce greater power output from downsized engines. Join us for an in-depth study of these fascinating devices. Pre-requisites: AUTO 114, AUTO 117, and MATH 116. Typically offered: Fall, Spring

The study of automotive fuel and emission control systems, engine combustion characteristics and vehicular lubricants. ASTM testing procedures will be included in the lab to analyze fuels and lubricants. Prerequisites: CHEM 114, MATH 126 and Senior Status. Typically Offered Fall.

The emphasis will be placed on the testing of the different emission systems and the control of the systems as they apply to the varying types of fuels systems. Pre-Requisites: CHEM 114, MATH 126 and Senior Status. Typically Offered Spring Only

The emphasis will be placed on the alternate fuel, hybrid, and electrical vehicles as they apply to the varying types of transportation industry. Pre-Requisites: CHEM 114 and MATH 126 and Senior Status. Typically Offered Spring Only
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<th>Course Code</th>
<th>Course Title</th>
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<td>AUTO493</td>
<td>Automotive Service Technology TE</td>
<td>Undergraduate</td>
<td>4</td>
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<tr>
<td>BCTM213</td>
<td>Building Construction Tech Mgm TE</td>
<td>Undergraduate</td>
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<td>BCTM217</td>
<td>Building Construction Tech Mgm TE</td>
<td>Undergraduate</td>
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<td>BCTM225</td>
<td>Building Construction Tech Mgm TE</td>
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<tr>
<td>BCTM234</td>
<td>Building Construction Tech Mgm TE</td>
<td>Undergraduate</td>
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</table>

**AUTO493 Automotive Service Technology TE Undergraduate 4**

Student will be placed in a position that is related to their technical degree. Includes a problem centered technology project planned in joint agreement with student, employer and program coordinator to be completed during internship and presented as a written term paper. Pre-Requisites: Senior status. Typically Offered Fall, Spring, Summer

**BCTM213 Building Construction Tech Mgm TE Undergraduate 3**

The study of basic framing and finish techniques and the materials and methods used in the construction industry. Apply the principles of construction mathematics to layout and assembly of structures consisting of wood and steel beams, joists, studs, rafters, stairs and other framing/enclosure components. Pre-Requisites: D- in CONM 112; C- in MATH 120 or 126 or 130 or 132 or 216 or 220 or 230 or Math ACT 26+/SAT 610+. Typically Offered Spring and Fall.

**BCTM217 Building Construction Tech Mgm TE Undergraduate 3**

Utilizing the emerging computing and information technologies used in the solution of construction problems and in construction management, this course will expose students to the creation and integration of virtual models used in design, construction, estimating, scheduling, and facility management. Pre-requisites: CONM 112, CONM 116 and CONM 117. Co-requisite: CONM 222. Typically offered: Fall, Spring

**BCTM225 Building Construction Tech Mgm TE Undergraduate 3**

Management of the construction site including planning and layout of temporary site facilities, field engineering, field documentation and regulatory requirements. Introduces CAD applications. Prerequisites: CONM 122 and CONM 117 and C- in MATH 120. Meets General Education requirements for Collaboration. Typically Offered Spring and Fall

**BCTM234 Building Construction Tech Mgm TE Undergraduate 3**

Interpret construction documents for electrical service and distribution, fire protection, building security, signaling, building automation systems, and site utilities. Identify major materials and construction installation requirements, including basic system design, operation, and code-related information for preparation of construction takeoffs and preliminary estimates. Discuss construction site issues including trade coordination and installation requirements, including equipment, systems installation, codes, and testing. Practice basic construction techniques common to the above systems including preparation of preliminary estimates. Pre-requisites: CONM 111, 112. Co-requisites: CONM 117. Typically offered: Fall, Spring
BCTM235  Building Construction Tech Mgm  TE  Undergraduate  3
Interpret construction documents for electrical service and distribution, fire protection, building security, signaling, building automation systems, and site utilities. Identify major materials and construction installation requirements, including basic system design, operation, and code-related information for preparation of construction takeoffs and preliminary estimates. Discuss construction site issues including trade coordination and installation requirements, including equipment, systems installation, codes, and testing. Practice basic construction techniques common to the above systems including preparation of preliminary estimates. Pre-requisites: CONM 111 and CONM 112. Typically offered: Fall, Spring

BIOL101  Biology  AS  Undergraduate  4
The emphasis is fundamental genetic principles and concepts and how these apply to individuals within our culture and society as a whole. Topics include transmission of inherited traits, chromosomal abnormalities, gene structure and function, genes in populations and genetic implications of cancer, genetic engineering, evolution, eugenics and bioethics. Designed for non-science majors; not applicable towards biology program requirements. This course meets General Education requirements: Scientific Understanding, Lab and new Fall 2017 Natural Sciences and Natural Sciences Lab. Typically Offered Fall, Spring

BIOL103  Biology  AS  Undergraduate  4
This course is a broad overview of the field of biology, for non-biology majors. The various fields and levels of biology will be presented with an emphasis on the basic principles underlying all areas and all levels of biology. This course is suitable for students needing a general introduction to biology, for students in elementary education, or for students preparing to take the introductory majors biology courses, BIOL 121 and BIOL 122. This course meets the Scientific Understanding requirement for general education and new Fall 2017 Natural Sciences. Typically Offered Fall, Spring

BIOL108  Biology  AS  Undergraduate  3
Introduction to the microbial world with an emphasis on human microbial disease mechanism and the basis of a protective immune response. The laboratory provides practical experience with fundamental techniques and instrumentation. Designed for students in allied health associate degree programs. This course meets General Education requirements: Scientific Understanding, Lab and new Fall 2017 Natural Sciences and Natural Sciences Lab. Typically Offered Fall, Spring, Summer
BIOL109  Biology  AS Undergraduate  4
An introductory course designed to provide students with a basic understanding of the structural organization and functions of the major systems of the human body. Laboratories provide opportunities to observe various anatomical parts and investigate physiological phenomena. For non-science students and is not applicable toward the applied biology major. This course meets General Education requirements: Scientific Understanding, Lab and new Fall 2017 Natural Sciences and Natural Sciences Lab. Typically Offered Fall, Spring, Summer

BIOL111  Biology  AS Undergraduate  4
Fundamental principles of biology as they apply to people, their health, as individual organisms, as species, and as a part of a functioning ecosystem. Designed for non-science majors; not applicable towards biology program requirements. This course meets General Education requirements: Scientific Understanding, Lab and new Fall 2017 Natural Sciences and Natural Sciences Lab. Typically Offered Fall, Spring

BIOL114  Biology  AS Undergraduate  4
The study of the biology of plants and soils as they relate to the turfgrass environment. Includes the growth, care, and management of turf and turfgrass, used on golf courses. Intended for professional golf management majors. Typically Offered Summer Only

BIOL116  Biology  AS Undergraduate  4
Great lakes flora and fauna are studied, with emphasis on ecological relationships and environmental impacts. Fisheries and wildlife management principles are also discussed. Open to recreation and outdoor activities directors, teachers needing updating in natural science, lifelong learning adults and others interested in the out-of-doors. Not applicable towards biology program requirements. Some hiking required. This course meets General Education requirements: Scientific Understanding, Lab and new Fall 2017 Natural Sciences and Natural Sciences Lab. Typically Offered: Fall, Spring, Summer

BIOL121  Biology  AS Undergraduate  4
The first semester of a year-long sequence in introductory biology designed for the science major and as a prerequisite for advanced biology courses. The topics include an introduction to scientific thinking, ecology, cell division, Mendelian genetics, evolution, and the diversity of the biological kingdoms (Bacteria, Protista, Fungi and Plantae), and plant structure and function. Laboratory exercises are designed to enhance the lecture material with hands-on experiences. Designed for students in science baccalaureate degree programs. This course meets General Education requirements: Scientific Understanding, Lab and new Fall 2017 Natural Sciences and Natural Sciences Lab. Pre-Requisites: CHEM 121 (may be taken concurrently). Typically Offered Fall, Spring, Summer
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<th>Level</th>
<th>Credits</th>
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<td>Undergraduate</td>
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<td>The second semester of a year-long sequence in introductory biology. The topics covered include molecular biology, cell biology (including bioenergetics and metabolism), molecular genetics, diversity of the Kingdom Animalia, and animal structure and function. Laboratory exercises are designed to enhance the lecture material with hands-on experiences. Designed for students in science baccalaureate programs. This course meets General Education requirements: Scientific Understanding, Lab and new Fall 2017 Natural Sciences and Natural Sciences Lab and Collaboration. Pre-Requisites: BIOL 121 with a C- grade or better and CHEM 121 with a C- grade or better. Typically Offered Fall, Spring, Summer</td>
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<tr>
<td>BIOL205</td>
<td>Biology</td>
<td>AS</td>
<td>Undergraduate</td>
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<td>An integrated course in human anatomy and physiology which emphasizes structure and function as they relate to clinical considerations. Basic concepts of structure and function will be discussed at the cellular, tissue and organ system levels. Laboratory will utilize cadavers in anatomical studies. Designed for students in allied health associate and baccalaureate degree programs and science education. This course meets General Education requirements: Scientific Understanding, Lab, and new Fall 2017 Natural Sciences and Natural Sciences Lab. Pre-Requisites: CHEM 114 or CHEM 121 with a C- grade or better. Typically Offered Fall, Spring, Summer</td>
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<td>BIOL207</td>
<td>Biology</td>
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<td>This course will stress the significance of ecological, entomological, and biotechnological forensic evidence that can be obtained from a crime scene. The course will also stress the field identification, collection and proper handling of the above forensic evidence for submission to a crime lab and the significance of such crime lab information. Meets General Education requirements: Scientific Understanding and Scientific Understanding Lab, and new Fall 2017 Natural Sciences and Natural Sciences Lab. Typically Offered Fall Only</td>
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<td>BIOL218</td>
<td>Biology</td>
<td>AS</td>
<td>Undergraduate</td>
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<td>The course will cover microbial interactions, both intraspecific and interspecific, and the role of microbes in plant and animal ecology; response to abiotic environmental factors and their role in biogeochemical cycling and biodegradation, and the use of microbes to recover metals and petroleum, and how genetically engineered microbes are being used for pest control. Designed for biology education, environmental biology, and environmental health students. Meets General Education requirements: Scientific Understanding Lab, and new Fall 2017 Natural Sciences and Natural Sciences Lab. Pre-Requisites: BIOL 121 with a grade of C- or better. Typically Offered Spring Only</td>
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BIOL 272  Biology  AS  Undergraduate  3

A survey of the major habitats, organisms, and processes related to the study of marine biology. The specialized adaptations of organisms to the diverse physical conditions found in the marine environment will be discussed with an emphasis on life history traits. The impact of pollution, harvest, and climate change on the marine environment will be discussed in relation to economic and political factors. This course meets the General Education requirements for Scientific Understanding, and new Fall 2017 Natural Sciences. Typically offered Spring, Fall, Summer.

BIOL 280  Biology  AS  Undergraduate  3

This introductory level course will examine the application of basic concepts of microbiology involved in the production of food by fermentation. The student's classroom understanding of vinification (wine making) and cheese production will be enhanced by extensive field learning experiences via instructional visitations of vineyards as well as industrial wine and cheese manufacturing facilities. This course meets General Education requirements: Scientific Understanding, and new Fall 2017 Natural Sciences and Natural Sciences Lab. Typically Offered Summer only.

BIOL 286  Biology  AS  Undergraduate  3

Introduction to the microbial world including microbial structure, function, metabolism, classification, genetics, control of microbial growth and immunity. The laboratory provides practical experience with fundamental concepts, techniques and instrumentation. This course meets General Education requirements: Scientific Understanding, Lab, and new Fall 2017 Natural Sciences and Natural Sciences Lab. Pre-Requisites: CHEM 122 with a C- grade or better. Typically Offered: Fall, Spring, Summer

BIOL 300  Biology  AS  Undergraduate  3

A study of general principles and causes of disease and resultant abnormal physiological functions of the organ systems. Included are discussions on cancer, aging, inflammation, stress, cardiovascular, nervous, respiratory, endocrine, excretory, digestive and musculoskeletal system dysfunction. Pre-Requisites: BIOL 205 or BIOL 322 with a grade of C- or better and CHEM 214 or CHEM 321 with a grade of C- or better. Typically Offered Fall, Spring, Summer

BIOL 301  Biology  AS  Undergraduate  4

A study of the physiological adaptations that occur during the onset of exercise and the long-term effects of exercise as one engages in systemic physical training. Pre-Requisites: BIOL 205 or BIOL 322 with a grade of C- or better. Typically Offered Fall.

BIOL 310  Biology  AS  Undergraduate  3

A comprehensive course in nutrition that covers energetics and metabolism of carbohydrates, lipids, and proteins as related to dietary requirements, recommended dietary allowances, and food sources of nutrients in humans and domestic animals. Pre-requisites: BIOL 122 and CHEM 214 or 322. Typically offered Summer.
First of two semesters of a comprehensive, integrated course in anatomy-physiology developing logical correlations between structures and their functions with emphasis on the molecular and cellular basis of organ system structure and function. Topics: cell physiology; control mechanisms; nervous, muscle, and endocrine systems. Laboratories include cadavers in anatomical studies and animal experimentation demonstrating physiological principles. Designed for students in science baccalaureate degree programs. Pre-Requisites: BIOL 122 & CHEM 122 with a grade of C- or better. Typically Offered Fall, Summer

Second of two semesters of a comprehensive, integrated course in anatomy-physiology developing logical correlations between structures and their function. Topics: respiratory, digestive, metabolic, cardiovascular, excretory and reproductive systems. Designed for students in science baccalaureate degree programs. Pre-Requisites: BIOL 321 with a grade of C- or better. Typically Offered Spring, Summer

Zoology is the study of the diversity of invertebrate and vertebrate animals. This course will examine the evolutionary mechanisms that lead to the diversity of animals on our planet, survey the animal kingdom by comparing the unique structures and functions that are used to classify organisms into major phylogenetic groups, and investigate these organisms in the laboratory. The laboratory portion of the course includes examination of representative organisms using slides, specimens, and dissections. Prerequisites: Earned grade on C- or better in BIOL 122. Typically offered in Spring.

The study of the process of evolution, including the origin of species and fossil evidence in the geological record. Considers evidence of evolutionary relationships, including molecular homologies recently discovered by genome projects, the evolution of metabolic pathways, symbiotic relationships and the evolution of eukaryotes. Prerequisites: BIOL 122 with a grade of C- or better. Typically offered Fall, Spring.

The purpose of this course is to gain an understanding of and an appreciation for the biology of birds. Lectures will address various aspects of avian biology, including evolution, behavior, anatomy, physiology, ecology, and biodiversity. Labs will involve examination of preserved specimens, dissections, and field trips for development of field identification skills. Students will be expected to learn the taxonomy and natural history of the avifauna of Michigan. Prerequisites: Earned Grade of C- or better in BIOL 122. Typically offered Fall, even years.
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<tr>
<th>Course Code</th>
<th>Discipline</th>
<th>Level</th>
<th>Title</th>
<th>Description</th>
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<tbody>
<tr>
<td>BIOL344</td>
<td>Biology</td>
<td>Undergraduate</td>
<td>3</td>
<td>Morphology, ecology, natural history and identification of the largest group of invertebrates, the insects. Emphasis on ecological, medical and economically important species. Designed for students in baccalaureate degree programs in science education and applied biology. Pre-Requisites: BIOL 122 with a grade of C- or better. Typically Offered Fall Only, Odd Years</td>
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<td>BIOL345</td>
<td>Biology</td>
<td>Undergraduate</td>
<td>3</td>
<td>A course designed to provide students with initial exposure to the wide variety of regulations that impact human health and the environment in general. Participants will review the key elements of major environmental regulations and how to evaluate activities that may harm or change the environment in some manner. A thorough understanding of local, state, regional and federal regulations will assist the student in managing human activities to protect human health and the environment. Prerequisites: BIOL 122 with a grade of C- or better. Typically Offered Spring only.</td>
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<tr>
<td>BIOL346</td>
<td>Biology</td>
<td>Undergraduate</td>
<td>3</td>
<td>This is a course that studies the ecological impact of environmental issues through sampling and measurement of those impacts. Students will study sensitive ecological systems then measure, investigate and evaluate the impacts of human and natural events on those ecosystems. In addition to the typical and common human impacts on ecosystems, the hazards of human introduction of invasive species will also be studied. Prerequisites: BIOL 122 with a grade of C- or better. Typically Offered Fall only.</td>
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<td>BIOL347</td>
<td>Biology</td>
<td>Undergraduate</td>
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<td>An in-depth study of conservation biology including interrelationships between humans and the environment, historical perspectives, present predicaments and future outlook. Describing, monitoring, and preserving biological diversity is a major theme with emphasis on economic and ethical values, extinction, habitat destruction, overexploitation, as well as, managing, restoring, and protecting areas. Pre-Requisites: BIOL 122 with a grade of C- or better. Typically Offered Fall Only</td>
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<td>BIOL348</td>
<td>Biology</td>
<td>Undergraduate</td>
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<td>In this course, we explore the diversity of animal behavior in order to understand how behavior is organized and controlled, how it develops, why it is performed, and why it takes a particular form. Natural selection is a major theme with emphasis on viewing behavior as a species attribute, following the approach of comparative ethology, and as an individual attribute, interpreting behavior to be a &quot;strategy&quot; that contributes to an organism’s fitness. Prerequisites: BIOL 122 with a grade of C- or better. Typically Offered: Fall</td>
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<td>BIOL349</td>
<td>Biology</td>
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<td>The basic concepts of parasitology with emphasis on the major types of medically important parasites will be covered, including life cycle, diagnosis, treatment, immunity and control. Laboratory stresses identification of the various developmental stages of these parasites. Designated for students in science baccalaureate degree programs. Pre-Requisites: BIOL 122 with a grade of C- or better. Typically Offered Spring Only, Even Ye</td>
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<td>BIOL351</td>
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<td>BIOL373</td>
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<td>BIOL375</td>
<td>Biology</td>
<td>AS</td>
<td>Undergraduate</td>
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<td>BIOL386</td>
<td>Biology</td>
<td>AS</td>
<td>Undergraduate</td>
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<td>Course Code</td>
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<td>BIOL389</td>
<td>Biology</td>
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<td>Undergraduate</td>
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<td>BIOL407</td>
<td>Biology</td>
<td>AS</td>
<td>Undergraduate</td>
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<td>BIOL421</td>
<td>Biology</td>
<td>AS</td>
<td>Undergraduate</td>
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<td>BIOL423</td>
<td>Biology</td>
<td>AS</td>
<td>Undergraduate</td>
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<td>BIOL438</td>
<td>Biology</td>
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<td>BIOL442</td>
<td>Biology</td>
<td>AS</td>
<td>Undergraduate</td>
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**BIOL389: Biology**

- Presents the principles of immunology including: Innate immunity, immunoglobulin structure and genetics, antigen-antibody reactions, the major histocompatibility complex reactions and antigen presentation, T cell receptors (genetics, structure, selection), T cell activation and effector functions, energy, and apoptosis, cytokines, phagocytic cell function, immune responses to infectious organisms and tumors, autoimmune diseases, autoimmunity, allergies, and immune deficiencies. The role of the normal microbiota and pathogen mechanisms of immune evasion are also discussed.
- Prerequisites: BIOL 122 (C- or better). Typically offered Spring.

**BIOL407: Biology**

- In-depth analysis of forensic biology, molecular biology, statistics, forensic DNA typing and the advantages and limitations of DNA analysis. The laboratory will cover the concepts and techniques of DNA tests currently used in forensic laboratories to solve questions of paternity, maternity, identity of humans, and animal and plant remains resulting from disasters and/or criminal activities.
- Pre-Requisites: BIOL 207 with a grade of C- or better and BIOL 375 with a grade of C- or better. Typically Offered Spring Only

**BIOL421: Biology**

- An in-depth investigation of vertebrate (particularly human) endocrinology. Topics will include hormone structure, hormone synthesis, the mechanisms of hormone action, endocrine disruptors, and the roles of hormones in calcium metabolism, digestive physiology, reproduction, growth, and the stress and sympathetic responses. The hormones of the major endocrine glands will be investigated. There will also be an introduction to various techniques used in endocrinological research. This course includes the reading and understanding of primary scientific literature. Prerequisites: Biol 205 or Biol 322 with a grade of C- or better. Typically Offered: Fall of even years

**BIOL423: Biology**

- This course covers the relation of structure and function of the nervous system. Topics covered include the structure and properties of excitable cells, synaptic transmission, neurochemistry integration of information in simple systems, centrally programmed behavior, and learning and memory.
- Prerequisites: BIOL 205 or BIOL 322. Typically offered Fall odd years.

**BIOL438: Biology**

- Medical microbiology and immunology with an emphasis on microbial diseases of the eye and ocular immunology. Pre-Requisites: Optometry students only. Typically Offered Fall Only

**BIOL442: Biology**

- Study of the dynamic relationships between organisms (plant and animal) and their environment. This course is designed for students in baccalaureate programs in science education and applied biology. Pre-Requisites: BIOL 122 with a grade of C- or better. Typically Offered Spring, Summer
Medical Botany explores the intersection of medicine and botany, utilizing
integrative and comparative approaches to critically analyze medical systems,
understand how plants produce compounds of medical interest, how
medicines work in the human body, and how diagnosticians view health and
disease. Medical botany will help prepare students going into medical careers
understand the benefits, dangers, and history of this fundamental basis for
medicine by exploring past and present treatment options. Pre-requisites:
BIOL 122 (C-) & CHEM 214 (C-) or CHEM 321 (C-). Typically offered: Spring

A study of the basic structure, function, and physiology of vascular plants.
Topics include plant anatomy and cell biology, water relations (including
waster uptake, xylem transport, and transpiration), nutritional requirements,
an in-depth look at photosynthesis, a review of other plant biochemistry, and
a study of development and environmental responses, focusing on the
detection of stimuli and hormonal and other messengers. Designed for
students in baccalaureate programs in science education and biology.
Completion of organic chemistry is recommended. Prerequisites: Earned
Grades of C- or better in BIOL 122 and BIOL 350. Typically offered Fall, Odd
Years.

Students will use published literature to interpret and analyze current topics of
biological interest. This is a capstone course for both the BA Biology and BS
Applied Biology programs as it requires students to draw on their knowledge
acquired throughout previous Biology coursework to complete the major
written and oral reports. This course meets General Education requirements:
new Fall 2017 Collaboration and Problem Solving. Pre-Requisites: ENGL 311
or ENGL 321 or ENGL 323 with a grade of C- or better. Typically Offered Fall,
Spring

An analysis of genetic phenomena at the molecular level. Topics include:
structures of DNA, replication, recombination, mutation, repair, genomic
sequences, chromatin structure, transcription, processing, translation, and the
theory of selected techniques. Emphasis is on regulatory mechanisms. Pre-
Requisites: BIOL 375 and CHEM 364 with a grade of C- or better. Typically
Offered Spring Only Even Years

Practical training in recombinant DNA techniques is provided to students.
These include DNA isolation, restriction enzymes, production of recombinant
DNA plasmids, bacterial transformation, polymerase chain reaction (PCR),
Southern transfer, non-radioactive probe labeling, hybridization, and DNA
sequencing. DNA sequence data from internet databases and the use of
graphics files to record results are also introduced. This course meets General
Education requirements: new Fall 2017 Collaboration and Problem Solving.
Prerequisites: BIOL 375 and CHEM 333 with a grade of C- or better. Typically
Offered Spring Only

Ferris State University
BIOL472 Biology AS Undergraduate 3

The theory, molecular mechanisms, and practical aspects of the major techniques used in protein purification. Emphasis is placed on data interpretation and manipulation, trouble-shooting, and prediction of the impact of various errors on the data, for each technique. Included are: enzyme kinetics; buffer design; cell disruption; differential solubility; ion exchange, gel permeation, and affinity chromatography; ultracentrifugation; chromatofocusing; radioisotope use; PAGE; and IEF. Pre-Requisites: BIOL 122 and CHEM 322 with a grade of C- or better. Typically Offered Fall Only, Odd Years

BIOL473 Biology AS Undergraduate 3

Hands-on practical experience in protein purification. Term project requires literature search, feasibility evaluation, record keeping and oral presentation of results. Numerous techniques such as enzyme assays, ammonium sulfate precipitation, ion exchange, ultracentrifugation, gel permeation chromatography, and SDS-PAGE electrophoresis will be used. This course meets General Education requirements: new Fall 2017 Collaboration and Problem Solving. Prerequisites: CHEM 333 with a grade of C- or better. Typically Offered Fall Only

BIOL474 Biology AS Undergraduate 3

Molecular biology of the cell, including basic genetic mechanisms, cell techniques, membranes and membrane components, cellular compartments, intracellular sorting, cytoskeleton, cell signalling, energy conversions, cell growth and division, differentiation, cell junctions, and others. Pre-Requisites: CHEM 364 and BIOL 375 with a grade of C- or better. Typically Offered Spring Only, Odd Years

BIOL475 Biology AS Undergraduate 3

A study of the interface between biotechnology and information technology. Primary focus will be placed on the use of nucleic acid and protein databases to accurately and efficiently analyze genomic and proteomic data. Secondary focus will be placed on investigation of the modern techniques of molecular biology (DNA and RNA sequencing, microarrays, chromatin conformation analysis) used to produce genomic, transcriptomic, and epigenomic data. Prerequisites: BIOL 375 with a grade of C- or better. Typically Offered: Spring of odd years

BIOL476 Biology AS Undergraduate 2

In this course students will gain practical experience required for conducting animal-based research including the appropriate and humane handling of laboratory animals. In addition each student will: 1) develop and present a research protocol that involves the use of animals, 2) use immunological and other laboratory techniques to test hypotheses, 3) assess proper laboratory design and safety, 4) establish a primary cell culture, and 5) maintain a laboratory notebook. Prerequisites: BIOL 386 and CHEM 333 with a grade of C- or higher. Typically Offered Fall only.
The student will participate in a basic or applied research project in their major or a closely related discipline. The course will be designed to provide the student with hands-on experience in research design, informational gathering and management, analysis, and interpretation. One credit hour equals 45 contact hours per semester. May be repeated for up to 9 credits. Prerequisites: Enrollment in Biology or Biotechnology Major and Consent from professor. Typically Offered On Demand

Students participate in an external biotechnology internship to gain valuable technical and networking skills. Internship opportunities are generally obtained in academia (undergraduate research programs), in government (research branches of state or federal agencies), or in the biotechnology industry (national and local biotechnology companies). Pre-Requisites: Biotechnology students only. Meets General Education requirements for Collaboration and Problem Solving. Typically Offered Fall, Spring, Summer

Work experience with cooperating employer organizations in business, industry, government, and education. The work experience is designed to be relevant to the student’s academic pursuits, personal development, and professional preparation. The work experience must last a minimum of 8 weeks with a total hours worked approved by the program coordinator. One credit hour equals 45 contact hours per semester. May be repeated for up to 9 credits. Typically Offered On Demand

This is the first of a two courses whose subject is structure and function of the human body, with an emphasis on systemic processes which impact the normal function of the eye and its adnexa. The laboratory provides practical experience with the structure and function of several systems. Typically offered Fall.

This is the second in a series of two courses whose subject is structure and function of the human body, with an emphasis on systemic processes which impact the normal function of the eye and its adnexa. The laboratory provides practical experience with the structure and function of several systems. Prerequisite: BIOL 537. Typically Offered Spring.

A survey course in business law; covers contracts and sales, business organizations, negotiable instruments, and real and personal property. Not to be taken by College of Business students. Typically Offered Fall, Spring, Summer

Develops an understanding of the interaction between law and business through a survey of public and private law. Emphasis on understanding business regulation in the areas of competition, labor law, securities regulation, consumer protection, and environmental law. A brief overview of contracts and business organizations is included along with a review of the court system and the constitutional rights of business. Typically Offered Fall, Spring, Summer
BLAW321  Business Law  BU  Undergraduate  3
Provides an introduction to the law and the legal system in the U.S. as well as a thorough examination of the law of contracts and sales. (Includes a review of articles 2 and 6 of the Uniform Commercial Codes.) Prerequisites: ENGL 211 or ENGL 250 with a C-. Typically Offered Fall, Spring, Summer

BLAW322  Business Law  BU  Undergraduate  3
This Commercial Law and Transactions course covers the study of law and issues arising in commercial settings including agency, payment systems, security interests, bankruptcy and additional areas of government regulation such as securities, antitrust and protection of intellectual property. Accountants' ethical responsibility and legal liability will be addressed. The principal emphasis is on the articles of the Uniform Commercial Code (UCC) that deal with commercial paper and secured transactions - Articles 3, 4, 4a and 9 and bankruptcy as covered in the Federal Bankruptcy Code. Pre-Requisites: BLAW 321 or 221. Typically Offered Spring

BLAW323  Business Law  BU  Undergraduate  3
Examines the law of business associations to include agency, partnerships, limited partnerships, joint ventures, and corporations. Also includes an overview of antitrust law and securities regulation. Pre-Requisites: BLAW 321 or 221. Typically Offered Fall, Spring

BLAW325  Business Law  BU  Undergraduate  3
This course examines a variety of topics essential to the understanding of real and personal property law including the concept and various classifications of property; methods of acquiring, maintaining, conveying and losing ownership real and personal property; rights, duties, risk and liability associated with real and personal property ownership; and Pre-Requisites: BLAW 321 or BLAW 221 or BLAW 301. Typically Offered Spring, Summer.

BLAW330  Business Law  BU  Undergraduate  3
Students will learn how to apply relevant principles of United States law to the business of insurance and risk management. This course examines both contract and agency law, particularly how it applies to insurance applications. Students are also introduced to insurance relevant concepts of commercial, property, and tort law, and the international legal environment. The course is aligned with CPCU 530 allowing successful students to apply for a CPCU exam waiver. Typically offered: Fall.

BLAW411  Business Law  BU  Undergraduate  3
This course will provide teaching professionals, sports and resort facility managers with an understanding of the legal relationships among themselves, consumers of their services and third parties. The subjects surveyed include contracts, torts, premises, liability, constitutional issues and sports associations. Pre-Requisites: BLAW 221 or 301 or 321; AND MKTG 321. Typically Offered On Demand

BLAW421  Business Law  BU  Undergraduate  3
Course covers Title VII Civil Rights Act; Equal Pay Act; Age Discriminations in Employment Act; Rehabilitation Act of 1973; Michigan Civil Rights Act; National Labor Relations Act, as amended; FLSA, minimum wage, overtime provisions. Pre-Requisites: Junior status or instructor approval. Typically Offered Fall Only
Managers & the Legal Environment introduces students to contemporary legal and ethical issues and concepts and provides a broad understanding of how law and ethics affects daily management decisions and business strategies. It further examines how law can be applied to guide and enhance the decision making process of managers in the complex and changing global economy so managers can create value and effectively manage risk. Prerequisite: BUS graduate student. Typically offered Fall, Spring, Summer.

Surveys the field of business; builds a vocabulary of business terms; offers insight into the managerial decision-making process; provides a background for further business study; informs students about careers in business and other organizations. Typically Offered Fall, Spring, Summer

Examines the impact that rapidly changing office technology has on the work force. Stresses the importance of management understanding the issues and the implications of these changes and the importance of management preparation for an understanding of work force fears and responses. Pre-Requisites: ISYS 105 and junior status. Typically Offered On Demand

Introduces the basics of business strategy and policy and moves to use of a computer simulation with students functioning in multidisciplinary teams. The teams have the challenge of developing and executing a strategy that involves production operations, procurement, distribution and marketing, pricing, research and development, employment levels and compensation, financing the operations, and other aspects of a business competing in a global environment. Pre-Requisites: FINC 322 and MGMT 370 and MKTG 321, and senior status. Meets General Education requirements for Collaboration and Problem Solving. Typically Offered Fall, Spring, Summer

Career Planning (CARE) 100 explores both the career search process and the skills needed for successful employment and career development. Typically Offered Fall, Spring, Summer. This course will provide students with the opportunity to explore college programs, career options and employment viability. Students will discover how educational planning can help them with their lifelong career decision making process. Students will develop personal educational and career plans based on interests and skills using strength-based assessment. Typically Offered Fall, Spring
CARE201 Career Exploration UN Undergraduate 1
To prepare students to become career ready by developing successful skills and strategies focused on writing resumes and cover letters. In addition, students will be connected with career resources on campus and around the community. Typically Offered: Fall, Spring

CARE202 Career Exploration UN Undergraduate 1
To prepare students to become career ready by developing successful skills and strategies focused on interviewing and professional etiquette. In addition, students will be connected with career resources on campus and around the community. Typically Offered: Fall, Spring

CARE203 Career Exploration UN Undergraduate 1
To prepare students to become career ready by developing successful skills and strategies focused on creating career portfolios, learning how to network, and learning transferable skills. In addition, students will be connected with career resources on campus and around the community. Typically Offered: Fall, Spring

CDTD111 CAD Drafting-Tool Design Tec TE Undergraduate 4
Fundamental techniques in drafting and design fundamentals are stressed in this course. Drawing layout, geometric construction, visualization with orthographic projection, descriptive geometry, sectioning, auxiliary views, and pictorial drawing with sketching is required. National standards and drafting applications will be an integral part of the activity. Pre-Requisites: CAD Drafting & Tool Design students only. Co-Requisites: CDTD 112. Typically Offered Fall Only

CDTD112 CAD Drafting-Tool Design Tec TE Undergraduate 4
The course is designed to introduce students to the operation of a CAD system and reinforce drafting and design standards. Students will demonstrate a thorough understanding of CAD option, setup and command structure. Two dimensional geometry creation reinforcing drawing standards will be required. Students will manage, manipulate and edit geometry. The course also includes application in geometric construction, projection skills, and standards. Dimensioning and 3D modeling techniques will be introduced. Pre-Requisites: CAD Drafting & Tool Design students only. Co-Requisites: CDTD 111. Typically Offered Fall Only

CDTD114 CAD Drafting-Tool Design Tec TE Undergraduate 2
This course is an applied approach to understanding the concepts and operation of parametric solid modeling applications used in the mechanical design field. It uses a computer graphics system for creation of two and three dimensional geometry. The student will learn file creation, file management, and graphics generation. The student will also learn how to edit and manipulate geometry using the graphics system. The major focus is 3-D model creation along with its assembled components. Prerequisites: Must be part of the TBAISO cohort and have departmental approval. Typically offered Fall and Spring.
A lecture/lab course designed to develop technical skill in detailing, tolerancing, product applications and processes. Students analyze product applications with functional relationships and the importance of correct product definition for production, inspection, and customer satisfaction. A fundamental understanding in geometric dimensioning and tolerancing with applications is attained. Assemblies, subassemblies with bill of materials will be introduced. Pre-Requisites: CDTD 111 and CDTD 112 with a grade of D or better. Typically Offered Spring Only

A lecture/CAD lab course designed to develop technical skills in solid modeling with parametric technology. Students are taught the skills needed for feature-based solid modeling, part detailing and assemblies. Industrial applications are provided for students to evaluate functional relationships, processes and assemblies. Students are given the opportunity to use rapid prototyping to create prototyped models. Pre-Requisites: CDTD 111 and CDTD 112 with a grade of D or better. Typically Offered Spring Only

A lecture/CAD lab course designed to provide students with a basic understanding of tool terminology, tool function and geometry by detailing tool components. Tool assemblies, bill of materials and standard components will be analyzed. Pre-Requisites: CDTD 111 and CDTD 112 with a grade of D or better. Typically Offered Spring Only

For first year manufacturing tooling students. Print layout of information, tolerance block, revision block, do not scale block, notes, bill of material and product detail layout are covered. Students sketch drawings of simple details from selected shop drawings to include dimensioning, tolerancing, and notes as related to the understanding of reading a: part, detail, tool, mold, or die blueprint. Projection, sectioning, and alternative dimensioning will be covered with an emphasis on shop floor communication. Typically Offered Fall Only

Provides the knowledge and ability to design various types of stamping dies. Operations such as blanking, forming, cam, piercing, drawing, and trimming will be included in the design of single operation and progressive dies utilizing standard and special components. Press accessories and feeding mechanisms are studied as they relate to the design problems, and safety standards are applied to all assignments. Drawing boards, and CAD systems, will be utilized for the assignments. Pre-Requisites: CDTD 121 and CDTD 122 with a grade of D or better. Typically Offered Fall, Spring

Develops skills in two and three dimensional cad tool design applications. The student designs various tooling concepts including jig and fixture and special machine components. Includes detailing, bill of material, and other related projects. Pre-Requisites: CDTD 121 and CDTD 122 with a grade of D or better. Typically Offered Fall, Spring
CDTD221 CAD Drafting-Tool Design Tec TE Undergraduate 6

Students design and detail single and multiple cavity plastic injection molds and products using drawing boards and computer aided design systems. Analysis of mold cavity fill, gate location(s)-size, runner size, and balance will be evaluated with computer aided mold fill programs. Instruction on the theory, application and practices of: plastic materials, forming and molding methods/machines, mold: bases, venting, cooling, ejectors, materials, heat treatments, fabrication, and finishing practices. Pre-Requisites: CDTD 121. Typically Offered Fall, Spring

CDTD222 CAD Drafting-Tool Design Tec TE Undergraduate 3

Students using computer aided moldflow analysis programs will review material databases, determine the optimum process feasibility, balance runner systems, create and mesh finite-element models, perform three-dimensional computer analysis, and read and interpret the data displayed. Static analysis of mechanical products and systems will also be performed by creating models to be investigated with finite element analysis software. The application of finite element modeling and analysis to tooling and plastic products will be emphasized. Pre-Requisites: CDTD 121 and 122. Typically Offered Fall, Spring

CENG220 Civil Engineering TE Undergraduate 3

A continuation of SURE 110. Engineering surveying theory and techniques. Subject areas include horizontal, vertical, easement curve calculations, and layout, slope staking, earthworks, introduction to GPS, and aspects of hydrographic, tunnel and mine surveying. Prerequisites: SURE 110. Typically Offered Fall.

This first course in mechanics for engineers focuses on rigid bodies and more specifically, statics. Statics is the study of rigid bodies at rest. Using vector mechanics as appropriate the principles of mechanics and their application to the solution of engineering problems are explored. Prerequisites: MATH 230. Corequisites: PHYS 241. Typically Offered: Fall Term

CENG321 Civil Engineering TE Undergraduate 4

Combined presentation of hydrology and hydraulics. Course shall include the natural occurrence of water on the earth and the study of fluid mechanics, kinematics of fluid flow, energy and momentum relating to the movement of water. Open channel flow and pressure conduits leading to gravity drainage design and pressure water supply systems. Prerequisites: PHYS 242 and MATH 230. Typically Offered Spring only.

Introductory course in soils engineering. Topics include engineering characteristics, classifications, weight-volume relationships, permeability, flow nets, dams, lateral earth pressures, shear stresses, loads on buried conduits, slope stability, and foundations. Prerequisites: CENG 240 and CONM 121 and MATH 220. Typically Offered Spring.
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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Prerequisites</th>
<th>Description</th>
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<tbody>
<tr>
<td>CENG499</td>
<td>Civil Engineering TE Undergraduate</td>
<td>4</td>
<td>- Prerequisites: SURE 420, Department Permissions only.</td>
<td>This is a senior capstone course. Students as individuals or as small teams upon faculty approval undertake a research project involving a topic of application in Survey Engineering. Professional collaboration as well as regular consultation with a faculty advisor is required. Course will culminate with a presentation of project report and the results addressing goals, expectations, methodology employed, and findings to the faculty and the invited guests. Multidisciplinary approaches are encouraged. Prerequisites: SURE 420, Department Permissions only. Meets General Education Requirements for Collaboration and Problem Solving. Typically offered Spring.</td>
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<tr>
<td>CETM214</td>
<td>Civil Engineering Tech Mgmt</td>
<td>3</td>
<td>- Prerequisites: D- in CONM 121; C- in MATH 120 or 126 or 130 or 132 or 216 or 220 or 230 or math ACT 26+/SAT 610+. Typically offered: Fall only</td>
<td>An advanced course in the application of aggregate characteristics, specifications, and testing and the design, analysis and application of hot mix asphalt and concrete. Michigan Department of Transportation specifications, testing procedures, and technician certification programs are emphasized. Prerequisites: D- in CONM 121; C- in MATH 120 or 126 or 130 or 132 or 216 or 220 or 230 or math ACT 26+/SAT 610+. Typically offered: Fall only</td>
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<tr>
<td>CETM215</td>
<td>Civil Engineering Tech Mgmt</td>
<td>3</td>
<td>- Prerequisites: D- in CONM 121; C- in MATH 120 or 126 or 130 or 132 or 216 or 220 or 230 or math ACT 26+/SAT 610+. Typically Offered Fall Only</td>
<td>Fundamentals of construction equipment ownership and operation. Topics include ownership and operating costs, earthwork fundamentals, productivity rates for construction equipment. Pre-Requisites: D- in CONM 121; C- in MATH 120 or 126 or 130 or 132 or 216 or 220 or 230 or math ACT 26+/SAT 610+. Typically Offered Fall Only</td>
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<tr>
<td>CETM226</td>
<td>Civil Engineering Tech Mgmt</td>
<td>3</td>
<td>- Prerequisites: D- in the following courses: CONM 112, 117, 122; C- in MATH 120 or 126 or 130 or 132 or 216 or 220 or 230 or math ACT 26+/SAT 610+. Typically Offered Spring</td>
<td>Basic techniques and procedures of highway design and pavement structural analysis. Planning processes for highway projects. Plan development utilizing current industry standard software emphasized. Pre-Requisites: D- in the following courses: CONM 112, 117, 122; C- in MATH 120 or 126 or 130 or 132 or 216 or 220 or 230 or math ACT 26+/SAT 610+. Typically Offered Spring</td>
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<tr>
<td>CETM227</td>
<td>Civil Engineering Tech Mgmt</td>
<td>3</td>
<td>- Prerequisites: D- in PHYS 211; C- in MATH 120 or 126 or 130 or 132 or 216 or 220 or 230 or math ACT 26+/SAT 610+. Typically Offered On Demand</td>
<td>The study of fluid mechanics, hydrostatics, open channel flow, pipe flow, pumping, flow measurements, and flow through hydraulic structures, and the principles of hydrology including precipitation, statistical methods and runoff. Pre-Requisites: D- in PHYS 211; C- in MATH 120 or 126 or 130 or 132 or 216 or 220 or 230 or math ACT 26+/SAT 610+. Typically Offered On Demand</td>
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CHEM103 Chemistry AS Undergraduate 3

Intended as preparation for CHEM 114 or CHEM 121 and should be taken by students with weak prior background in chemistry. It will emphasize the general process skills necessary for chemistry and introduce students to fundamental principles of chemistry, including observations and analysis; matter and atoms; periodic properties; the mole concept; chemical reactions; and states of matter. This course meets General Education requirements: Scientific Understanding, Lab and new Fall 2017 Natural Sciences and Natural Sciences Lab. Pre-Requisites: MATH 110 with a grade of C- or better or 19 on ACT or 460 on pre 2016 SAT or post 2016 SAT 500. Typically Offered Fall, Spring, Summer

CHEM104 Chemistry AS Undergraduate 4

The underlying chemistry of food preparation and nutrition is discussed. A foundation of fundamental concepts in chemistry such as periodicity, bonding, solution behavior, changes in state, and chemical reactions is developed within the context of working with and eating food. This course meets General Education requirements: Scientific Understanding Lab and new Fall 2017 Natural Sciences and Natural Sciences Lab. Pre-Requisites: MATH 010 or minimum Math score of 15 on ACT or minimum score of 350 on pre 2016 SAT or post 2016 SAT 400. Typically Offered Spring Only

CHEM114 Chemistry AS Undergraduate 4

A survey course covering the major topics of general chemistry relevant for biological or allied health applications, including atomic structure, chemical bonding, interpretation of equations, solution chemistry, and an introduction to acids and bases. Concurrent laboratory sessions will include experiments illustrating the principles discussed in lecture. This course meets General Education requirements: Scientific Understanding, Lab and new Fall 2017 Natural Sciences and Natural Sciences Lab. A year of HS chemistry substitutes for CHEM103 Pre-Requisites: CHEM103 with a grade of C- or better or yr of HS Chem & MATH110 with a grade of C- or better or ACT 19 or pre 2016 SAT 460 or post 2016 SAT 500. Typically Offered Fall, Spring, Summer

CHEM121 Chemistry AS Undergraduate 5

Fundamental principles, laws and theories of general chemistry, including stoichiometry, gas laws, thermochemistry, atomic structure, chemical bonding, periodicity, liquids and solids, solution chemistry, and theories of acids and bases. Concurrent laboratory-workshop sessions will include exercises illustrating the principles discussed in lecture. Students who anticipate enrolling in chemistry courses at the 200-level or higher should take this course. This course meets General Education requirements: Scientific Understanding, Lab and new Fall 2017 Natural Sciences and Natural Sciences Lab. A year of HS chemistry substitutes for CHEM103 Pre-Requisites: MATH115 with a grade of C- or better or ACT 24 or pre 2016 SAT 560 or post 2016 SAT 580; & CHEM103 with a grade of C- or better or yr of HS Chem. Typically Offered Fall, Spring, Summer
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<th>Course Code</th>
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<tr>
<td>CHEM122</td>
<td>Chemistry AS Undergraduate 5</td>
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<td>Continuation of CHEM 121, including oxidation-reduction reactions, electrochemistry, chemical equilibrium, chemical kinetics, nuclear chemistry, thermodynamics, and descriptive chemistry of metals and nonmetals. Laboratory will involve some experiments illustrating topics discussed in lecture along with several sessions devoted to the qualitative analysis of common cations and anions. Is a prerequisite for most 200-level or higher classes in chemistry. This course meets General Education requirements: Scientific Understanding, Lab and new Fall 2017 Natural Sciences and Natural Sciences Lab. Pre-Requisites: CHEM121 with a grade C- or better. Typically Offered Spring, Summer</td>
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<tr>
<td>CHEM124</td>
<td>Chemistry AS Undergraduate 3</td>
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<td>Study of properties, preparations, and reactions of organic compounds as they relate to living organisms and life processes. The structure and metabolism of biomolecules such as amino acids, polypeptides, proteins and enzymes, carbohydrates, lipids, and nucleic acids will be emphasized. Concurrent laboratory sessions include exercises in fundamental lab techniques, demonstrations, and workshops. Pre-Requisites: CHEM 114 with a grade of C- or better. Typically Offered Fall, Summer</td>
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<tr>
<td>CHEM140</td>
<td>Chemistry AS Undergraduate 2</td>
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<td>Overview of the chemical industry, including its development and practical applications of chemistry in an industrial setting. The role of the industrial chemist and/or technologist is discussed. Emphasis is also placed on use of the scientific literature available and the study of patents. Typically Offered Fall Only</td>
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<td>CHEM145</td>
<td>Chemistry AS Undergraduate 2</td>
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<td>Introduction to the chemical lab and the safety related responsibilities of the practicing chemist and/or technologist. Emphasis is placed on the safe handling and storage of hazardous materials, recognizing non-compatible materials, understanding and interpreting safety documents such as MSDS sheets, and in general becoming a safety conscious lab worker. Pre-Requisites: CHEM 121 with a grade of C- or better. Typically Offered Spring Only</td>
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<td>CHEM207</td>
<td>Chemistry AS Undergraduate 3</td>
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<td>A cross-discipline introductory forensic science course covering the application of the natural sciences to the analysis of physical evidence used in the investigation of a crime. Incorporates lecture and laboratory sessions for the study and analysis of crime scene evidence, such as the recognition, identification, and evaluations of fibers, hairs, chemicals, blood, controlled substances (a.k.a. drugs), glass, soil, fingerprints, firearms and DNA. This course meets General Education requirements: Scientific Understanding and Scientific Understanding Lab, and new Fall 2017 Natural Sciences and Natural Sciences Lab. Pre-Requisites: Sophomore Status. Typically Offered Fall, Spring</td>
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CHEM211 Chemistry AS Undergraduate 4

Introduction to the functional group approach to cover structures, preparations, and reactions of important commercial organic compounds. Includes the study of polymerization processes, addition polymers, the stereochemistry of polymers, copolymers, condensation polymers, and the structure and properties of polymers. Concurrent laboratory sessions include exercises in basic lab techniques, demonstrations, and workshops. Designed for students majoring in plastics. This course meets General Education requirements: Scientific Understanding, Lab, and new Fall 2017 Natural Sciences and Natural Sciences Lab. Pre-Requisites: CHEM 121 with a grade of C- or better. Typically Offered Spring Only

CHEM214 Chemistry AS Undergraduate 4

A survey course in organic chemistry which uses the functional group approach to cover the important preparations and reactions which organic compounds undergo. Also provides an introduction to organic compounds of biological significance. Concurrent laboratory sessions include exercises in basic lab techniques, demonstrations, and workshops. Designed for students who do not anticipate further studies in organic chemistry. This course meets General Education requirements: Scientific Understanding, Lab, and new Fall 2017 Natural Sciences and Natural Sciences Lab. Pre-Requisites: CHEM 114 or CHEM 121 with a grade of C- or better. Typically Offered Spring Only

CHEM231 Chemistry AS Undergraduate 4

Introduction to classical quantitative and modern instrumental methods of analysis, including data handling, statistics, volumetric and gravimetric techniques, potentiometry, spectroscopy, and liquid chromatography. Concurrent laboratory includes the topics referred to above. This course meets General Education requirements: Scientific Understanding, Lab, and new Fall 2017 Natural Sciences, Natural Sciences Lab. Pre-Requisites: CHEM 122 with a grade of C- or better. Typically Offered Fall Only

CHEM240 Chemistry AS Undergraduate 2

A review of the stoichiometric and weight relations in the chemical industry with an emphasis on problem solving. This course also covers statistical process control, as well as statistical techniques for evaluating experimental results. Scale-up problems and the use of industrial units are emphasized. Pre-Requisites: CHEM 122 with a grade of C- or better. Typically Offered Fall Only

CHEM245 Chemistry AS Undergraduate 4

A laboratory intensive course stressing the preparation and analysis of various materials including plastics, pesticides, and petroleum products, as well as a variety of pure substances. Characterization by instrumental methods, testing by use of American Society tests and materials methods, and notebook keeping are also emphasized. Lecture topics include polymer synthesis and characterization as well as special topics in analysis. Pre-Requisites: CHEM 321 and CHEM 231 with a grade of C- or better. Typically Offered Spring Only
CHEM307 Chemistry AS Undergraduate 3
This course will center on the application of the physical sciences to gain an appreciation for and an understanding of the methods involved in the analysis of physical evidence present at a crime scene. Pre-Requisites: CHEM 207 with a C- grade or better. Typically Offered Spring Only

CHEM311 Chemistry AS Undergraduate 3
Designed to present analytical topics in polymer science for students who have completed an introductory organic chemistry course. The methods utilized to characterize the structure-property relationships in polymers will be presented. Pre-Requisites: CHEM 211 or 322. Typically Offered Spring Only

CHEM317 Chemistry AS Undergraduate 3
The theory and instrumentation of modern analytical techniques will be explored, including potentiometry, infrared (IR) spectroscopy, nuclear magnetic resonance (NMR) spectroscopy, atomic absorption (AA) spectroscopy, and gas chromatography. Concurrent laboratory work includes projects involving these techniques. Meets General Education requirement for Collaboration and Problem Solving. Pre-Requisites: CHEM 231 with a grade of C- or better. Typically Offered Spring Only

CHEM321 Chemistry AS Undergraduate 5
Modern bonding theory in organic molecules, theory of reactions, stereochemical principles, chemistry of alkanes, cycloalkanes, alkenes, dienes, alkynes, aromatics, and alcohols, with special emphasis on reaction mechanisms. Concurrent laboratory includes basic laboratory techniques, synthesis, TLC and GC, stereochemistry and spectroscopy workshops. Pre-Requisites: CHEM 122 with a grade of C- or better. Typically Offered Fall, Summer

CHEM322 Chemistry AS Undergraduate 5
Study of ethers and epoxides, carbonyl-containing compounds, aldehydes, ketones, carboxylic acids and their derivatives, carbonion chemistry, aliphatic and aromatic nitrogen-containing compounds, with special emphasis on bioorganic compounds, amino acids and polypeptides, carbohydrates and lipids. Concurrent laboratory includes multistep synthesis, spectroscopic analysis, and the systematic identification of organic compounds with emphasis on chemical separation and purification techniques. Pre-Requisites: CHEM 321 with a grade of C- or better. Meets General Education requirements for Collaboration and Problem Solving. Typically Offered Spring, Summer

CHEM324 Chemistry AS Undergraduate 3
An introductory course that examines the dependence of living systems on interactions of biological compounds such as proteins, carbohydrates, lipids, and nucleic acids at the molecular level. Credit will not be given for both CHEM 324 and CHEM 364. Pre-Requisites: CHEM 214 or 322 with a grade of C- or better. Typically Offered Fall Only
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<th>Course Code</th>
<th>Subject</th>
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<th>Level</th>
<th>Credits</th>
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<tr>
<td>CHEM332</td>
<td>Chemistry</td>
<td>AS</td>
<td>Undergraduate</td>
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<td>Laboratory theory and techniques of biochemistry are introduced. Experiments focus on the application of photometry, chromatography, electrophoresis and activity assays to the isolation and analysis of biomolecules such as amino acids, proteins, enzymes and nucleic acids. Pre-Requisites: CHEM 322 with a grade of D- or better. Co-Requisites: CHEM 364. Typically Offered Fall Only</td>
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<td>Biochemistry laboratory techniques and theory are continued. Experiments will include the isolation of sub-cellular systems such as chloroplasts, mitochondria and microsomes. The metabolic properties of these systems, including chemiosmotic coupling, electron transport and substrate preference will be examined. Pre-Requisites: CHEM 332 and 364 with a grade of D- or better. Meets General Education requirements for Collaboration and Problem Solving. Typically Offered Spring Only</td>
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<td>CHEM342</td>
<td>Chemistry</td>
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<td>Undergraduate</td>
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<td>An introduction to the science of fermentation and the use of microorganisms for the synthesis and production of chemical compounds. Topics will include the role of raw materials, control of temperature and sanitation in both aerobic and anaerobic environments, stylistic differences in beer, wine, and cheese, and the production of other chemical synthesis starting materials via a fermentation process. Concurrent laboratory sessions will include experiments illustrating the principles discussed in lecture. Prerequisites: CHEM 364 and BIOL 122 with a C- or better with each course. Typically offered Spring.</td>
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<tr>
<td>CHEM345</td>
<td>Chemistry</td>
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<td>Undergraduate</td>
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<td>A laboratory intensive course building on the principles and skills developed in CHEM 245 that covers foods, steroids, isotopic labeling, antibiotics, monomers, polymers, rubbers, dyes, medicines, and insecticides. Lab work involves assays in addition to common instrumental forms of analysis. The course will develop proficiency in the theory and application of the following instruments: FT-IR, H-NMR, 13C-NMR, GC, GC-MS, Refractometry, UV-Vis, HPLC, and AAS. The course will further develop proficiency in technical writing abilities, lab safety and documentation protocols, and the safe use and disposal of advanced chemical reagents. Prerequisites: CHEM 245 and CHEM 317 with C- or better in each course. Typically offered Spring.</td>
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<tr>
<td>CHEM364</td>
<td>Chemistry</td>
<td>AS</td>
<td>Undergraduate</td>
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<td>A rigorous course in the chemistry of such biomolecules as amino acids, polypeptides, proteins and enzymes, carbohydrates, lipids and nucleic acids. The structure/function relationships of these biomolecules will be stressed and the biosynthetic and biodegradative pathways discussed. Credit will not be given for both CHEM 324 and CHEM 364. Pre-Requisites: CHEM 322 with a grade of C- or better. Typically Offered Fall Only</td>
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CHEM381 Chemistry AS Undergraduate 3

On overview course covering the fundamental principles and theories of inorganic chemistry, with emphasis on the chemistry of the d block elements. Included topics are molecular structure, electronic structure and spectra, bonding descriptions and reaction mechanisms of coordination complexes along with an introduction to organometallic compounds of d block elements and an introduction to molecular symmetry and point groups. Students who plan to pursue graduate study in chemistry are recommended to take this course. Prerequisite: CHEM 321 with a C- or better. Typically offered Spring, even years.

CHEM442 Chemistry AS Undergraduate 4

A survey of the analytical chemical and biological methods used in monitoring and maintaining a fermentation production facility. Topics will include assessment of raw materials, in-stream production monitoring, post production analysis and adherence to style guidelines, industry standards (ASBC Methods of Analysis), and product stability. Concurrent laboratory sessions will include experiments illustrating the principles discussed in lecture. Prerequisites: CHEM 317 and either BIOL 218 or BIOL 286 with a C- or better in each course. Typically offered Fall.

CHEM451 Chemistry AS Undergraduate 4

An overview course covering some of the fundamental topics, of physical chemistry including the gas state, the first and second laws of thermodynamics, free energy, physical and chemical equilibrium, electrochemistry, chemical kinetics, reaction mechanisms, and the solid state. This is the capstone course for the Chemistry BA degree. Pre-Requisites: PHYS 212 or 242; & MATH 220 & CHEM 322 with a grade of D- or better in each course. Typically Offered Spring Only, Odd Year

CHEM474 Chemistry AS Undergraduate 3

Builds on the introduction to biochemistry presented in CHEM 364. Metabolism will be examined in greater detail, stressing mechanisms, regulation, and research implications. A significant component of the course is literature driven, requiring research analysis and discussion of current topics in biochemistry. This is the capstone course for the Biochemistry BA degree. Pre-Requisites:CHEM 231 or 451; & CHEM 364 & BIOL 375 with a grade of D- or better in each course. Typically Offered Spring Only

CHEM491 Chemistry AS Undergraduate 3

The student will participate in an external internship, generally at either an industrial chemistry, academic research, or governmental laboratory site. The internship will reinforce essential technical skills and provide for networking and application opportunities. Prerequisites: CHEM 245 and CHEM 317 with a C- or better in each course. Typically offered Fall, Spring, Summer.

CITS150 Computer Information Tech Sys BU Undergraduate 3

Provides preparation for the CompTIA A+ exams. The class will step through the core objectives of the certification exams including: personal computer components; laptop and portable devices; operating systems; and printers and scanners. Recommended students complete both CITS 150 and CITS 160 courses before sitting for A+ exams. Typically Offered Fall, Spring.
CITS160 Computer Information Tech Sys BU Undergraduate 3 Provides preparation for the CompTIA A+ exams. The class will step through the core objectives of the certification exams including: networks; security; safety and environmental issues; and communication and professionalism. Recommended students complete both CITS 150 and CITS 160 courses before sitting for A+ exams. Co-requisites: CITS 150. Typically Offered Fall, Spring.

CITS250 Computer Information Tech Sys BU Undergraduate 3 Provides preparation for the Microsoft's Windows client Administration exam. Students will study and prepare for certification exam covering topics such as: installation and upgrading Window client; implementing and conducting administration of resources; implementing, managing, monitoring, and troubleshooting hardware devices and drivers; monitoring and optimizing system performance and reliability; configuring and troubleshooting the desktop environment; implementing, managing, and troubleshooting network protocols and services; and configuring, managing, and troubleshooting security. Prerequisites: ISYS 105 competency, or ISYS 105, or ISIN 200, or CITS 160, w/C grade or higher. Typically Offered Spring only.

CITS255 Computer Information Tech Sys BU Undergraduate 3 Provides an overview of the Microsoft Windows Server Operating System environment to include configuration, performance monitoring, command execution, policy development, networking and user administration tasks. Aligned with current Microsoft certification testing standards. Prerequisites: CITS 250 w/C grade or higher. Typically Offered Spring only.

CITS260 Computer Information Tech Sys BU Undergraduate 3 Provides the opportunity to more deeply examine and evaluate features of the Microsoft Windows Server Operating System environment. Specifically the course will address multi-tiered deployment, patching and security, file and print services, advanced network services, and policy protection. Students will design specific solutions and ensure that appropriate monitoring and performance controls exist. Aligned with current Microsoft certification testing standards. Prerequisites: CITS 250 w/C grade or higher. Typically offered Spring.

CITS270 Computer Information Tech Sys BU Undergraduate 3 Provides preparation for the CompTIA's Network+ exam. A study of networking hardware and software including transmission media, communication and security protocols, the Open System Interconnection (OSI) model, and distributed networking/processing. The hardware and software utilized in LANs, MANs, WANs, WLANs and VLANs networks along with appropriate terminology and concepts utilized in networking standards, addressing schemes, network services, and NOS connectivity requirements are introduced. The class will include hands-on experiences with designing, planning, installing and troubleshooting a Local Area Network. Prerequisites: CITS 160 or ISIN 200 w/C grade or higher. Typically Offered Spring, Fall.
CITS280  Computer Information Tech Sys  BU  Undergraduate  3  
Provides a comprehensive overview of the Linux operating system through exploration of various distributions in both CLI and GUI shells. Various system administration tasks will be performed, including file management, permissions, and system security. Best practices will be incorporated, including fault tolerance, standardization, and documents. Students will explore licensing agreements and the impact of Open Source Software. Prerequisites: ISYS 105 competency, or ISYS 105, or CITS 160, or ISIN 200, w/C grade or higher. Typically Offered Spring.

CITS291  Computer Information Tech Sys  BU  Undergraduate  1 TO 3  
Work experience with cooperating employer organizations in business, industry, government, and education. The work experience is designed to be relevant to the student’s academic pursuits, personal development, and professional preparation. The work experience must last a minimum of 12 weeks. Credits awarded base on total hours worked during the internship. 1 credit minimum 30 hours, 2 credits minimum 160 hours, 3 credits minimum 240 hours. Detailed summary report of work experience required at end of internship.Prerequisites: Sophomore standing and 30+ earned credits in program.Typically offered Fall, Spring and Summer.

CITS320  Computer Information Tech Sys  BU  Undergraduate  3  
The class will step through the core objectives of the certification exam including: General security concepts and practices including nonessential services and attacks; communication security and online vulnerabilities; infrastructure security including intrusion detection, security baselines; and basics of Cryptography including deploying cryptography. Prerequisites: CITS 270 or ISYS 325 or ECNS 115, w/C grade or higher.Typically offered Fall.

CITS360  Computer Information Tech Sys  BU  Undergraduate  3  
Provides preparation for the Microsoft’s Window Server Administrator exam. Students will study and prepare for certification exam covering topics such as: planning for Server Deployment; planning for Server Management; monitoring and maintaining servers; planning Application and Data Provisioning; and planning for Business Continuity and High Availability. Prerequisites: CITS 255 and CITS 260, both w/C grade or higher. Typically offered Fall.

CITS370  Computer Information Tech Sys  BU  Undergraduate  3  
The course will provide an analysis and integration of a variety of system platforms and the manner in which they can be controlled in a virtualized or distributed computing environment. Topics will include system design and development, monitoring and benchmarking, as well as hardware and network management requirements. Prerequisites: CITS 270 and CITS 280 and CITS 360, all w/C grade or higher. Typically offered Spring.
CITS380 Computer Information Tech Sys BU Undergraduate 3
Provides preparation for the CompTIA's Linux+exam. Building on CITS 280, students will learn to setup network resources and properly configure the server and client to provide various services such as DNA, DHCP, SAMBA, Apache, remote access, printing, and e-mail. The course will also cover server/network management skills such as scheduling jobs, securing the server and client, and monitoring the network for intrusion detection including how to properly use log files. Prerequisites: CITS 280 or Permission of Instructor. Typically Offered Fall.

CITS480 Computer Information Tech Sys BU Undergraduate 3
Students will work with an external partner agency or organization to develop and implement a computing solution which incorporates the knowledge acquired throughout the course of the CIT program. The project will include strong integration of effective communication strategies including proper system documentation, stakeholder communication, and development of user training materials. The course will include a written research component on a topic of current relevance. Prerequisites: CITS 320, CITS 360 and PROJ 320, all w/C grade or higher. Typically Offered Spring only.

CITS491 Computer Information Tech Sys BU Undergraduate 1 TO 6
Work experience with cooperating employer organizations in business, industry, government, and education. The work experience is designed to be relevant to the student's academic pursuits, personal development, and professional preparation. The work experience must last a minimum of 12 weeks with a minimum of 240 total hours worked. Detailed summary report of work experience required at end of internship. Prerequisites: Junior standing and 60+ earned credits in program. Typically Offered Fall, Spring and Summer.

CLLS101 Clinical Lab Sciences HP Undergraduate 1
Introduction to the profession of clinical laboratory science to include curricula, roles of laboratory science professionals, career and employment opportunities, and standards and ethics of the profession. Typically Offered Fall, Spring

CLLS122 Clinical Lab Sciences HP Undergraduate 2
Students gain experience in safe practices of venipuncture, dermal puncture, and specimen processing. Co-Requisites: CLLS 122. Prerequisites: Enrollment in Medical Laboratory Technology, Medical Laboratory Science or Allied Health Science program required. Typically Offered Spring only

CLLS216 Clinical Lab Sciences HP Undergraduate 3
Introduction to methods commonly used in clinical chemistry, including disease correlations and quality control. Pre-Requisites:Biol 205 and Chem 214 with C or better. Co-Requisites:CLLS 217. Typically Offered Fall Only
CLLS217 Clinical Lab Sciences HP Undergraduate 1
Directed practice with the methodology and instrumentation in common use in clinical chemistry. Pre-Requisites: BIOL 205 and CHEM 214 with a grade of C or better. Co-Requisites: CLLS 216. Typically Offered Fall Only
Theories in Body fluid analysis (urine, cerebrospinal fluid, and semen), and their correlation with patient health. Pre-Requisites: BIOL 205 with a grade of C or better. Co-Requisites: CLLS 219 and CLLS 220. Typically Offered Summer Only

CLLS218 Clinical Lab Sciences HP Undergraduate 1
Theories and techniques in hemostasis and their correlation with patient health. Pre-Requisites: BIOL 205 with a grade of C or better. Co-Requisites: CLLS 218 and CLLS 220. Typically Offered Summer Only
Directed practice in the tests and techniques in common use in the body fluids and hemostasis laboratory. Pre-Requisites: BIOL 205 with a grade of C or better. Co-Requisites: CLLS 218 and CLLS 219. Typically Offered Summer Only
Introduction to the theories and techniques in blood cell analysis, and concepts of blood cell pathology. Pre-Requisites: BIOL 205 and CHEM 214 with a grade of C or better. Co-Requisites: CLLS 232. Typically Offered Fall Only

CLLS219 Clinical Lab Sciences HP Undergraduate 1
Directed practice in the tests and techniques in common use in the hematology laboratory. Pre-Requisites: BIOL 205 and CHEM 214 with a grade of C or better. Co-Requisites: CLLS 231. Typically Offered Fall Only

A course designed to introduce students to clinically significant bacteria. Particular attention is given to specimen collection and processing, key biochemical identifying characteristics, and susceptibility testing of many human pathogens. Pre-Requisites: BIOL 108 or BIOL 286 with grade of C or better; BIOL 205 and CHEM 214 with a grade of C or better. Co-Requisites: CLLS 237. Typically Offered Fall Only
Directed practice in the tests and techniques in common use in the clinical microbiology laboratory. Prerequisites: BIOL 108 or BIOL 286 with grade of C or better; BIOL 205 and CHEM 214 with a grade of C or better. Co-Requisites: CLLS 236. Typically Offered Fall Only
An introduction to clinically significant viruses, fungi, and parasites. Pre-Requisites: BIOL 108 or BIOL 286 with grade of C or better. Co-Requisites: CLLS 242. Typically Offered Spring Only
Directed practice in the tests and techniques in common use for the identification of clinically significant viruses, fungi, and parasites. Prerequisites: BIOL 108 or BIOL 286 with grade of C or better. Co-Requisites: CLLS 241. Typically Offered Spring Only
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<th>Course Code</th>
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<tr>
<td>CLLS252</td>
<td>Clinical Lab Sciences HP Undergraduate 2</td>
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<td>An introduction to the immune system with emphasis on development and function of the immune cells, antibodies and their interactions and antigens, immune disorders, immunization, and the immunological basis for tissue transplants.  Pre-Requisites: BIOL 205 with a grade of C or better.  Co--Requisites: CLLS 253.  Typically Offered Summer Only</td>
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<td>CLLS253</td>
<td>Clinical Lab Sciences HP Undergraduate 1</td>
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<td>Directed practice in the tests and techniques in common use in the clinical immunology laboratory. Prerequisites: BIOL 205 with grade of C or better.  Co--Requisites: CLLS 252.  Typically Offered Summer Only</td>
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<td>Medical Laboratory Technician students apply previously acquired theory and techniques in a simulated clinical laboratory. Emphasis is on work organization and correlation of results.  Pre-Requisites: CLLS 216, 217, 218, 219, 220, 231, 232, 236, 237, 252, 253, 258 and 259 with a grade of C or better.  Typically Offered Spring Only</td>
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<td>CLLS256</td>
<td>Clinical Lab Sciences HP Undergraduate 3</td>
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<td>Directed practice in the tests and techniques in common use in the clinical immunology laboratory. Prerequisites: BIOL 205 with grade of C or better.  Co--Requisites: CLLS 252.  Typically Offered Summer Only</td>
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<td>Theory of contemporary blood banking, including collection, storage and processing of blood components, role of RBC antigens and antibodies in compatibility testing and transfusion practice, application of test results in conditions such as hemolytic disease of the newborn and transfusion reactions, and beginning problem solving.  Pre-Requisites: BIOL 205 with a grade of C or better.  Co--Requisites: CLLS 259.  Typically Offered Fall Only</td>
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<td>CLLS258</td>
<td>Clinical Lab Sciences HP Undergraduate 2</td>
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<td>Directed practice in the tests and techniques in common use in the transfusion service laboratory. Prerequisites: BIOL 205 with a grade of C or better.  Co--Requisites: CLLS 258.  Typically Offered Fall Only</td>
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<td>During clinical experience in an affiliated laboratory, the student will review and apply knowledge of testing methods and clinical significance of test results in preparation for national certification examinations.  Pre-Requisites: CLLS 256 with a grade of C or better.  Co--Requisites: CLLS 292.  Typically Offered Spring Only</td>
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<td>CLLS292</td>
<td>Clinical Lab Sciences HP Undergraduate 6</td>
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<td>Application of theories and basic techniques in immunochemistry, clinical immunology, and clinical microbiology, in a clinical laboratory setting for 8 weeks.  Pre-Requisites: CLLS 256 with a grade of C or better.  Co--Requisites: CLLS 281.  Typically Offered Spring Only</td>
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<td>Application of theories and basic techniques in hematology, coagulation, body fluid analysis and clinical chemistry in a clinical laboratory setting for six weeks.  Pre-Requisites: CLLS 292 with grade of C or better.  Typically Offered Summer Only</td>
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<td>CLLS293</td>
<td>Clinical Lab Sciences HP Undergraduate 5</td>
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<td></td>
<td>Application of theories and basic techniques in hematology, coagulation, body fluid analysis and clinical chemistry in a clinical laboratory setting for six weeks.  Pre-Requisites: CLLS 292 with grade of C or better.  Typically Offered Summer Only</td>
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<td>CLLS356</td>
<td>Clinical Lab Sciences HP Undergraduate 2</td>
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<td>An advanced course in clinical chemistry that focuses on interpretations of test results, method evaluation and implementation, and new technologies.  Pre-Requisites: CLLS 216 and CLLS 217 with grade of C or better.  Co--Requisites: CLLS 357.  Typically Offered Fall Only</td>
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<td>CLLS357</td>
<td>Clinical Lab Sciences</td>
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<td>CLLS431</td>
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<td>CLLS432</td>
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<td>CLLS436</td>
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<tr>
<td>CLLS437</td>
<td>Clinical Lab Sciences</td>
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<td>CLLS456</td>
<td>Clinical Lab Sciences</td>
<td>Undergraduate 3</td>
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<td>CLLS458</td>
<td>Clinical Lab Sciences</td>
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<td>CLLS459</td>
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<tr>
<td>CLLS465</td>
<td>Clinical Lab Sciences</td>
<td>Undergraduate 3</td>
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A second laboratory course in clinical chemistry, where students establish reference ranges, compare analytical methods, and practice emerging techniques. Pre-Requisites: CLLS 216 and CLLS 218 with a C or better. Co-requisites: CLLS 356. Typically Offered Fall Only

Advanced concepts in hematology including abnormal hemoglobins, special stains, bone marrow differentials, diseases of the hematopoietic system and body fluid cell identification. Pre-Requisites: CLLS 231 and CLLS 232 with a grade of C or better. Co-requisites: CLLS 432. Typically Offered Spring Only

Advanced practice of laboratory techniques in hematology including abnormal hemoglobins, special stains, bone marrow differentials, diseases of the hematopoietic system and body fluid cell identification. Pre-Requisites: CLLS 231 and CLLS 232 with a grade of C or better. Co-requisites: CLLS 431. Typically Offered Spring Only

Advanced, case-based course in diagnostic microbiology with an emphasis on pathologic manifestation of human infectious disease. Pre-Requisites: CLLS 236 and CLLS 237 with a grade of C or better. Co-requisites: CLLS 437. Typically Offered Spring Only

Directed practice in the advanced tests and techniques in common use in the clinical microbiology laboratory. Pre-Requisites: CLLS 236 and CLLS 237 with a grade of C or better. Co-Requisites: CLLS 436. Typically Offered Spring Only

Medical technology students apply previously acquired theory and techniques in a simulated clinical laboratory, with emphasis on work organization, correlation of results, management, decision-making, and quality assurance for 10 weeks. Pre-Requisites: CLLS 218, 219, 220, 252, 253, 356, 357, 431, 432, 436, 437, 458 and 459 with a grade of C or better. Meets General Education Requirements for Problem Solving. Typically Offered Fall Only

Application of theory to problems in blood banking, including ABO and RH typing anomalies, HLA testing, antibody identification, positive direct antiglobulin tests. Maintaining optimal inventories of blood products and the use of emerging technologies is also discussed. Pre-Requisites: CLLS 258 and CLLS 259 with a grade of C or better. Co-Requisites: CLLS 459. Typically Offered Spring Only

Laboratory problem solving, including resolution of typing discrepancies, complex antibody identification and resolution of positive direct antiglobulin tests. Pre-Requisites: CLLS 258 and CLLS 259 with a grade of C or better. Co-Requisites: CLLS 458. Typically Offered Spring Only

Evaluation and quality improvement of clinical laboratory operations. Application of management theory and techniques. Meeting regulatory, accreditation, and compliance requirements. Pre-Requisites: CLLS 356, CLLS 431, CLLS 436 and CLLS 458 with a C or better. Typically Offered Fall Only
CLLS480 Clinical Lab Sciences HP Undergraduate 1

During clinical experience in an affiliated laboratory, the student will review and apply knowledge of testing methods, clinical significance of test results, method selection and evaluation, and laboratory practice in preparation for national certification examinations. Prerequisites: CLLS 456 with a grade of C or better. Corequisite: CLLS 491. Typically Offered Spring.

CLLS491 Clinical Lab Sciences HP Undergraduate 10

Application of theories and techniques in immunohematology, clinical immunology, clinical chemistry, clinical microbiology, hematology, coagulation, and body fluid analysis with an emphasis on correlation of test results and problem solving skills in a clinical laboratory setting for 18 weeks. Prerequisite: CLLS 456 with a grade of C or better. Co-requisites: CLLS 480. Typically Offered Spring Only

CLLS494 Clinical Lab Sciences HP Undergraduate 1

A problem solving management project for the baccalaureate degree intern. Each student will identify a problem or project, write a proposal, modify the proposal as needed, obtain approval, carry out the assigned project, and write a paper describing the project, its results, and recommendations for future action. Pre-Requisites: CLLS 465 with a grade of C or better. Meets General Education Requirements for Collaboration. Typically Offered Spring Only

CLLS499 Clinical Lab Sciences HP Undergraduate 1

A course assessing students' comprehension of clinical laboratory science and general education concepts, which will be accomplished through papers, projects, and examinations. Pre-Requisites: Enrollment in final on-campus semester of CLS program. Typically Offered Fall Only

CLOU131 Cloud Computing BU Undergraduate 3

Students are introduced to a leading cloud computing service architecture. Students will learn cloud architecture principles, services, value proposition, pricing models, and security fundamentals. Students will create, configure, secure, and deploy cloud computing services. Typically offered Fall and Spring semester.

CLOU280 Cloud Computing BU Undergraduate 1 TO 3

Cloud computing services and security are constantly evolving and it is essential that a cloud computing professional examine new aspects of cloud computing services. This course is focused on emerging cloud computing services and how the new technologies and services are securely utilized by organizations. Typically offered Fall and Spring semester.
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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Department</th>
<th>Level</th>
<th>Credits</th>
<th>Description</th>
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<tr>
<td>COAS100</td>
<td>College of Arts and Sciences AS Undergraduate 2</td>
<td>One of two required courses for the associate degree in Integrative Studies. COAS 100 is a writing intensive course intended to assist students in transitioning into college life while discovering connections across the new content they gain in their classes. The course will introduce the concept of integrative learning while supporting students' acquisition of new knowledge. In addition to meeting the outcomes for FSUS 100, the course will introduce students to multiple strategies for retaining information, posing questions for deep learning and transferring knowledge among disciplines. The course will be taken twice (semesters 1 and 2) for a total of 4 credits. Pre-requisite: Open only to majors in AA or BS in Integrative Studies. Typically offered: Fall, Spring, Summer</td>
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<tr>
<td>COAS291</td>
<td>College of Arts and Sciences AS Undergraduate 3</td>
<td>This is a second-year capstone in integrative learning. Students will enroll for two semesters. During the first semester, students will synthesize what they have learned, formulate a research question or problem to investigate, select elective courses to support their research, and deliver a research proposal that outlines their plans. During the second semester, students will conduct their research with the support and integration of the learning in their coursework, publically present their findings, develop a career plan including the selection of a four-year degree, and compile an electronic portfolio summarizing their experience in the program demonstrating their mastery of the program outcomes. Pre-requisites: COAS 100, ENGL 150, C- or better. Typically offered: Fall, Spring, Summer</td>
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<tr>
<td>COAS491</td>
<td>College of Arts and Sciences AS Undergraduate 1 TO 8</td>
<td>This internship provides students with work experience in a workplace setting consistent with their academic plan. An 8 credit internship requires 600 hours, the equivalent of 40 hours per week. COAS 495 serves both as an orientation and a capstone experience. Students will take the course their first semester in the BIS in order to build their academic plan. They will repeat the course in their final semester for additional credit. Capstone students well develop a portfolio that demonstrates their achievement of programmatic competencies as well as individual competencies identified in their academic plan. Meets General Education requirements for Collaboration and Problem Solving. Prerequisites: Permission of program coordinator. Typically Offered Fall, Spring, Summer</td>
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<tr>
<td>COAS495</td>
<td>College of Arts and Sciences AS Undergraduate 1 TO 4</td>
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<th>Course Code</th>
<th>Course Title</th>
<th>College</th>
<th>Degree Level</th>
<th>Credit Hours</th>
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<tr>
<td>COAS499</td>
<td>This course is designed to help students to explore the employment and professional opportunities available to liberal arts graduates and to prepare for either seeking employment or selecting and applying for admission to graduate or professional school. Students will construct a senior portfolio, resume, and statement of personal philosophy. Other topics include individual assessment, the application process, interviewing, business etiquette, mentoring, and continuing professional development. Student must be within 3 semesters of graduating with a CAS BA. Pre-Requisites: Within 3 sem of graduating with a CAS BA degree. Typically Offered On Demand.</td>
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<tr>
<td>COHP100</td>
<td>Basic terminology related to all areas of health care. Introduces the student to the language of medicine, dentistry, and other medical specialties. Prerequisites: ORO 1. Typically Offered Fall, Spring, Summer.</td>
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<tr>
<td>COHP101</td>
<td>An introduction to the health care system as a basis for understanding the roles and responsibilities of health care providers and services. Emphasis will be placed on human interactions. Topics include social and market justice systems, governmental and community roles, ethical – legal aspects, disparities, special needs populations, long term care, Health Insurance Portability and Accountability Act (HIPAA) and insurance/reimbursement. Prerequisites: ORO 1. Meets General Education requirements for Self and Society. Typically offered in Fall, Spring and Summer.</td>
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<td>COHP102</td>
<td>This course will address the following subjects relative to the workplace: potential chemical and physical hazards, rights and responsibilities of employers and employees under OSHA, and the Joint Commission, the need for documentation and reporting of hazard activities, hazard communication plans, emergency preparedness (fire, tornados, chemical spills, etc.), ergonomic risks, and roles and responsibilities of environmental services. Prerequisites: ORO 1. Typically offered in Fall, Spring and Summer.</td>
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<td>COHP160</td>
<td>This course provides an introduction to food and nutrition as a foundation for healthy living. Students will learn about key nutrients as well as consumer related challenges to healthy food choices. Topics to be addressed include nutritional analysis, nutritional standards and food labeling and food safety. Nutritional health will be addressed in the areas of nutritional diseases, weight challenges and general fitness. Current nutrition topics in the media will also be examined from a consumer perspective. Typically Offered Fall or Spring.</td>
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<td>COHP205</td>
<td>Application of basic principles of nutrition to the care of children from birth through adolescence. Practice in relating food and nutrition knowledge in planning and implementing food and nutrition education programs for children in child care settings. Typically Offered Spring Only.</td>
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<tr>
<td>Course Code</td>
<td>College of Health Professions</td>
<td>Type</td>
<td>Credits</td>
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<td>COHP213</td>
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<td>This course consists of principles of diseases and their distribution among people in addition to public health surveillance. Students will be involved in performing a simulated outbreak investigation. Students will learn to read and interpret epidemiological data. Prerequisites: ORO 1. Typically Offered Fall, Spring and Summer.</td>
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<td>COHP221</td>
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<td>This course will prepare students to identify the changes in nutritional needs throughout the life cycle. Students will learn how to apply the Dietary Guidelines for Americans to plan, write and evaluate menus for variety, appearance and appropriate dietary modifications. Prerequisites: COHP160. Typically offered Fall only.</td>
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<td>COHP222</td>
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<td>This course will prepare students to provide nutrition education, participate in patient/client care conferences as well as understand the role of the dietary manager during regulatory agency surveys. Prerequisites: COHP 221. Typically Offered Spring only.</td>
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<td>COHP300</td>
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<td>This course examines the realm of Health Care Information Systems (HCIS) and will provide the student with the opportunity to develop an understanding of basic information technology terminology, standards and protocols. The course will introduce software applications used in HCIS. The student will develop an understanding of the implications of integrated versus interfacing disparate HCIS application, data base management and patient privacy issues. The course will examine emerging technology in the areas of rural health care, telemedicine, access to Electronic Medical Records, and Regional Health Information Organizations. Prerequisites: ENGL 250 and ORO 1. Typically Offered Fall, Spring &amp; Summer.</td>
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<td>COHP317</td>
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<td>Overview of health department organization, public health laws, personnel management and the importance of planning for health-related agencies. An introduction to community health services and practices with particular emphasis upon public health’s contribution to overall community health. Typically Offered Fall, Spring</td>
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<td>COHP330</td>
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<td>This course is designed to present the basic concepts of Occupational Safety and Health law. Students will be exposed to various legal concepts, the OSHA Right To Know Law (Hazard Communication Law), general duty clause, OSHA laws, and compliance activities before and after inspections. Periodic discussions of current events related to the Occupational Safety and Health Act play an important part in understanding and compliance with OSHA. Typically offered Fall, spring and Summer.</td>
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COHP350 College of Health Professions  HP  Undergraduate  3
This course will provide a thorough examination into the nature and uses of descriptive and inferential statistics in healthcare including data collection through manual and automated systems. Parametric and nonparametric statistical methods commonly used to analyze healthcare data will be introduced. Basic theory and application of statistics including data analysis, probability, random variables, sampling techniques, tests of hypotheses, confidence intervals, linear regression and correlation will be discussed. Prerequisite: MATH 114 MATH 115 or MATH 117. Meets General Education requirements for Collaboration and Problem Solving. Typically offered Fall, Spring, Summer.

COHP351 College of Health Professions  HP  Undergraduate  3
This course provides a comprehensive overview of the human experience of aging. The physical, psychological, social and cultural aspects of aging are examined in terms of how they interact to shape the experience of aging. This course is appropriate for students who desire background knowledge in gerontology. Prerequisite: ENGL 250. Typically Offered Fall and Spring.

COHP352 College of Health Professions  HP  Undergraduate  3
This course is designed to provide students with the opportunity to explore normal and abnormal health and physical changes, the ability to adapt, and the effects of these changes on maintaining functional independence and a quality of life in older adults. Individual body system changes will be reviewed, emphasizing how these changes relate to the slow or accelerated development of disorders in later life. Prerequisite: ENGL 250. Typically Offered Fall and Spring.

COHP353 College of Health Professions  HP  Undergraduate  3
This course is designed to provide students with the opportunity to learn the basics skills of care giving and the provision of a safe environment for older adults. Students will be introduced to a variety of skills to include older adult health assessment, planning, treatment, and multidisciplinary care services delivery to address medical, physical, emotional, and psychological aspects of patient care. Prerequisite: ENGL 250. Typically offered Fall and Spring.

COHP354 College of Health Professions  HP  Undergraduate  3
This course will provide students with the opportunity to develop a basic understanding of the dynamics of an aging population to include the phenomenon of aging of baby boomers, current issues and public policies as they relate to aging. The implications of these population changes, current aging research, and government policy on the general population will be addressed throughout the course. Prerequisites: ENGL 250. Typically Offered Fall and Spring.

COHP450 College of Health Professions  HP  Undergraduate  3
This course introduces the role of the healthcare professional to evidence-based practice with a focus on research. Students will engage in critical evaluation of research and explore the relationship of credible evidence to best practices. Students will assess basic research methodology and design as part of a limited research project. Prerequisite: COHP 350. Meets General Education requirements for Collaboration and Problem Solving. Typically offered Fall, Spring and Summer.

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COHP471 College of Health Professions HP Undergraduate 3
This course is designed to enable the student to develop an understanding of and appreciation for the developing trends in health care. Students will be required to perform an in-depth analysis of one current trend in addition to the study of the socioeconomic, scientific and political forces that impact health care in the United States. Meets General Education requirements for Collaboration. Prerequisites: Enrollment in the Bachelor of Science in Allied Health program. Typically Offered Fall, Spring and Summer.

COHP498 College of Health Professions HP Undergraduate 3
The capstone project is the final course in the medical informatics minor. During the course, the student will utilize data mining tools, business intelligence, and healthcare knowledge to identify a project and prepare a business plan for implementation. Prerequisite: COHP 300 and STQM 342 and ISYS 411 and ISIN 302. Offered Fall, Spring and Summer.

COHP499 College of Health Professions HP Undergraduate 3
The capstone project is the final course in the program. During the course, the student will utilize past knowledge to identify a project, investigate possible solutions and make a final proposal for implementation. Meets General Education requirements for Problem Solving. Prerequisites: Department Permit Required. Typically Offered Fall, Spring and Summer.

COMM10 Communication AS Undergraduate 3
A general overview of the field of human communication with emphasis on types of positions, professional responsibilities and applications of training in a variety of workplace contexts. Students are introduced to the Applied Communication faculty and other communication professionals. Typically Offered Fall.

COMM105 Communication AS Undergraduate 3
Face-to-face or mediated communication and how it affects interpersonal relationships. Topics include perception, self-concept; listening, and conflict management. Course meets General Education requirements for Oral Communication. Typically Offered Fall, Spring, Summer.

COMM121 Communication AS Undergraduate 3
Training and experience in preparation and delivery of short speeches with emphasis on the clear, concise, logical communication of ideas. Emphasis will be placed on informative and persuasive speaking. Meets General Education requirements for Oral Communication. Typically Offered Fall, Spring, Summer.

COMM216 Communication AS Undergraduate 3
Students learn the basic rules for managing meetings in most organizations, with emphasis on Robert’s Rules of Order. Through observation, simulations and other class activities they practice how to prepare organizational constitutions, design meeting agenda, conduct meetings, and manage conflict in meeting settings. Typically offered on demand.

COMM221 Communication AS Undergraduate 3
Decision making and problem-solving in small groups. Students participate in groups and evaluate group functioning from the perspective of small group communication concepts. This course meets General Education requirements Communication Competence, and new Fall 2017 Oral Communication. Typically Offered Fall, Spring, Summer.
COMM23 1 Communication AS Undergraduate 3 Fundamental principles of selecting, interpreting, and performing literature for an audience. This course meets General Education requirements: Cultural Enrichment, and new Fall 2017 Culture. Typically Offered Fall, odd years.

COMM25 1 Communication AS Undergraduate 3 Principles of reasoning, advocacy, and oral argumentation applied to issues of current importance. Research methodologies, analysis of issues and arguments, speech construction, preparation of briefs, refutation and reasoning. This course meets General Education requirements Communication Competence, and new Fall 2017 Oral Communication. Pre-Requisites: COMM 121 or Instructor Approval. Typically Offered Fall

COMM25 2 Communication AS Undergraduate 2 Preparation and participation in discussion, debate, individual speaking, and oral interpretation. Two hours of credit may be earned each semester but not more than four hours of credit may be applied toward graduation. Pre-Requisites: Department approval. Typically Offered Fall, Spring

COMM29 9 Communication AS Undergraduate 3 Students examine classical and contemporary theories of human communication. They exercise communication skills at the interpersonal, small group, and presentational levels. They investigate research in communication in their career area. This course serves as the capstone course for the Communication minor and the Associate in Arts in Applied Speech Communication. Pre-Requisites: Any two of the following: COMM 105, COMM 121, or COMM 221, all with C or higher. Typically Offered Fall

COMM30 0 Communication AS Undergraduate 3 A review of methods of conducting communication research, including design and use of surveys, content analysis, experimental methods, as well as such qualitative procedures as rhetorical analysis and ethnography. Prerequisites: Comm 299. Typically Offered Spring

COMM30 1 Communication AS Undergraduate 3 The development of practical skills in interviewing. The course focuses on techniques and strategies, and includes ethical and legal considerations. Types of interviews include: informational, selection, performance appraisal, discipline, exit, counseling, and persuasive. Pre-Requisites: COMM 105 or COMM 121, with C or better. Typically Offered Fall, Spring

COMM30 5 Communication AS Undergraduate 3 Advanced study of the interactive effects of communication and of human relationships. Prerequisites: COMM 105 or COMM 121 or COMM 221, with C or better. Typically offered Fall, odd years. Study of human communication focusing on non-word symbols and signs. Topics include: affect, eye behavior, deception, movement, and voice. Students will conduct a study as a course project. Prerequisites: COMM 105 or COMM 121 or COMM 221, with C or better. Typically Offered Spring, even years
COMM31 5 Communication AS Undergraduate 3
The course will focus on studying the similarities and differences in communication attitudes and behaviors expressed and created by men and women in the United States. Students will learn and evaluate the development, psychological, situational and cultural theories of sex and gender in the communication context. Pre-requisites: COMM105 with C or better. Typically offered Fall, even years.

COMM32 0 Communication AS Undergraduate 3
The course examines current trends in theory/practice of understanding communication frameworks related to the family unit. Various forms of relational and family communication structures will be studied, and the complexities, challenges, and rewards of communication in the family will be examined. Several theoretical frameworks will be analyzed as they apply to the development and continuation of the family unit. Prerequisites: COMM 105, 121, or 221, with C or better. Typically Offered Spring Odd Years.

COMM32 5 Communication AS Undergraduate 3
Style, patterns of organization, and supporting materials appropriate for oral communication. Students write and deliver manuscript speeches. Pre-Requisite: COMM 121 with C or better. Typically Offered Fall, odd years.

COMM33 2 Communication AS Undergraduate 3
Advanced study in social, rhetorical, and scientific theories of persuasion. Prerequisites COMM 121. Typically Offered Fall, odd years.

COMM33 3 Communication AS Undergraduate 3
Advanced techniques for clarifying and emphasizing ideas in oral presentations. Students prepare and deliver extemporaneous and manuscript speeches. Pre-Requisite: COMM 121. Typically Offered Fall, Spring, Summer.

COMM34 0 Communication AS Undergraduate 3
Students will examine communication theories and strategies associated with advocacy, activism and social movements. They analyze messages from these theoretical frameworks, giving special attention to cultural clash and to issue of gender and race. Prerequisites: COMM 105 or COMM 121 or COMM 221, all with C or better. Typically Offered Spring.

COMM34 1 Communication AS Undergraduate 3
Students examine the evolution of western democracies, focusing on the impact of media on political candidates and their campaigns. Students participate in a political campaign. Prerequisites: COMM 105 or COMM 121 or COMM 121 or COMM 221, all with C or better. Typically Offered: Fall, even years.
Students prepare to direct secondary programs in debate, forensics and journalism. Legal, economic and political issues that confront the debate/forensics coach and the journalism advisor in Michigan schools, managing a competitive forensics program including coaching students, managing a budget, scheduling a tournament and networking with state and national sanctioning bodies; legal constraints for the journalism advisor; and strategies for managing newspaper and yearbook activities are studied.

Prerequisites: COMM 105 or COMM 121 or COMH 121 or COMM 221; with C or better. Typically offered Spring odd years.

Global cultural differences as they affect communication between individuals and groups. Communication strategies and techniques as they are influenced by cultural relativity and value systems. This course meets General Education Requirements for Global Consciousness and Social Awareness and New Fall 2017 Global Diversity and Self and Society. Prerequisites: COMM 105 or COMM 121 or COMH 121 or COMM 221; with C or better. Typically Offered Fall, Spring, Summer.

This course focuses on examining how elements of diversity in the US: including ethnicity, race, sex, sexual orientation/gender, religion, socio-economic status and ability; affect the ability of parties to communicate effectively and appropriately. Students apply their reading to experiences interacting with “different” others throughout the semester and journal these experiences to monitor their growth in understanding and adapting their communication behaviors. This course meets general education requirements for Social Awareness, and Race-Ethnicity-Gender and new Fall 2017 U.S. Diversity and Self and Society. Prerequisites: COMM 105 or COMM 121 or COMM 221 or COMH 121, all with C or better. Typically Offered: Fall, Spring, Summer.

The constructive management of interpersonal conflict. Methods of handling conflict will be identified and practiced. Topics include power, conflict styles, problem-solving, conflict issues, bargaining and negotiation, and third party intervention. Prerequisites: COMM 105 or COMM 121 or COMM 212 or COMM 221; with C or better. Typically Offered Spring.

Interpersonal, small and large group communication studied within the context of formal and informal organizations. Pre-Requisites: COMM 105 or COMM 121 or COMM 221, with C or better. Typically Offered Fall, even years.
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<tr>
<th>Course</th>
<th>Title</th>
<th>Description</th>
<th>Prerequisites</th>
<th>Typically Offered</th>
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<tr>
<td>COMM38 1</td>
<td>Communication AS Undergraduate 3</td>
<td>Students explore theories and principles of interpersonal, group, and mass and social media communication within the context of sports organizations, including applications of communication concepts to organizational structures, the roles of participants in and consumers of sport (fans), and the messages exchanged between sports organizations and the cultural contexts in which they operate. Students participate in and critically examine sports organizations’ activities.</td>
<td>COMM 105 or COMM 121 or COMM 221, with C or better. Typically offered Fall.</td>
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<tr>
<td>COMM38 3</td>
<td>Communication AS Undergraduate 3</td>
<td>Examination of prominent and current trends in research and theory in the field of mass communication. By exploring the role of mass communication in business and society, this course provides an understanding of the form, content, and consequences of mass communication. Specific topics include the intended and unintended consequences as well as the evolution of mass communication; from print to traditional broadcasting, convergent electronic media, and social media.</td>
<td>COMM 105 or COMM 121 or COMM 221, with C or better. Typically offered Fall.</td>
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<tr>
<td>COMM38 7</td>
<td>Communication AS Undergraduate 3</td>
<td>Broadcast announcing, whether for radio or television, requires a unique knowledge base and a special set of skills. Vocal quality, word flow, camera presence (kinetics or body movement), timing to the second, the ability to attend to information from several sources simultaneously, and script writing are some of the skills that are needed. The knowledge base and practice in these skills are provided in the course.</td>
<td>COMM 121 or COMH 121. Typically Offered Spring Only, Odd Years</td>
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<tr>
<td>COMM38 9</td>
<td>Communication AS Undergraduate 3</td>
<td>Students examine how participants in and observers of ‘sports’ communicate. They analyze how the sports industry has evolved, maintains itself, and continues to grow as a cultural phenomenon. They analyze how sports organizations function through integration of athletes, managers, and audiences. This course features guest speakers from the sports industry.</td>
<td>COMM 105 or COMM 121 or COMM 221 or COMH 121 and ENGL 250 all at C or better. Meets General Education Requirements for Collaboration and Problem Solving.</td>
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<tr>
<td>COMM39 6</td>
<td>Communication AS Undergraduate 3</td>
<td>Students journal their travel to a country or countries outside of the United States to meet with the people and to explore their culture. Students prepare for the experience by attending seminars and completing assignments on the history and culture of the country(ies), cross-cultural communication theories and ethnomethodological assumptions and strategies. This course meets General Education requirements: Cultural Enrichment and Global Consciousness and new Fall 2017 Culture and Global Diversity.</td>
<td>Instructor approval. Typically Offered Summer Only.</td>
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</table>
COMM40 0 Communication AS Undergraduate 3
A study of factors which distort and block communication, and of the
"techniques that minimize distortion and overcome communication blockage in
a variety of organizational settings. Students conduct in-depth organizational
case audits, study communication audit instruments, and examine ethical
implications of organizational assessments. Pre-Requisites: COMM 380.
Typically Offered Spring Only

COMM42 1 Communication AS Undergraduate 3
Leadership expectations and responsibilities, leadership emergence and
leadership techniques for meeting task and social needs of group members
within a larger organization. Typically offered Fall semester. Pre-Requisites:
COMM 105 or COMM 221, with C or better. Typically Offered Fall Only

COMM46 0 Communication AS Undergraduate 3
Freedom of speech as it applies to human communication. Students study
legal and ethical responsibilities. Meets General Education requirements for
Collaboration and Problem Solving. Prerequisites: COMM 105 or COMM 121
or COMM 121 or COMM 221, with grade of C or higher. Typically offered
Spring.

COMM48 5 Communication AS Undergraduate 1 TO 6
The student will participate in a basic or applied research project in their major
or a closely related discipline. The course will be designed to provide the
student with hands-on experience in research design, informational gathering
and management, analysis and interpretation. One credit hour equals 45
contact hours per semester. May be repeated for up to 12 credits. Pre-
Requisites: Communication students only. Typically Offered On Demand

COMM48 9 Communication AS Undergraduate 3
This course is the capstone for the Sports Communication major. Students
read essays, lead class discussion and write essays analyzing the Sports
industry in the United States and around the globe. They complete projects in
teams and present their conclusions to clients in the Sports industry. They
complete and present a portfolio demonstrating how they have improved
their communication skills in preparation for career entry. Prerequisites:
COMM 389, with C or better. Sports Communication majors only. Meets
General Education Requirements for Collaboration and Problem Solving.
Typically offered Spring

COMM49 3 Communication AS Undergraduate 1 TO 3
Work experience or research with a cooperating employer or supervisor in
organizations in business, government, non-governmental organizations, or
education. The work or research experience is designed to be relevant to the
student's academic pursuits, personal development, and professional
preparation. The intern or researcher must record 40 hours of work for each
credit hour. Enrollment may be repeated for a maximum of 8 credits.
Prerequisites: COMM 299 and COMM 300, all with C or higher, and Instructor
Permit. Typically offered Fall, Spring, Summer.
### COMM49 Communication AS Undergraduate 3

Reviews and explores contemporary and significant viewpoints about human communication in the following contexts: interpersonal, small group, public and organizational. As part of the requirements for the course, students will complete major projects which may, in part, be based on their internship experiences. Pre-Requisites: COMM 299 and COMM 300. Meets General Education requirements for Collaboration and Problem Solving. Typically Offered Spring.

### CONM100 Construction Management TE Undergraduate 1

The purpose of this course is to provide first year construction students with personal connections, knowledge and resources that will enhance their potential for learning, safety, satisfaction and graduation. The goal is to facilitate student's transition from high school to university life and thus improve each student's academic performance and retention. This course will serve as an internal model for interactions with program professors. Prerequisites: BCTM, CETM, Pre-BCTM, Pre-CETM students. Typically Offered: Fall.

### CONM111 Construction Management TE Undergraduate 3

Exposure to materials, methods and equipment used on heavy and commercial construction projects. Site layout, foundations, structural components of a project, quantity takeoff, material ordering and basic construction codes are introduced. Prerequisites: C- in MATH 110 or 115 or 116 or 120 or 126 or 130 or 132 or 220 or 230 or math ACT 19+/SAT 500+. Typically Offered: Spring.

### CONM112 Construction Management TE Undergraduate 3

Introduction to the interpretation of plans, specifications, and building codes for commercial/industrial buildings and major civil projects. The design process and how plans and specifications are developed and interrelated is explained. Basic quantity takeoff methods are introduced. Pre-Requisites: CONM 116; C- in MATH 115 or 116 or 120 or 126 or 130 or 132 or 220 or 230 or math ACT 24+ or math SAT 580+. Typically Offered Fall, Spring.

### CONM116 Construction Management TE Undergraduate 2

A foundation course utilizing basic and complex construction graphics methods used to: communicate; understand ideas and concepts found in construction; and solve graphical representations required to explain the details of building a project. This course familiarizes the student with fundamental principles of construction graphics and drafting using hard line, freehand sketching, three-dimensional modeling, and basic computer modeling techniques. This course includes the development of orthographic presentations, isometric drawings, perspectives, graphical techniques, freehand drawings, dimension clarity, and three-dimensional models. Prerequisites: C- in MATH 110 or 115 or 116 or 120 or 126 or 130 or 132 or 216 or 220 or 230 or math ACT 19+ or SAT 500+. Typically Offered: Fall, Spring.
CONM117  Construction Management  TE  Undergraduate  3  This course will review basic micro application software including windows type operating systems, word processing, spreadsheets, and presentation software and will introduce the basic principles of Building Information Technology. Students will examine geometry, spatial relationships, geographic information, quantities and properties of building components. Prerequisites: D- in CONM 116; C- in MATH 115 or 116 or 120 or 126 or 130 or 132 or 216 or 220 or 230 or math ACT 24+/SAT 580+. Typically offered: Fall, Spring.

CONM121  Construction Management  TE  Undergraduate  3  Application and properties of construction materials. The sampling, testing and application of the physical properties of aggregates and Portland cement concrete; bituminous materials, metals, and wood. Prerequisites: C- in MATH 115 or 116 or 120 or 126 or 130 or 132 or 216 or 220 or 230 or math ACT 24+/SAT 580+. Typically Offered: Fall.

CONM122  Construction Management  TE  Undergraduate  3  Fundamentals of construction surveying, including distance measurement, leveling, angular measurement, traversing, topographic surveying, volume calculations, circular curves, building and roadway layout and grading. Pre-Requisites: C- in MATH 120 or 126 or 130 or 132 or 216 or 220 or 230 or math ACT 26+/SAT 610+. Typically Offered Fall, Spring.

CONM211  Construction Management  TE  Undergraduate  3  The study of the elements involved in the preparation of the contractor’s bid proposal. Determine quantity takeoff, crew sizes, daily outputs, unit costs and organization of the bid packages into general contracted and subcontracted work. Discuss the ethics of bidding and prepare a bid proposal. Incorporate industry technology into the estimating process. Pre-Requisites: CONM 111 and CONM 112 or ARCH 102 and ARCH 112 and ARCH 115 and MATH 120 or MATH 126 or MATH 130 or MATH 132 or MATH 220 or MATH 230 with a C- or higher or MATH ACT 24 or MATH SAT 580. Typically Offered: Fall, Spring.

CONM212  Construction Management  TE  Undergraduate  3  An introduction to the principles of soil mechanics including soil compaction and load bearing. The origin and engineering characteristics of soil, soil classification systems, the strength of soil masses, control of structural embankments and an introduction to the design of foundations will be emphasized. Pre-Requisites: D- in CONM 121 or ARCH 112; C- in MATH 120 or 126 or 130 or 132 or 216 or 220 or 230 or math ACT 26+/SAT 610+. Typically Offered: Fall, Spring.

CONM221  Construction Management  TE  Undergraduate  3  Static’s, strength of materials and basic structural design fundamentals of steel and wood as they relate to beams, columns, and open-web joints. Topics include equilibrium, bending, shear and deflection, centroids, moments of inertia, truss analysis and thermal properties. Prerequisites: CONM 121 and MATH 120 or a pre 2016 SAT of MATH score of 560 or post 2016 SAT of 580 and PHYS 211. Typically Offered Fall and Spring.
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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Program</th>
<th>Prerequisites</th>
<th>Typically Offered</th>
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</thead>
<tbody>
<tr>
<td>CONM222</td>
<td>Construction Management</td>
<td>3</td>
<td>TE Undergraduate</td>
<td>An introduction to project documentation and on-site administration procedures for construction projects. Apply construction documents and project planning methods. Acquire knowledge of the structure of the construction industry and project delivery systems. The importance of project administration procedures for time, cost, and quality control during the construction process is emphasized. Prepare documentation for changes in the construction process. Pre-Requisites: CONM 111 and CONM 112 or ARCH 102 and ARCH 112 and ARCH 115 and ARCH 203; and CONM 211 and MATH 120 or MATH 126 or MATH 130 or MATH 132 or MATH 220 or MATH 230 with a C- or higher or MATH ACT 24 or MATH SAT 580. Typically offered: Fall, Spring.</td>
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<tr>
<td>CONM225</td>
<td>Construction Management</td>
<td>3</td>
<td>TE Undergraduate</td>
<td>Management of the construction site, including planning and layout of temporary and permanent site facilities, field engineering calculations, project documentation, regulatory requirements and sustainable construction practices. Meets General Education requirements for Collaboration. Pre-requisites: CONM 117, 122. Typically offered: Fall, Spring</td>
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<tr>
<td>CONM311</td>
<td>Construction Management</td>
<td>3</td>
<td>TE Undergraduate</td>
<td>Design, erection, use and removal of temporary structures used in the construction industry with an emphasis on concrete formwork. Basic rigging operations introduced. Pre-Requisites: D- in the following courses: CONM 212, 221, 222, 225; C- in MATH 120 or 126 or 130 or 132 or 216 or 220 or 230 or math ACT 26+/SAT 610+; D- in PHYS 211. Typically Offered: Fall, Spring.</td>
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<tr>
<td>CONM312</td>
<td>Construction Management</td>
<td>3</td>
<td>TE Undergraduate</td>
<td>Develop construction planning and scheduling techniques, including work breakdown, crew analysis and productivity, activity time-cost relationships, project time-cost relationships, resource leveling, overlapping activity relationships and lag, and project cash flow. Computer application is used as a scheduling tool throughout the course. Pre-Requisites: D- in the following courses: CONM 222, 225; C- in MATH 120 or 126 or 130 or 132 or 216 or 220 or 230 or math ACT 26+/SAT 610+. Typically Offered: Fall, Spring.</td>
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<tr>
<td>CONM321</td>
<td>Construction Management</td>
<td>3</td>
<td>TE Undergraduate</td>
<td>The development of unit prices for estimating labor, material and equipment, productivity adjustment factors, overhead and profit, cash flow and interest calculations, conceptual estimating methods, and cost variance analysis. Develop conceptual estimate using various methodology and statistical techniques. Pre-Requisites: D- in the following courses: CONM 211, 222, 225; C- in MATH 120 or 126 or 130 or 132 or 216 or 220 or 230 or math ACT 26+/SAT 610+. Typically Offered: Fall, Spring.</td>
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<tr>
<td>CONM324</td>
<td>Construction Management</td>
<td>3</td>
<td>TE Undergraduate</td>
<td>Understanding emerging technologies used in the solution of construction problems and in construction management. This will include PC-based office software; project management software; and new industry technologies. Pre-Requisites: D- in the following courses: CONM 117, 122, 211, 222, 225. Typically Offered: Fall, Spring.</td>
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<td>Course Code</td>
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<td>CONM330</td>
<td>Construction Management</td>
<td>TE</td>
<td>1</td>
<td>CONM 112 or ARCH 102. Typically offered Fall or Spring.</td>
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<tr>
<td>CONM373</td>
<td>Construction Management</td>
<td>TE</td>
<td>1</td>
<td>The study of professional ethics and leadership as related to the construction industry. Discusses the codes of ethics adopted by many technical societies. The course explores the meaning and attributes of professionalism along with the moral, ethical, and social responsibilities of professional constructors. This course may be team taught by several or one Construction Management faculty. CONM 211, 222, 225. Co-requisites: ENGL 311. Typically offered: Fall, Spring.</td>
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<tr>
<td>CONM412</td>
<td>Construction Management</td>
<td>TE</td>
<td>3</td>
<td>Pre-Requisites: CONM 222, 225, 312, 321; D- in BLAW 301; D- in ENGL 311. Typically Offered: Fall, Spring.</td>
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<tr>
<td>CONM413</td>
<td>Construction Management</td>
<td>TE</td>
<td>3</td>
<td>Economic and financial factors in the construction industry environment to be considered in managerial decision making. Emphasizes the time value of money concept. (mixed delivery). Prerequisites: D- in the following courses: CONM 222, 225, 321; C- in MATH 120 or 126 or 130 or 132 or 216 or 220 or 230 or math ACT 26+/SAT 610+. Typically Offered: Fall, Spring.</td>
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<tr>
<td>CONM424</td>
<td>Construction Management</td>
<td>TE</td>
<td>3</td>
<td>Construction Safety and Management techniques used to manage people, resources and safety at the construction site. Safety topics, professional ethics, productivity, motivation, communication styles, leadership, time management and team building skills addressed. Prerequisites: D- in the following courses: CONM 222, 225, 311; D- in ENGL 311. Meets General Education requirements for Problem Solving. Typically offered: Fall, Spring.</td>
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<tr>
<td>CONM430</td>
<td>Construction Management</td>
<td>TE</td>
<td>3</td>
<td>Study of the construction and basic engineering design of power generating plants and process plants. Review of major equipment and facility requirements with plant layout and arrangement. Emphasis on construction of power and process plants including field construction materials and methods as well as on-site management of the construction process. Prerequisites: BCTM 223, HVAC 337, CONM 311 and ENGL 311. Typically Offered Fall or Spring.</td>
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</table>
CONM460 Construction Management TE Undergraduate 2 The course dynamics and study topic will vary based upon contemporary problems, issues, or trends impacting the construction industry at the time of the course. Advanced technology, management techniques and efficiencies, and business focus will be investigated depending on the course topic. Student assessment will be determined by demonstration their overall grasp of the problem analysis, possible solutions, and communication of study results. Depending on selected project, cross functional team role playing may be utilized. Pre-requisites: CONM 225, 311, 321, 324, 373; ENGL 311. Typically offered: Fall, Spring

CONM461 Construction Management TE Undergraduate 2 A study of the basic concepts and principles of sustainability utilized in the design and professional construction industry. Review methodology used to measure sustainable energy, materials, water management, and the construction environment. Examine the different methods for rating sustainable building "green" rating systems. Pre-requisites: CONM 225, 311, 312, 321, 324, 373; ENGL 311. Typically offered: Fall, Spring

CONM462 Construction Management TE Undergraduate 2 Study of the construction and basic engineering design of power generating plants and process plants. Review of major equipment and facility requirements with plant layout and arrangement. Emphasis on construction of power and process plants including materials and methods of construction with on-site management of the construction process. Pre-requisites: CONM 225, 311, 321, 324, 373; ENGL 311. Typically offered: Fall, Spring

CONM463 Construction Management TE Undergraduate 2 Study of basic civil engineering design and on-site construction issues for construction projects. Use of construction documents and project planning methods. Study of engineering material systems with construction methods. Pre-requisites: CONM 225, 311, 312, 321, 324, 373; ENGL 311. Typically offered: Fall, Spring

CONM499 Construction Management TE Undergraduate 3 The Construction Management program capstone course leading to the award of an ACCE accredited Bachelor of Science degree in Construction Management. Students explore the roles and tasks of the professional construction manager. Student work is intended to be applied in a holistic manner using all previously developed construction program coursework. Project management issues within a decision making and problem solving context are included in a semester-long simulation of an actual construction project in a student team environment. Assessment of the student team projects include a professional presentation to industry standards conducted by a team of faculty and several construction industry representatives. Pre-Requirements: D- in the following courses: CONM 311, 312, 321, 324, 373, 413, 424; D- in ENGL 311. Meets General Education requirements for Collaboration and Problem Solving. Typically Offered: Fall, Spring.
An introduction to programming and problem solving for students with little or no programming background. Topics include problem specification and algorithm design, and fundamental procedural programming concepts (including variables, assignment, conditional and iterative control structures, arrays or lists, and functions). Prerequisites: MATH 116 or MATH 120 or 24 ACT or 560 MATH pre 2016 SAT or post 2016 SAT 580. Typically Offered Fall, Spring, Summer.

This course introduces programming and software engineering. The methodology is based on object oriented analysis. Discussion of fundamental algorithms and elementary data structures is included, focusing an ADT's throughout. User interfaces are covered in the specification of programming tasks. Prerequisites: MATH 126 or MATH 130: and CPSC 130 or permission of instructor. Typically Offered: Fall, Spring.

This course covers data structures and object-oriented design in some depth. Topics covered include data structure, a formal treatment of recursion, an introduction to basic problem solving strategies, an introduction to complexity analysis and theory of computability. Sorting and searching algorithms are presented in the light of the presentation of problem-solving strategies and complexity issues. Finally, objected-oriented design methodologies are studied. Pre-Requisites: CPSC 200 with a grade of C- or better. Meets General Education requirements for Collaboration and Problem Solving. Typically Offered: Fall.

An introduction to discrete and continuous processes including queues, and population dynamics. Examples will be modeled using Pascal and/or simulation languages such as Dynamo, and SIMSCRIPT. Pre-Requisites: MATH 216 or MATH 220; and CPSC 200 and MATH 251 all courses with a grade of C- or better.Meets General Education requirements for Collaboration and Problem Solving. Typically Offered Spring Only, Even Years.

An overview of graphics hardware, representation of curves and surfaces, transformations and hidden line removal. Pre-Requisites:CPSC 200 and MATH 322 with a grade of D- or better, or instructor approval. Typically Offered Spring Only, Odd Year.

Discrete Mathematics topics for Applied Mathematics and Computer Science, including: Sets, Algorithms, Recursion, Combinatorics, and Graph Theory. Students cannot receive credit for both CPSC 328 and MATH 328. Pre-Requisites: MATH 216 or 220 with a grade of D- or better. Typically Offered Fall Only, Even Year.
CPSC330  Computer Science  AS  Undergraduate  4
Introduction to the parallel computing landscape and a parallel programming language. Overview of processes, synchronization, and the use and implementation of semaphores. Introduction to distributed programming techniques (including message passing, RPC and rendezvous), process interaction paradigms and scientific computing (including heartbeat algorithms, pipeline algorithms, broadcast algorithms, grid computations and particle computations). Prerequisites: MATH 216 or MATH 220; and CPSC 200 or ECNS 311. Typically Offered: On Demand

CPSC340  Computer Science  AS  Undergraduate  4
Digital logic and digital systems, machine-level representation of data, assembly-level machine organization and instruction sets, memory system organization, Input/Output and interrupts, multiprocessing and an introduction to systems software. Prerequisites: CPSC 130 or CPSC 200 or ECNS 311. Typically Offered Spring Only

CPSC442  Computer Science  AS  Undergraduate  3
This course covers the syntax and semantics of programming languages and provides an introduction to compiler construction. Topics that may be covered include: formal specification of syntax, declarations, binding, allocation, data types, control structures, control and data flow, and the implementation and execution of programs. The type of programming methodologies that may be covered include: functional programming, imperative programming, logic programming, and object-oriented programming. Programming projects will provide experience in a number of languages. Prerequisites: CPSC 300 and MATH 328. Typically Offered Spring Only, Even Year

CRIM110  Criminal Justice  BU  Undergraduate  3
General survey of the field of criminal justice. Special emphasis given to examining the crime problem, history of the criminal justice system, constitutional limitations of criminal justice, and the U.S. police system. Typically Offered Fall, Spring

CRIM111  Criminal Justice  BU  Undergraduate  3
Tracks the correctional process from the prosecutorial stage to release from correctional supervision. History of corrections, modern day correctional ideology, various correctional philosophies, correctional goals, existing problems, future correctional goals, and components of corrections. Meets M.C.O.T.C. certification requirements. Typically Offered Spring Only

CRIM112  Criminal Justice  BU  Undergraduate  3
This course shall explore the historical development, power/jurisdictions and current issues pertaining to the courts in the United States. Further, this course will analyze the effectiveness of traditional techniques used by the courts, prosecution and defense in the judiciary process at both the state and federal levels. Typically Offered: Spring.
CRIM113 Criminal Justice BU Undergraduate 3
This course shall explore the historical development, power/jurisdictions and current issues pertaining to law enforcement in the United States. Further, this course will analyze the effectiveness of traditional and non-traditional techniques of law enforcement’s control of crime in urban and rural settings from a state and federal level. Typically Offered: Spring.

CRIM220 Criminal Justice BU Undergraduate 3
The fundamental principles of supervision and management as they are applied to the agencies of the criminal justice system. Pre-Requisites: Criminal Justice Students. Typically Offered Fall Semester.

CRIM260 Criminal Justice BU Undergraduate 3
Analysis of juvenile delinquency theories of causation and current prevention programs. Role of police agencies in prevention programs and their relationship to juvenile courts and institutional treatment centers. Meets General Education requirements for Collaboration and Problem Solving. Typically Offered Spring Only

CRIM301 Criminal Justice BU Undergraduate 3
A survey course of the basic principles of modern criminal investigation. The course will cover areas of current criminal investigative techniques, interview and interrogation issues, crime scenes, evidence collection, preservation, and analysis, evidentiary standards, and current and future issues and developments in the field of criminal investigation. Pre-Requisites: CRIM 110 and Criminal Justice Corrections or Criminal Justice Generalist students. Typically Offered Spring Only

CRIM302 Criminal Justice BU Undergraduate 1
This course will enhance awareness and understanding of research regarding school violence, current statistics, laws, critical issues and effective approaches in managing violence. Students will gain insight and develop strategies to prevent violence and promote safe schools. Identification of characteristics of potentially violent situations and the role of educators in the development and implementation of policies and procedures will be explored. Typically Offered Spring Only

CRIM305 Criminal Justice BU Undergraduate 3
Explore selected issues in criminal justice organizations with emphasis on the role of practitioners and relationships with the public. Students will evaluate issues surrounding their personal value systems, as well as ethical and moral development within criminal justice organizations. The foundation of this study will be a structured debate of moral dilemmas from ethical perspectives. Pre-Requisites: Criminal Justice students only or department approval. Typically Offered Fall Only

CRIM310 Criminal Justice BU Undergraduate 3
In this course the student will examine history, philosophy, legal process, performance and outcomes of juvenile and adult correctional systems. Pre-Requisites: Criminal Justice students only and Junior status or department approval. Typically Offered Fall Only
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<tr>
<th>Course Code</th>
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</table>

In this course the student will examine development, organization, policies, and performance of the police in society as well as community and selected social institutional factors as related to their influence on police systems. Pre-Requisites: Criminal Justice students only and Junior standing or department approval. Typically Offered On Demand

The dynamics involved when dealing with the public and inmates. An in-depth analysis of the following: culture and minorities, formation of attitudes and prejudices, understanding human relations, conflict intervention, special needs inmates, domestic situations and suicide. Meets M.C.O.T.C. certification requirements. Pre-Requisites: Junior status and Criminal Justice - Corrections and Criminal Justice students. Typically Offered Spring Only

Writing an effective report by analyzing the use of vocabulary, sentence structure, utilization of mechanics specific to law enforcement, use of notes and field notebook, understanding the various styles of writing and preparing reports pertaining to the criminal justice field. Meets COLES certification requirements. This course meets General Education requirements: Writing Intensive Course and new Fall 2017 Comm Across the Curriculum. Pre-Requisites: Junior status and Criminal Justice students only. Typically Offered Summer Only

Writing an effective report analyzing the use of vocabulary, sentence structure, utilization of mechanics specific to corrections, using notes, case notebook, interviewing methods, understanding the various styles of writing and preparing specific corrections reports. Meets MCOCTC certification requirements. This course meets General Education requirements: Writing Intensive Course and new Fall 2017 Comm Across the Curriculum. Pre-Requisites: Junior status and Criminal Justice, Criminal Justice Generalist and Criminal Justice Corrections majors only. Typically Offered Summer Only

A detailed look at crime, what may lead to it, and how criminal behavior may be prevented, from Criminal Justice theoretical perspectives. The course also includes a focus on serious crimes, particularly those involving violence. Prerequisites: Junior standing in Criminal Justice BS major. Typically offered Spring.

Basic police training which covers police pursuit/precision driving techniques, driving policies, procedures and liabilities. Meets COLES certification requirements. Pre-Requisites: Junior status & Criminal Justice Law Enforcement and Criminal Justice students only. Typically Offered Summer Only

Basic police training in orientation to firearms. Policies, procedures and liabilities of firearms use and firearms range techniques. Meets COLES certification requirements. Pre-Requisites: Senior status and Criminal Justice and Criminal Justice Law Enforcement students only. Typically Offered Fall, Summer
CRIM357  Criminal Justice  BU  Undergraduate  3  
Basic firearms marksmanship, competence in safe handling, and lawful discharge of pistols, rifles, and shotguns for non-law enforcement students within the School of Criminal Justice. This course will be taught in accordance with general firearms guidelines. This course will be taught by an instructor licensed to provide CCW Pistol Safety training course certificates which will then be provided to successful students. Prerequisites: Junior/Senior status in generalist or corrections in Criminal Justice. Typically Offered Summer only.

CRIM370  Criminal Justice  BU  Undergraduate  3  
Examines federal, state, county and local correctional facilities. Topical issues include: the purpose of correctional institutions, historical and philosophical developments, management and organizational principles, security operations, treatment issues, classification issues, analysis of women's facilities, types of institutions and the role of staff. Meets M.C.O.T.C. certification requirements. Pre-Requisites: Junior status and Criminal Justice Corrections and Criminal Justice students only or department approval. Typically Offered Fall Only

CRIM385  Criminal Justice  BU  Undergraduate  3  
A dynamic course studying various contemporary problems or issues impacting the criminal justice system such as alcohol and other drugs of abuse, AIDS, crime trends, drunk driving, etc. Topics addressed in this course change to reflect the most current issues facing the criminal justice system. Pre-Requisites: Criminal Justice students only and Junior Status or department approval. Meets General Education requirements for Collaboration and Problem Solving. Typically Offered Spring Only

CRIM391  Criminal Justice  BU  Undergraduate  4  
The student serves 216 hours as an observer or participant in a criminal justice agency picked by the student and approved by the program. Pre-Requisites: Junior status in Criminal Justice or department approval. Students must pass CRIM 322 (Report Writing) prior to taking an internship. Typically Offered Summer Only

CRIM401  Criminal Justice  BU  Undergraduate  3  
Provides effective guidelines for the corrections officer to make defensive decisions in the field regarding the reasonable use of physical force. Credit may not be received for both CRIM 400 and CRIM 401. Pre-Requisites: Junior status Criminal Justice, Criminal Justice Corrections or Criminal Justice Generalist students only. Typically Offered Spring Only

CRIM402  Criminal Justice  BU  Undergraduate  1  
Introduces the basic components of fitness: cardiovascular, flexibility, body composition, nutrition, plyometric exercises and muscular strength. Pre-Requisites: Senior Status & Criminal Justice or Criminal Justice Law Enforcement students only. Typically Offered Fall Only
CRIM403 Criminal Justice BU Undergraduate 5
Provides effective guidelines for the law enforcement officer to make
defensive decisions in the field regarding the reasonable use of physical force.
Included is the state certified Pressure Point Control Tactics Management
System. Meets MCOLES certification requirements. Pre-Requisites: Senior
Status & Criminal Justice and Criminal Justice Law Enforcement students only.
Typically Offered Spring Only

CRIM411 Criminal Justice BU Undergraduate 3
This course will provide an analysis of historical, legal ideologies and
assumptions, and performance of crime control policies. Pre-
Requisites: Junior status & Criminal Justice and Criminal Justice Generalist
students only or Department approval. Typically Offered Fall Only

CRIM420 Criminal Justice BU Undergraduate 4
Designed to enhance student’s understanding of the dynamics of
communication involved in interaction with the public or prisoners. Topics
include: Culture and minorities, formation of attitudes and prejudices, the
human relations process, techniques for handling crisis and conflict situations,
and developing interpersonal communications. Meets MCOLES certification
requirements. Pre-Requisites: Senior Status & Criminal Justice and
Criminal Justice Law Enforcement students only. Typically Offered Fall Only

CRIM425 Criminal Justice BU Undergraduate 4
Analysis of substantive criminal law emphasizing crimes against persons and
property; includes an overview of juvenile law and basic principles and
definitions of evidence law. Meets MCOLES certification requirements.
Pre-Requisites: Junior standing and Criminal Justice students only. Typically
Offered Fall Only

CRIM428 Criminal Justice BU Undergraduate 3
First aid and emergency care designed for criminal justice personnel. Other
students need permit to enroll in class. Successful completion of the course
will result in American Red Cross Advanced First Aid and Basic Life Support CPR
certification. Pre-Requisites: Criminal Justice Senior or instructor approval.
Prerequisites: Senior Status and Criminal Justice students or department
approval. Typically Offered Fall Only.

CRIM430 Criminal Justice BU Undergraduate 4
Legal procedures governing the police and courts, due process, Bill of Rights,
right to counsel, search and seizure, confessions, identification procedures.
The study of court functions and civil law, emphasizing theories of tort liability,
Meets MCOLES certification requirements. Pre-Requisites: Junior Status &
Criminal Justice students only. Typically Offered Spring Only

CRIM435 Criminal Justice BU Undergraduate 3
Constitutional law as it pertains to the functions, operations and
responsibilities of corrections. The court process, prisoner’s rights, liability
issues involved in corrections and pertinent cases. Thorough examination of
how the law impacts on corrections decisions. Meets M.C.O.T.C. certification
requirements. Pre-Requisites: Senior status & Criminal Justice and
Criminal Justice Corrections students only or Department approval.
Typically Offered Spring Only
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**CRIM440**  
Police laboratory techniques, preliminary investigation, crime scene process, follow-up investigation, auto theft, fingerprinting, receiving and booking process, and special investigations. Meets COLES certification requirements.  
Pre-Requisites: Senior status & Criminal Justice and Criminal Justice Law Enforcement students only. Typically Offered Spring Only

**CRIM453**  
Basic police training which covers patrol operations, patrol techniques, civil disorders, stopping vehicles and occupant control, arrest procedures, and emergency preparedness and disaster control. Meets MCOLES certification requirements. Pre-Requisites: Senior Status & Criminal Justice and Criminal Justice Law Enforcement students only. Typically Offered Spring Only

**CRIM454**  
Basic police training which covers motor vehicle law, driver licensing, OUIL enforcement, motor vehicle accident investigation, traffic direction and control techniques and methods of traffic law enforcement. Meets MCOLES Pre-Requisites: Senior Status & Criminal Justice and Criminal Justice Law Enforcement students only. Typically Offered Fall Only

**CRIM460**  
This course offers instruction in a jail corrections officer curriculum that includes such topics as booking and intake, suicide awareness, prisoner behavior mental health, and workplace harassment. The instruction is delivered in a para-military academy setting. Prerequisite: Instructor Permission. Typically offered Fall

**CRIM465**  
This course offers instruction in a jail corrections officer curriculum that includes such topics as Correctional Law, Report Writing, CPR/First Aid, Fire Safety, The instruction is delivered in a para-military academy setting. Prerequisites: CRIM 460. Typically offered Spring

**CRIM475**  
The human behavior process. Includes: Impact of the environment and psychological influences on behavior, criminal behavior and lifestyles, the role of substance abuse and behavior, the role of the family on behavior, personality development, emotional, social and psychotic disorders and treatment alternatives. Meets M.C.O.T.C. certification requirements. Pre-Requisites: Senior status and Criminal Justice and Criminal Justice Corrections option or department approval. Typically Offered Fall only.

**CRIM498**  
Assessment of the Law Enforcement student's mastery of the curriculum. Pre-Requisites: Senior status and Criminal Justice Law Enforcement & Criminal Justice students only. Typically Offered Spring Only

**CRIM499**  
Assessment of the student's mastery of the curriculum. Pre-Requisites: Senior status and Criminal Justice, Criminal Justice Corrections and Criminal Justice Generalist students only. Typically Offered Spring Only
CRIM605 Criminal Justice BU Graduate 3
Designed to provide the student with a basic understanding of legal issues surrounding the role of an administrator and a line worker. Subjects to be addressed include civil liability under state tort law, civil liability under federal law, criminal liability, and the impact of recent court decisions. Students will acquire a working knowledge of their legal role and responsibility and will learn risk management strategies to reduce the risk of exposure to liability. Pre-Requisites: Graduate status and Criminal Justice students only. Typically Offered Fall Only

CRIM608 Criminal Justice BU Graduate 3
This course is designed for graduate students interested in identifying and enhancing their leadership styles and skills in preparation for management careers in the field of criminal justice. Students will be exposed to related theories, concepts and issues, and will apply these theories and skills through selected projects and experiential exercises. Pre-Requisites: Graduate status & Criminal Justice students only. Typically Offered Fall, Spring, Summer

CRIM610 Criminal Justice BU Graduate 3
This course examines the overall effectiveness of the criminal justice system in the United States, with some comparison of other criminal justice systems. Pre-Requisites: Graduate status and Criminal Justice students only. Typically Offered On Demand

CRIM615 Criminal Justice BU Graduate 3
This course will examine the theory and research on the nature and correlates of crime. The relationship between explanations of and the policies proposed to reduce crime will be covered. The most recent contributions to understanding the nature of crime will be reviewed. Pre-Requisites: Graduate status and Criminal Justice students only. Typically Offered Fall Only

CRIM620 Criminal Justice BU Graduate 3
This course is designed as a graduate level seminar for students interested in understanding the theory of evaluation of criminal justice systems and developing program evaluation skills. Pre-Requisites: Graduate status and Criminal Justice students only. Typically Offered Spring Only

CRIM630 Criminal Justice BU Graduate 3
This course is designed for graduate students with an interest in the knowledge of contemporary policing and will explore the role of police in American society. Attention is given to the origin of policing, the nature of police organizations and police work, and patterns of relations between police and the public. The values of a democratic society as they affect the law enforcement role are also discussed. Pre-Requisites: Graduate status and Criminal Justice students only. Typically Offered Spring Only

CRIM640 Criminal Justice BU Graduate 3
This course is designed to give an analytical perspective to the history, development, current practices, critical issues and future of corrections. Primary focus will be directed towards an exploration of the various theoretical and practical approaches to corrections and the research intended to support or refute these perspectives. Pre-Requisites: Graduate status and Criminal Justice students only. Typically Offered Spring Only
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<tr>
<td>CRIM665</td>
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This course provides an introduction to quantitative research methods and statistical concepts. Students will gain an understanding of the stages of quantitative research design. The course is focused on the basics of descriptive and inferential statistics. The students will learn various techniques that are used in describing and interpreting quantitative data from empirical studies. Students will gain hands-on experience in data collection, analysis, program evaluation, and grant writing. The overarching intent is to prepare graduates to appropriately assess the efficacy of published empirical studies to better inform their decision making as criminal justice practitioners. Pre-requisite: Criminal Justice graduate student status. Typically offered: Fall.

This course provides an introduction to qualitative research methods. Students will gain an understanding of the stages of qualitative research design. The focus of the course is on the basics of various qualitative methodological approaches. The students will learn various techniques that are used in describing and interpreting qualitative data from empirical studies. Students will gain hands-on experience in data collection and analysis. The overarching intent is to prepare graduates to appropriately assess the efficacy of published empirical studies to better inform their decision making as criminal justice practitioners. Pre-requisite: Criminal Justice graduate student status. Typically offered: Spring.

This is a directed studies course which will require the student to apply research methods learned in the curriculum in solving a criminal justice problem or resolving an issue in the criminal justice system. The focus will be on the application of scientific technique to problem solving and the preparation of a written thesis.

This course introduces professionals in the criminal justice field to the basic principles of accounting and financial management, including the preparation of budgets, the use of external and internal audits, and the working relationship between accounting personnel and other administrators. Special emphasis will be placed on governmental accounting and its unique considerations. Pre-Requisites: Graduate status & Criminal Justice students only. Typically Offered Fall, Spring.
CRIM670 Criminal Justice BU Graduate 3
This course offers a concentrated study of selected critical issues in the criminal justice system. Topics that are timely and of concern to both academicians and practitioners will be chosen for study. Pre-Requisites: Graduate status and Criminal Justice students only. Typically Offered Fall, Spring, Summer.

CRIM673 Criminal Justice BU Graduate 3
This course takes a problem solving/decision-making approach to human resource management. Students will overview and integrate such topics as: legal aspects of personnel management, job analysis, employee selection and performance evaluation, training and development, compensation systems, and labor relations. Pre-Requisites: Graduate status & Criminal Justice students only. Typically Offered Fall, Spring, Summer.

CRIM691 Criminal Justice BU Graduate 3
Under the guidance of criminal justice program faculty, students are required to acquire an agreement between the student and a criminal justice agency for the purpose of conducting a research project for the agency for which the agency has a need, or conduct a study of an issue being faced by the agency. Pre-Requisites: Graduate status and Criminal Justice students only. Co-Requisites: CRIM 661. Typically Offered On Demand.

CRIM699 Criminal Justice BU Graduate 3
Designed to review key areas of concentration taught in the program including criminal justice core courses, research and evaluation, and managerial skills. By reviewing the key concepts of these major areas, the student will be prepared for the end of the term comprehensive exam. Pre-Requisites: Graduate status and Criminal Justice students only. Typically Offered Spring, Summer.

DAGD100 Digital Animation and Game Des BU Undergraduate 3
Students use 3D computer software to learn the fundamentals of modeling, texturing, lighting, animation, and rendering. Students are expected to read, write, discuss, research, and explore the application of 3D modeling and animation to a wide range of industries and projects. This is a heavily project-based class that builds to a short animated video. Typically Offered Fall and Spring.

DAGD103 Digital Animation and Game Des BU Undergraduate 3
This course covers the fundamentals of creating a 3D project. Topics included are 3D computer applications, 2D visualization and drawing, traditional modeling techniques, spatial design, temporal influence, development tools, image and animation formats, and delivery solutions. Typically Offered Spring.

DAGD104 Digital Animation and Game Des BU Undergraduate 3
This course focuses on building a solid foundation with contemporary digital imaging techniques, centering on applications important to successful 3D development. Typically offered Fall, Spring.

DAGD150 Digital Animation and Game Des BU Undergraduate 3
This course explores and analyzes games from anthropological, psychological, and design perspectives. Students will study game pleasures, demographics, mechanics, game balancing, level design, morality, censorship, aesthetics, communities, pitches, game design documents, and more. Typically Offered Spring.
DAGD155 Digital Animation and Game Des  
BU Undergraduate 3  
A practical introduction to programming games. Students will learn the fundamental techniques and theory for creating interactive media with code. Typically offered: Spring.

DAGD180 Digital Animation and Game Des  
BU Undergraduate 3  
This course covers the fundamentals of constructing and editing a digital-based video. Topics include cinematography, video storytelling techniques, pacing, editing, compression/decompression techniques (codecs), video file formats, soundtracks and sound effects, title screens and overlays, menu systems, and DVD authoring. Prerequisites: VISD 216 or GRDE 216 with a grade of D- or better. Typically Offered Spring.

DAGD185 Digital Animation and Game Des  
BU Undergraduate 3  
This is a basic course in the fundamentals of audio production as it relates to game design and animation. Topics include basic digital audio theory, midi production, audio tracking, mixing and mastering. Typically Offered Fall and Spring.

DAGD201 Digital Animation and Game Des  
BU Undergraduate 3  
In this course, students will discover preproduction techniques for animation and storytelling. Students will examine animation production pipelines, story structure, storyboarding concepts, character development, scriptwriting, concept art, and animatic development. Prerequisites: DAGD 103 with C or higher. Typically offered: Spring.

DAGD204 Digital Animation and Game Des  
BU Undergraduate 3  
This course focuses on building a solid foundation with contemporary digital techniques, centering on applications important to successful 3D development. Prerequisites: DAGD 104 with grade of C or better. Typically offered Fall, Spring.

DAGD230 Digital Animation and Game Des  
BU Undergraduate 3  
Students use 3D modeling and animation to articulate and communicate ideas and concepts. Students produce a series of fully rendered 3D animated models. Using 3D modeling software, students work with timing, effects, creation of 3D projects from a 2D plane, materials editing, reflection mapping, and various other 3D animation operations. Prerequisites: DAGD 100, Minimum Grade of C. Typically Offered Fall and Spring.

DAGD255 Digital Animation and Game Des  
BU Undergraduate 3  
This course introduces students to programming for game development. Topics include game loops, vector math, camera systems, input, content pipelines & rendering, collision detection, state machines, and game states. Prerequisites: SENG 100 with a grade of C or better. Typically Offered Fall.

DAGD260 Digital Animation and Game Des  
BU Undergraduate 3  
This course covers the fundamentals of designing cohesive communication across multiple mediums. Course topics include design methodologies, visual communication, interaction design, branding, and delivery solutions. Students will produce print, video, and interactive media. Prerequisites: DAGD 104 with C or higher. Typically offered: Spring and Fall.

DAGD280 Digital Animation and Game Des  
BU Undergraduate 3  
This is an advanced course in digital modeling, sculpting, and texturing for animation and game design. Pre-requisites: DAGD 100 and DAGD 104, both with a C or higher. Typically offered: Spring and Fall.
In this course, students will be introduced to designing game levels for specific player types and solving gameplay related problems. Students will use an industry standard game engine to design 3D spaces, scripted gameplay, lighting, materials, and more. Level and environmental design are vital parts of game design, so focus will be on creating spaces that enable desirable gaming experiences. Prerequisites: DAGD 230 and DAGD 150 with a grade of C or better in each. Meets General Education requirements for Problem Solving. Typically offered: Fall and Spring

Students will develop animation skills through exercises in the 12 principles of animation, traditional and digital animation techniques, and the creation of short, animated stories. Pre-requisites: DAGD 201 and DAGD 230 with a grade of C or better for both. Typically offered: Fall, Spring

Students will develop skills for animating objects procedurally. This includes using code to drive animation, building hierarchical rigs, developing particle system behavior, and leveraging mathematics. Pre-requisites: DAGD 201 and SENG 100 with a grade of C or better for both. Typically offered: Fall, Spring

An introduction to the concepts and practices associated with the preparation of portfolio creation. During this course students have the opportunity to enhance their design skills by developing a visual identity. Multimedia career development, resume building and industry research will also be addressed. Prerequisites: DAGD 230, DAGD 204, and TDMP 243, each with a grade of C or higher. Typically offered: Fall, Spring

An introduction to the concepts and practices associated with interaction design, user interfaces, and input/output devices. Students will design and develop a user interface as their final project. Prerequisites: DAGD 104 and DAGD 260 with Grade of C or better in each. Meets General Education requirements for Collaboration and Problem Solving. Typically Offered Fall, Spring, Summer

This is a course in researching, planning, and managing productions related to Digital Animation and Game Design. Topics include quoting, proposal documents, budgets, schedules, business plans and production pipelines. Prerequisites: DAGD 150 and DAGD 260 with Grade of C or better in each. Typically offered Fall and Spring.

This course explores writing games that play across the internet, intranet, and network, focusing on online gaming technology. A thorough understanding of OOP in important. Prerequisites: DAGD 255 with a grade of C or better. Typically Offered Fall, Spring, Summer
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<td>DAGD335</td>
<td>Digital Animation and Game Des</td>
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<td>Along with building on learned 3D modeling and animation techniques, this course emphasizes the student of computer rendering, lighting, and materials. Topics include techniques for light, shadow, texture, composition, advanced materials and their proper use. Prerequisites: DAGD 204 and DAGD 230 with grade of C or better in each. Typically Offered Fall and Spring.</td>
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<td>DAGD340</td>
<td>Digital Animation and Game Des</td>
<td>BU</td>
<td>Undergraduate 3</td>
<td>Students will prepare a successful Rich Media project from concept to completion. Prerequisites: DAGD 315 with grade of C or higher; and either DAGD 335 or DAGD 355 with a grade of C or higher. Meets General Education requirements for Collaboration. Typically Offered Fall, Spring.</td>
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<td>DAGD345</td>
<td>Digital Animation and Game Des</td>
<td>BU</td>
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<td>One of the challenges with working in digital animation and game design are that the tools and approaches are constantly evolving with the fast pace of technology. This course focuses on contemporary topics in digital media with an emphasis on working with the latest in software (usually focusing on one particular application). Please review the description line for this course as the tools and techniques explored will tend to change each time the course if offered. Generally offered Fall, Spring.</td>
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<td>DAGD355</td>
<td>Digital Animation and Game Des</td>
<td>BU</td>
<td>Undergraduate 3</td>
<td>Students will design, program, and debug games in a modern, industry-standard game engine. Prerequisites: DAGD 255 with a grade of C or better. Typically Offered Spring.</td>
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<td>DAGD375</td>
<td>Digital Animation and Game Des</td>
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<td>This course covers advanced issues in 3D computer graphics. Topics included are modeling, texturing, rigging, animation, and 3D character development. Prerequisites: DAGD 335.</td>
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<td>DAGD385</td>
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<td>This course emphasizes advanced modeling, texturing, and animation techniques for rigid body objects such as vehicles and buildings. Prerequisites: DAGD 335, minimum Grade of C. Typically Offered Spring and Fall.</td>
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<td>DAGD420</td>
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<td>Students will explore the theory, mathematics, and algorithms behind: rendering, game mathematics, shaders, audio visualization, pathfinding, collision detection, cameras, physics, procedural content generation, and emergence. An understanding of object-oriented programming is necessary. Prerequisites: DAGD 255 with a grade of C or higher. Typically Offered Fall, Spring.</td>
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<td>DAGD430</td>
<td>Digital Animation and Game Des</td>
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<td>This is an advanced course exploring techniques for creating Digital FX with a focus on merging 3D and live video. Prerequisites: DAGD 335, Minimum Grade of C. Typically Offered Spring and Fall. The programming of advanced and modern multimedia productions is explored with an emphasis on creating cross-platform, interactive projects for the web. Prerequisites: DAGD 255 with a grade of C or better. Typically Offered Fall, Spring.</td>
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<td>DHYG104</td>
<td>Dental Hygiene</td>
<td>HP</td>
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<td>Introduction to dental equipment, patient/operator positioning, aseptic technique, instrumentation skills, patient assessment procedures, dental deposits and the dental hygiene process of care. Prerequisites: DHYG students only. Typically offered Fall.</td>
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<td>DHYG105</td>
<td>Pre-Clinical application of procedures introduced in DHYG 104. Prerequisites: DHYG students only. Typically offered Fall.</td>
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<td>DHYG107</td>
<td>Introduction to dental nomenclature, anatomic form, eruption and exfoliation of human primary and permanent teeth. A comprehensive study of the histology and anatomy of the head and neck, including skeletal, epithelial, glandular and lymph tissues of the oral cavity. Prerequisites: DHYG students only. Typically offered Fall.</td>
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<tr>
<td>DHYG108</td>
<td>In the lab setting, students will learn dental nomenclature, anatomic form, eruption and exfoliation of human primary and permanent teeth. A comprehensive study of the histology and anatomy of the head and neck, including skeletal, epithelial, glandular and lymph tissues of the oral cavity. Prerequisites: DHYG students only. Typically offered Fall.</td>
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<tr>
<td>DHYG117</td>
<td>A continuation of the comprehensive study of the histology and anatomical structures of the head and neck including muscular, blood and nerve systems. This course includes emphasis on embryonic development of the face, oral cavity and dental tissues. Prerequisites: DHYG 107 and DHYG 108. Typically offered Spring.</td>
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<tr>
<td>DHYG118</td>
<td>In the lab setting, using skulls, overheads and slides the student will continue a comprehensive study of the histology and anatomical structures of the head and neck including muscular, blood and nerve systems. This course includes emphasis on embryonic development of the face, oral cavity and dental tissues. Prerequisites: DHYG 107 and DHYG 108. Typically offered Spring.</td>
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<tr>
<td>DHYG123</td>
<td>Examination of the cause and nature of both systemic and oral diseases. Discussion of significant diseases of the body's systems. Special emphasis will be on oral pathology, including developmental disturbances, infection, lesions and physical injuries to the oral and paraoral structures. Pre-Requisites:DHYG 107. Typically Offered Spring Only</td>
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<tr>
<td>DHYG124</td>
<td>Content in this course will provide a theoretical framework for dental hygiene diagnostic and therapeutic regimens as a basis for evidence-based clinical decision making. This course will provide structured activities that increase the knowledge of dental hygiene theory, enhance professionalism and gain an understanding for evidence-based clinical decision making and application. Prerequisites: DHYG 104 and DHYG 105. Typically offered Spring.</td>
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<tr>
<td>DHYG126</td>
<td>Clinical application of procedures introduced in DHYG 124. Prerequisites: DHYG 104 and 105. Typically offered Spring.</td>
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<tr>
<td>DHYG127</td>
<td>Dental Hygiene</td>
<td>HP</td>
<td>Undergraduate 1</td>
<td>The chemistry and physical properties of dental materials will be identified. Dental specialties will be introduced as well as the laboratory and restorative materials used in the dental profession such as: composites, resins, sealants, amalgam, dental cements, impression materials, gypsum products, bleaching materials, fabrication of removable appliances and fixed restorations. Prerequisites: DHYG 107 and DHYG 108. Typically offered Spring.</td>
</tr>
<tr>
<td>DHYG129</td>
<td>Dental Hygiene</td>
<td>HP</td>
<td>Undergraduate 1</td>
<td>Directed laboratory practice allows students times to understand dental material product properties and skills necessary for manipulation of laboratory and restorative materials used in the dental profession such as: composites, resins, sealants, amalgam, dental cements, impression materials, gypsum products, bleaching materials, fabrication of removable appliances and fixed restorations. Prerequisites: DHYG 107 and DHYG 108. Typically offered Spring.</td>
</tr>
<tr>
<td>DHYG208</td>
<td>Dental Hygiene</td>
<td>HP</td>
<td>Undergraduate 2</td>
<td>This course focuses on Periodontology and Pathology involvement in patient treatment. Critical thinking skills will be used to compile and present clinical perio/path case study project. Prerequisites: DHYG 123 and DHYG 213. Typically offered Fall.</td>
</tr>
<tr>
<td>DHYG212</td>
<td>Dental Hygiene</td>
<td>HP</td>
<td>Undergraduate 3</td>
<td>A continuation of Dental Hygiene Theory 2 this course introduces comprehensive periodontal patients assessments and management for a diverse patient populations utilizing non-surgical periodontal therapy, advanced instrumentation techniques, chemotherapeutic agents, pain management, maintenance of dental implants, treatment planning and evaluation using the dental hygiene process of care. Prerequisites: DHYG 124 and DHYG 126.</td>
</tr>
<tr>
<td>DHYG213</td>
<td>Dental Hygiene</td>
<td>HP</td>
<td>Undergraduate 2</td>
<td>Examination of the structures of the periodontium and the etiology, pathology, recognition, control, treatment, prevention and ramifications of diseases of those structures. Pre-Requisites:DHYG 107. Typically Offered Spring.</td>
</tr>
<tr>
<td>DHYG214</td>
<td>Dental Hygiene</td>
<td>HP</td>
<td>Undergraduate 2</td>
<td>A continuation of clinic theory which introduces the student to advanced instrumentation techniques, automated instrument devises, soft tissue curettage, suture removal techniques, case studies, practice management issues, and management of patients with special needs. Pre-Requisites:DHYG 124 AND 125. Typically Offered Fall Only.</td>
</tr>
<tr>
<td>DHYG217</td>
<td>Dental Hygiene</td>
<td>HP</td>
<td>Undergraduate 1</td>
<td>Community Dentistry will explore the role of the dental hygienist in the community. Students will be introduced to principles of public health, health education and health promotion programs and resources for culturally appropriate materials. Prerequisites: DHYG students only. Typically offered Fall.</td>
</tr>
<tr>
<td>DHYG218</td>
<td>Dental Hygiene</td>
<td>HP</td>
<td>Undergraduate 2</td>
<td>Course concerned with the action(s) and the fate of drugs commonly used in dentistry as well as their possible interaction(s) with drugs being taken by the patient. Pre-Requisites:DHYG 123. Typically Offered Fall, Summer.</td>
</tr>
</tbody>
</table>
DHYG222 Dental Hygiene HP Undergraduate 3
This course is a continuation of Dental Hygiene Practice 2 with students providing oral services to clients in a supervised clinical setting. Students will demonstrate skills in periodontal patient assessment and non-surgical periodontal therapy methods including advanced instrumentation, patient treatment planning, evaluation of care, and radiographic interpretation. Prerequisites: DHYG 124 and DHYG 126. Typically offered Fall.

DHYG227 Dental Hygiene HP Undergraduate 1
Community Dentistry A is an Academic Service Learning course which will focus on identifying potential community partners for addressing local oral health issues. Students will create, implement, and evaluate health education and health promotion programs for community groups. Prerequisites: DHYG students only. Typically offered Fall.

DHYG229 Dental Hygiene HP Undergraduate 1
Concepts in the administration of local anesthesia and nitrous oxide/oxygen sedation as methods for pain management. Anatomy, physiology, pharmacology, client assessment, indications contraindications, selection of anesthetic agents, complications and emergency management will be discussed. Prerequisites: DHYG 124 and DHYG 126. Typically offered Fall.

DHYG231 Dental Hygiene HP Undergraduate 1
Clinical application of local anesthesia and nitrous oxide/oxygen sedation administration. Prerequisites: DHYG 124 and DHYG 126. Typically offered Fall.

DHYG232 Dental Hygiene HP Undergraduate 3
A continuation of Dental Hygiene Theory 3, this course continues with the management of the advanced periodontal patient, nutritional counseling, tobacco cessation counseling, ethical and legal issues in dentistry, professional organizations, practice management, professional credentialing, and career planning. Prerequisites: DHYG 212 and DHYG 222. Typically offered Fall.

DHYG233 Dental Hygiene HP Undergraduate 3
This course is a continuation of Dental Hygiene Practice 3 with students providing a variety of oral services to patients in a supervised clinical setting, including nutritional counseling and tobacco cessation counseling. Students will continue to increase proficiency in all dental hygiene skills, and will perform patient screenings to select a patient for the North East Regional Board (NERB) licensure examination. Prerequisites: DHYG 212 and DHYG 222. Typically offered Spring.

DHYG237 Dental Hygiene HP Undergraduate 1
Community Dentistry B will cover epidemiologic and research principles or oral health. The students will analyze scientific literature and describe statistical concepts. This course will describe current methods of payment for dental care. The students will review current dental research articles and create professional presentations. Prerequisites: DHYG 217. Typically offered Spring.
Community Dentistry B is an Academic Service Learning course which will focus on creating community health education and health promotions programs for the local area. Students will conduct service learning programs which will include assessment, planning, implementation and evaluation. Community Dentistry B is a continuation of Community Dentistry A. Prerequisites: DHYG 227. Typically offered Spring.

Intended to enhance knowledge of the concepts, principles and techniques of dental pain and it's control. Topics include pain management, local and topical anesthesia - its physiology, anatomy, and pharmacology. Anesthetic choices, contraindications, and risk factors will be discussed. The optional laboratory will involve contact with various agents and equipment, including electronic anesthesia, local and topical anesthesia, and dentin desensitizing. This course does NOT include clinical experience delivering (injection of) local anesthetics. This course is NOT required for graduation. Pre-Requisites: DHYG 216 AND 223. Typically Offered Spring Only

This course focuses on patients case studies designed to further student critical thinking skills for advanced patient treatment decision-making. Prerequisites: DHYG 212 and DHYG 222. Typically offered Spring.

Students will expand their knowledge by participating in an off campus clinical or professional enrichment experience. Students will work directly with a preceptor in an approved clinical or professional setting. Prerequisites: DHYG 222. Typically Offered Spring only.

This course is an overview of the transition from the associate degree program to the Bachelor of Science degree in Dental Hygiene. The course will focus on dental hygiene theory development, critical thinking skills and decision making, alternative career opportunities and professionalism through leadership opportunities. Prerequisites: Admission to the DHYG BS Program. Typically Offered Fall only.

Students will develop an understanding of the promotion of oral health and the prevention of oral disease over the human life span through application of specific knowledge about the patient's emotions, values, family, and culture. This course defines the connection between oral health and systemic health through the examination of prevalent diseases. Prerequisites: Admission to DHYG BS program. Meets General Education requirements for Collaboration. Typically Offered Fall only.
<table>
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<th>Course Code</th>
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<td>DHYG320</td>
<td>Dental Hygiene</td>
<td>HP</td>
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<td>Students will develop an understanding of the American Dental Association’s standards for Dental Informatics which provides a seamless information exchange throughout all facets of oral health care. This course examines the relationship between patient care and oral health through the application of information technology. Topics explored include: computerized dental clinical work stations, electronic technologies used in dental practices, software products, digital radiography, and electronic dissemination of dental information and online/web based learning. Prerequisites: Admission to the DHYG BS Program. Typically Offered Fall only.</td>
</tr>
<tr>
<td>DHYG330</td>
<td>Dental Hygiene</td>
<td>HP</td>
<td>3</td>
<td>This course will offer students the methodologies of teaching, both clinic and didactic. Students will examine the accreditation process, Instructional strategies used in the classroom, lab and clinic will be discussed. Prerequisites: Admission to the DHYG BS program. Typically Offered Spring only.</td>
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<tr>
<td>DHYG400</td>
<td>Dental Hygiene</td>
<td>HP</td>
<td>4</td>
<td>In this course, students will evaluate community oral health based programs in the areas of assessment, planning, implementation and evaluation. Students will investigate current policy on oral health programs and report on findings. Prerequisites: Admission to the DHYG BS program. Meets General Education requirements for Problem Solving. Typically Offered Spring only.</td>
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<tr>
<td>DHYG415</td>
<td>Dental Hygiene</td>
<td>HP</td>
<td>3</td>
<td>This course is intended to provide the dental hygienist with the knowledge and skills to address the issues of the aging population. Students will examine the sociopsychological, environmental and physiologic aspects of aging and how aging impacts oral health care. Prerequisites: Admission to the DHYG BS program. Typically Offered Spring.</td>
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<tr>
<td>DHYG491</td>
<td>Dental Hygiene</td>
<td>HP</td>
<td>3</td>
<td>This practicum experience provides students the opportunity to engage in field work within one or more of the advanced roles of the dental hygienist. Field work in this course may include; management, marketing, education, leadership in associations and government, public health and advancement in clinical practice. Field work required for successful completion of this course. Prerequisites: Admission to the BS in DHYG and completion of all DHYG courses or with instructor approval. Typically Offered Spring only.</td>
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<tr>
<td>DHYG499</td>
<td>Dental Hygiene</td>
<td>HP</td>
<td>3</td>
<td>This course provides the opportunity for students to analyze, synthesize and develop solutions to oral health care issues. Students will choose a current topic in dental hygiene and use an interdisciplinary approach in finding solutions. Prerequisites: Admission to the DHYG BS program and completion of all DHYG courses or with instructor approval. Typically Offered Summer only.</td>
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<td>DIST100</td>
<td>Directed Studies</td>
<td>UN</td>
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<td>Developing strategies for managing the changes that impact Directed Studies students in order to enhance their opportunity for college success. For Directed Studies students only. Typically Offered Fall, Spring, Summer.</td>
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DIST101 Directed Studies UN Undergraduate 1
Developing strategies that promote student connections to the university community, their academic program and their career paths. For Directed Studies students only. Typically Offered Fall, Spring

DMOL101 Molecular Diagnostics HP Undergraduate 1
Introduction to the profession of clinical laboratory science to include curricula, roles of laboratory science professionals, career and employment opportunities, and standards and ethics of the profession. Typically offered: Fall, Spring, Summer

DMOL110 Molecular Diagnostics HP Undergraduate 2
This course will cover basic molecular laboratory techniques such as pipetting, specimen collection, quality control, calibration and laboratory mathematics. The course will also cover extraction techniques and determination of DNA purity using a spectrophotometer. Typically Offered Fall only. This course will introduce advanced molecular laboratory skills including microscopy, extraction and purification of nucleic acids, cell culture, immunology techniques, laboratory record-keeping, and clinical applications of molecular testing. DMOL 110 with a grade of C or better. Typically Offered Spring only.

DMOL236 Molecular Diagnostics HP Undergraduate 2
Introduction to the study of bacteria associated with infectious diseases, including organism characteristic, isolation techniques, identification and antimicrobial susceptibility testing with emphasis on traditional and molecular techniques in the clinical laboratory. Prerequisites: DMOL 110 with C or better and either BIOL 108 or BIOL 286. Typically offered: Spring

DMOL410 Molecular Diagnostics HP Undergraduate 2
This course will provide an integrative overview of traditional, current, and cutting-edge molecular diagnostic technologies available in modern clinical and research laboratories. This integrative approach will describe molecular diagnostics as an evolving scientific discipline, incorporating profiling, fingerprinting, and technology cross-validation utilizing data obtained from DNA, RNA, protein, and tissue. This will be used to distinguish between normal and disease states, determine genetic abnormalities and cancers, and provide insight into personalized medicine. Fundamentals of DNA and RNA isolation, amplification, hybridization and analysis will also be reviewed. Laboratory exercises will illustrate these principles in the co-requisite DMOL 411 lab course. Prerequisites: DMOL 110 and DMOL 210 with a C or better. Co-requisite: DMOL 411. Typically offered: Fall only.

DMOL411 Molecular Diagnostics HP Undergraduate 2
This course will provide directed laboratory practice using advanced microscopic techniques, qRT-PCR and next-generation sequencing for the purpose of integrating key diagnostic methods and technologies. This will include sample processing, patient profiling, fingerprinting, and technology cross-validation utilizing data obtained from patient DNA, RNA, protein, and tissue. Fundamentals of DNA and RNA isolation, amplification, hybridization and analysis will also be reviewed. Prerequisites: DMOL 110 and DMOL 210 with a C or better. Co-requisite: DMOL 410. Typically offered: Fall only.
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<td>DMOL421</td>
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<td>DMOL430</td>
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<td>DMOL431</td>
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<td>DMOL440</td>
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<td>Spring</td>
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<td>DMOL441</td>
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<td>Spring</td>
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<td>DMOL450</td>
<td>Molecular Diagnostics HP 7</td>
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<td>DMOL451</td>
<td>Molecular Diagnostics HP 8</td>
<td>1</td>
<td>Undergraduate</td>
<td>Spring</td>
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This course will cover topics in molecular methods for detection of various viruses, bacteria, fungus and parasites. Prerequisites: DMOL 410 and 411 with C grade or better. Meets General Education Requirements for Problem Solving. Typically offered in Spring.

Directed practice utilizing methodology and instrumentation commonly used in molecular infectious disease laboratory. Molecular methods used to detect and phenotype infectious disease organisms such as viruses, bacteria, and fungi will be demonstrated. Techniques used to indentify resistance in microorganisms will also be discussed and demonstrated. Prerequisites: DMOL 410 and DMOL 411 with C grade or better. Co-requisites: DMOL 420. Meets General Education Requirements for Problem Solving. Typically offered in Spring.

This course will cover topics related to the molecular pathogenesis of human cancer, diagnosis of lymphoma, classification of neoplasms and genetic abnormalities in acute and chronic leukemias. This course will also cover molecular diagnostics in coagulation. Prerequisites: DMOL 410 and DMOL 411 with a C grade or better. Typically offered in Spring.

Directed practice utilizing methodology and instrumentation commonly used in molecular hematology/oncology laboratory. Fluorescence in situ hybridization (FISH) and other techniques. Perquisites: DMOL 410 and 411 with C grade or better. Co-requisites: DMOL 430. Typically offered in Spring.

This course will provide an overview of molecular genetics, genetic basis for neurologic and neuromuscular diseases, endocrine disorders, markers for cardiovascular disease, prenatal genotyping. Prerequisites: DMOL 410 and 411 with C grade or better. Typically offered in Fall.

Directed practice utilizing methodology and instrumentation commonly used in molecular genetics laboratory. Prerequisites: DMOL 410 and 411 with C grade or better. Co-requisites: DMOL 440. Typically offered in Fall.

This course will provide an overview of HLA typing, forensic casework, parentage testing, bone marrow transplant engraftment and use of DNA for identity testing. Prerequisites: DMOL 410 and 411 with C grade or better. Typically offering in Spring.

Directed practice utilizing methodology and instrumentation that are commonly used in molecular forensics and identity based testing laboratories. Case studies of bone marrow graft implant will be discussed and reviewed. Prerequisites: DMOL 410 and 411 with C grade or better. Co-requisites: DMOL 450. Typically offered in Spring.
DMOL460 Molecular Diagnostics HP Undergraduate 2
This course will cover the framework of quality assurance, quality system essentials, instrumentation maintenance, calibration and verification of molecular assays. Standards and guidelines set by the College of American Pathologists (CAP), Clinical and Laboratory Standards Institute (CLSI) and the Centers for Disease Control or Prevention (CDC) will be discussed. Proficiency testing and lab design will also be covered. Prerequisites: DMOL 410, DMOL 411, DMOL 420, DMOL 421, DMOL 430, DMOL 431, DMOL 440, DMOL 441, DMOL 450, and DMOL 451. Meets General Education Requirements for Collaboration. Typically offered in Spring.

DMOL470 Molecular Diagnostics HP Undergraduate 4
Students work closely with a faculty member to engage in an original research project using current and emerging molecular diagnostics technology. Hypothesis development, designing a feasible experimental study, conducting the proposed research plan, problem solving, and scientific writing within a research context will be emphasized. Data collected during laboratory sessions will be analyzed and integrated into a final written research report. Students will build and associate these individual methodologies as a cohesive process of molecular research. Pre-requisite: DMOL 210 with C or better. Typically offered: Spring

DMOL491 Molecular Diagnostics HP Undergraduate 6
This course requires the student to demonstrate previously learned knowledge to: Application of theories and techniques in molecular diagnostics with an emphasis on correlation of test results and problem solving skills in a clinical laboratory setting for 12 weeks. Prerequisites: DMOL 420, DMOL 421, DMOL 430, DMOL 431, DMOL 440, DMOL 441, DMOL 450, and DMOL 451. Typically offered in Summer.

DMOL499 Molecular Diagnostics HP Undergraduate 1
A course assessing students' comprehension of molecular diagnostics and general education concepts, which will be accomplished through papers, projects, and examinations. This is a capstone course of the Molecular Diagnostics program. Prerequisites: DMOL 420, DMOL 421, DMOL 430, DMOL 431, DMOL 440, DMOL 441, DMOL 450, and DMOL 451. Typically offered in Summer.

DSGN100 Graphic Design BU Undergraduate 3
Design Foundations is intended to introduce the student to the design profession. It does so with a cursory review of the history of the profession, an introduction to the skill sets required, the rigor and responsibilities, and the impact the design field has in society and business. Students will be introduced to user-centered design, principles of design, knowledge of the application of visual literacy, and design technology, resources, and craft. Typically offered: Fall
This course is intended to introduce graphic design students to the history and effective use of type in visual communications. It will present organized processes to disseminate multiple typographic factors and employ them in technically and aesthetically structured methods. This course is intended to balance basic design principles with the current industry technology as it concerns typography and its use in visual communication. Prerequisites: DSGN 100 with C- or higher or program approval; Co-requisites: DSGN 120 Typically offered Spring

This course will emphasize simplification, abstraction, and categorization of imagery. Students will be aware of the mood, style and emotional qualities of imagery and their appropriate application. Additionally, students will apply best practices of appropriation, creation and manipulate of images for effective communication. This course will convey best practices for the production of image systems. Prerequisites: DSGN 100; Co-requisites: DSGN 100 with C- or higher or program approval. Typically offered Spring

This course will introduce the concepts of readability, legibility, and usability as they relate to typography across multiple media formats. Assignments allow students to apply typography principles while considering basic interaction principles necessary for navigation and wayfinding. The course stresses the importance of technical prototyping skills through the execution of exercises and assignments. Prerequisites: DSGN 110 and DSGN 120 with C- or higher; Co-requisites: DSGN 212. Typically offered Fall.

This course introduces students to specific methods in the creation and development of concepts that address visual problem-solving. It focuses on creating multiple initial design concepts, the evaluation and refinement of those, and the development of iterations in a chosen direction. The course will investigate the narrative in visual information delivery. It will review research methods relevant to visual problem solving. It will also introduce and oversee the professional development of a portfolio and its presentation. Prerequisites: DSGN 110 and DSGN 120 both with C- or higher or program approval. Co-requisites: DSGN 210. Typically offered Fall.

This course will introduce students to current web-based interactive technologies and standards, content and technical execution in order to create good experiences. Students will also gain a practical understanding of interface development, site organization, hosting, and management techniques. Students will gain experience in applying user-centered principles to the process of creating interactive experiences. Students will also demonstrate a working knowledge of current interactive technologies and standards. Prerequisites: DSGN 210 and DSGN 212 both with C- or higher or program approval; Co-requisites: DSGN 222. Typically offered Spring.
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<td>DSGN222</td>
<td>Graphic Design</td>
<td>BU</td>
<td>3</td>
<td>This course will introduce students to the principles of designing effective, engaging and efficient user experiences incorporating user research and the idea of a repeatable design process along with principles of visual communication. It uses current communication technologies and explores execution strategies, establishing the environment for a user-centered approach to design. This course provides the foundation for a deeper understanding of the user experience model. Prerequisites: DSGN 210 and DSGN 212 all with C- or higher or program approval; Co-requisites: DSGN 220</td>
</tr>
<tr>
<td>DSGN224</td>
<td>Graphic Design</td>
<td>BU</td>
<td>3</td>
<td>This course introduces the planning and production of interactive content using current industry standards and technology to non Graphic Design majors. Students will create, publish, and test interactive content using modern technology and best practices. The process of organizing and publishing interactive content based on user-centered principles will be the primary focus. Typically offered: Fall, Spring, Summer</td>
</tr>
<tr>
<td>DSGN291</td>
<td>Graphic Design</td>
<td>BU</td>
<td>2</td>
<td>This class will prepare students to survey the design industry, portfolios and résumés aligned with the design industry. Students will begin to present their digital and print portfolio as a documentation of design process, craft, and technical ability. Students will be introduced to skills in preparation for internship searches and interviews. Prerequisites: DSGN 210 and DSGN 212, both with C-minus or better. Typically offered Spring.</td>
</tr>
<tr>
<td>DSGN300</td>
<td>Graphic Design</td>
<td>BU</td>
<td>3</td>
<td>This course introduces students to the role of technical specifications, processes, and methodology of content management and delivery in the production of visual communication solutions across multiple media. Students will explore content management systems, resources, and interact with vendors and industry. Students will apply a variety of systems and techniques in the production of their design solutions. This course stresses the importance of managing quality, time and resources in the production process. Pre-requisites: DSGN 220 and DSGN 222 both with C- or higher. Co-requisites: DSGN 310. Typically offered: Fall</td>
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<tr>
<td>DSGN301</td>
<td>Graphic Design</td>
<td>BU</td>
<td>3</td>
<td>This class prepares students for real-world workflows in interactive media. Students will apply design principles and key concepts of interaction design in order to create compelling, attractive, and easy-to-use digital experiences. Through an emphasis on process and collaboration, class projects examine dynamic media and the demands of a designer’s analytical, visual, and technical skills. Students will produce projects that demonstrate best practices in digital media development. Students will demonstrate an understanding of current topics of technical development in the industry. Prerequisites: DSGN 310 and DSGN 300 with C- or higher; Co-requisites: DSGN 320. Typically offered Spring.</td>
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</tbody>
</table>
This course introduces the design of user-centered brand experiences for businesses, organizations, services, and products. Students will research and create identity systems designed for engaging user interaction. Students will discover, plan and prototype a variety of brand touchpoints across multiple media formats. Students will apply knowledge of typography, color, and other principles of visual communication to the design of a visual system. The study of brand identity design will be complemented with examples of work done for leading global brands. Students refine skills to present deliverables throughout the duration of the course. Pre-requisites: DSGN 220 and DSGN 222 with C- or higher or program approval. Co-requisites: DSGN 300. Typically offered: Fall

The focus of this course will be the application of fundamentals of brand identity and interactive design to create effective, efficient and engaging brand experiences. Through exposure to a variety of business and social problems, students will be challenged to create unique ideas and solutions that meet real-world challenges. An emphasis will be placed on understanding and capturing the essence of a chosen brand (corporate, product, service, NGO, media personality) to develop experiences designed for interaction and engagement that target all environments and platforms through which the brand has to connect with their users. Student presentations demonstrate solutions for multiple media formats. Prerequisites: DSGN 310 and DSGN 300 both with C- or higher; Co-requisites: DSGN 301. Typically offered: Spring.

Internships provide students with the opportunity to gain experience in workplace settings and to translate classroom learning into practice. Students are required to deliver detailed summary reports of experience during and at end of internship. The experience includes supervision and feedback by a design manager, creative director, art director, and professor. Experiences contribute to personal development and professional preparation. Study abroad experiences approved by an advisor could also be considered as equivalence. Prerequisites: DSGN 222 and DSGN 291, both with C-minus or better. Typically offered: Summer.

Internships provide students with the opportunity to gain experience in workplace settings and to translate classroom learning into practice. Students are required to deliver detailed summary reports of experience during and at the end of the internship. The experience includes supervision and feedback by a design manager, creative director, art director, and professor. Experiences contribute to personal development and professional preparation. Study abroad experiences approved by an advisor could also be considered as equivalence. Prerequisites: DSGN 310. Typically offered: Spring.
DSGN410  Graphic Design  BU  Undergraduate  9

This course is designed for students to synthesize all program outcomes in a professional studio environment involving client contact and project management. Students will research, plan, prototype and produce a design system and the appropriate artifacts that meet a real client need. Students will research, identify and present design proposals for projects across multiple media formats. Clients include the University, regional community business, and non-profit organizations. Through weekly meetings, students will prepare updates and requirements with vendors and clients, meet project milestones, and respond to faculty and client feedback. Through daily time tracking, students accurately track all project progress. Students have an assigned role and are required to manage the studio as a real work environment. 
Prerequisites: DSGN 320 and DSNG 301 both with C- or higher; Co-requisites: DSGN 412. Meets General Education requirements for Collaboration and Problem Solving. Typically offered Fall.

DSGN412  Graphic Design  BU  Undergraduate  3

The consultative, service-oriented, and often freelance-based nature for the design field makes the business side of design a critical component of design education. Complementing other studio courses in the program, students will learn about the internal management and marketing issues pertinent to successful contemporary design practice. This course will provide a framework for students to launch their careers in design, be it working for a design firm, an in-house design department or freelance. Following the best practices of the contemporary design field, students will develop project management skills, personal brand identity systems, presentation, and job interview skills. 
Pre-requisites: DSGN 301 and DSGN 320 both with C- or higher. Co-requisite: DSGN 410. Typically offered: Fall

DSGN420  Graphic Design  BU  Undergraduate  9

As a continuation of the project work established in the Fall Semester, Students in the Design Project Center will produce the client work including the research, planning, and prototyping from the previous semester. This course structure will simulate a professional studio environment involving client contact, design, project management, and production. A continuation of weekly status meetings students prepare and conduct efficiently, manage updates and requirements with vendors & clients, meet project milestones, respond to feedback. Through daily time tracking, students accurately, diligently track all project progress. Manage studio with an assigned role within a real work environment. Through project management software, maintain project communication daily. 
Prerequisites: DSGN 399, DSGN 410 and DSGN 412 all with C- or higher; Co-requisites: DSGN 499. Meets General Education requirements for Collaboration and Problem Solving. Typically offered Spring.
DSGN499 Graphic Design BU Undergraduate 3

This class will prepare senior students to enter the job market with a portfolio and process example. Each student will complete designed communication projects and develop professional skills for a professional-level presentation of their projects. These will aid the graduate in securing employment in the design field. Students will complete a digital and physical capstone portfolio, per specification, that is an excellent representation of student's design knowledge, craft, and technical ability. Students will assemble and present a detailed design process example through a book or digital presentation. Students will develop presentation skills in preparation for job interviews and portfolio review. Prerequisites: DSGN 410; Co-requisites: DSGN 420 with grade of C- or higher. Typically offered Spring.

ECNS115 Electronic Computer Net-System TE Undergraduate 3

Networks 1, Introduction to Networks is the first of four courses leading to the Cisco Certified Network Associate (CCNA) designation. Introduction to Networks introduces the Cisco Networking Academy – Routing and Switching program students to the fundamental networking concepts and technologies. It provides a theoretically-rich, hands-on introduction to networking and the Internet. The course introduces the architecture, structure, functions, components, and models of the Internet and other computer networks. The principles and structure of IP addressing and the fundamentals of Ethernet concepts, media, and operations are introduced. By the end of the course, students will be able to build simple LANs, perform basic configurations for routers and switches, and implement IP addressing schemes. Typically Offered Fall Only

ECNS125 Electronic Computer Net-System TE Undergraduate 3

Networks 2, Routing and Switching Essentials is the second of four courses leading to the Cisco Certified Network Associate (CCNA) designation. Routing and Switching Essentials introduces Cisco Networking Academy – Routing and Switching program students to router and switch configurations. The course describes the architecture, components, and operations of routers and switches in a small network. Students learn how to configure routers and switches for basic functionality. By the end of this course, students will be able to configure and troubleshoot routers and switches and resolve common issues with RIP, RIPv2, single-area and multi-area OSPF, virtual LANs, and inter-VLAN routing in both IPv4 and IPv6 networks. Pre-Requisites: ECNS 115 minimum grade of C-. Typically Offered Spring Only
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<th>Course Title</th>
<th>Type</th>
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<tr>
<td></td>
<td>System (Scaling Networks)</td>
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Scaling Networks is the third of four courses leading to the Cisco Certified Network Associate (CCNA) designation. Scaling Networks introduces Cisco Networking Academy – Routing and Switching program students to larger redundant networks. This course describes the architecture, components, and operations of routers and switches in larger and more complex networks. Students learn how to configure routers and switches for advanced functionality. By the end of this course, students will be able to configure and troubleshoot routers and switches and resolve common issues with OSPF, EIGRP, and STP in both IPv4 and IPv6 networks. Students will also develop the knowledge and skills needed to implement a WLAN in a small-to-medium network. This course also includes the building of a mock LAN network where the students design, implement, document, then deliver both in writing and oral a presentation of their findings. Pre-Requisites: ECNS 125 minimum grade of C-. Typically Offered Fall Only

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<th>Course Title</th>
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<td>Electronic Computer Network</td>
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<td></td>
<td>System (Connecting Networks)</td>
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Connecting Networks is the fourth of four courses leading to the Cisco Certified Network Associate (CCNA) designation. Connecting Networks introduces Cisco Networking Academy – Routing and Switching program students to WAN technologies. This course discusses the WAN technologies and network services required by converged applications in a complex network. The course enables students to understand the selection criteria of network devices and WAN technologies to meet network requirements. Students learn how to configure and troubleshoot network devices and resolve common issues with data link protocols. Students will also develop the knowledge and skills needed to implement virtual private network (VPN) operations in a complex network. This course also includes the building of a mock WAN network where the students design, implement, document, then deliver both in writing and oral a presentation of their findings. Pre-Requisites: ECNS 215 minimum grade of C-. Typically Offered Spring Only

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<td>ECNS310</td>
<td>Electronic Computer Network</td>
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<td></td>
<td>System (C++ Programming)</td>
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The student will apply C/C++ programming concepts through hands on instructor supervised labs. Development of software for real-time control will be emphasized. Topics include hardware/software interface and control techniques; software development; and system debug tools. Co-Requisites: ECNS 311. Typically Offered Fall Only
ECNS311 Electronic Computer Net-System TE Undergraduate 3
Course teaches the fundamental of C and C++ programming with emphasis on embedded systems and technical applications. C/C++ will be used to solve engineering problems and to introduce concepts of modular program design, object oriented programming, real-time control, system hardware/software dependencies, and other software engineering topics. Topics include structured program design, C/C++ input and output, functions, pointers, arrays, structures, run-time libraries, classes and object oriented design.
Course labs provide hands-on experience with programming and implementation. Pre-Requisites: MATH 120 or MATH 126 or MATH 130 or MATH 216 or MATH 220 or MATH 226 or MATH 230 Minimum grade of C-. Typically Offered Fall Only

This course provides an in-depth technical understanding of wired and wireless network implementation, operation, and maintenance. Topics include: electronic, optical, and wireless communication devices and data transmission media; local and wide area networks from the most basic system and architecture to the common components (hardware and software) of the infrastructure and terminals, and their fundamental principles, interconnection, and protocols; network modes including private (Ethernet, Token Ring, and Wi-Fi) and public (Frame Relay, ATM, cellular and PCS, 3G+ and WiMax); performance specifications, servers, and troubleshooting.
Course labs provide hands-on experience with network components and implementation. Pre-Requisites: ECNS225 minimum grade of C-. Typically Offered Fall Only

ECNS320 Electronic Computer Net-System TE Undergraduate 1
Assembly language for the Intel 80x86 family of microprocessors. Course will provide supervised labs to emphasize development of well structured, modular assembly software, interrupt service routines, hardware-software integration, and debugging tools. Development of assembly language programs for interface with high level languages and interrupt driven software will also be stressed. Co-Requisites: EEET 320. Typically Offered Spring Only

ECNS323 Electronic Computer Net-System TE Undergraduate 4
Computer operating systems that provide features and performance suitable for high speed control is called real time operating systems. This course will introduce the theory, functional components, features, and specifications of real time operating systems. Lab projects will re-enforce lecture topics and provide experience programming and analyzing real-time operating systems. Prerequisites ECNS 311 minimum grade of C-. Typically Offered Spring only.
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<td>ECNS325</td>
<td>Electronic Computer Net-System</td>
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<td>Wireless networks topics include wireless, industrial network, and associated network technologies. Technical concepts of wireless LAN (Wi-Fi) networks; cellular and PCS systems; wireless public data networks (i.e. 3G, WiMax, etc.); architecture, signal transmission/reception fundamentals, protocols, security and hardware and software components are all presented. Fundamental applications of industrial and control network technologies will also be introduced. Wireless and RF based technologies are emphasized. Pre-Requisites: ECNS 315 minimum grade of C-. Typically Offered Spring Only</td>
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<td>ECNS410</td>
<td>Electronic Computer Net-System</td>
<td>Undergraduate</td>
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<td>This course will introduce students to important concepts and applications of digital signal processing systems and algorithms. Topics include: waveform sampling, discrete and fast fourier, digital filters, system hardware considerations, DSP processors, correlation, signal detection methods, and applications. Concepts will be reinforced through hands on lab assignments. Pre-Requisites: ECNS 310 &amp; ECNS 311 and MATH 226. Co-Requisites: EEET 412. Typically Offered Fall Only</td>
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<td>ECNS414</td>
<td>Electronic Computer Net-System</td>
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<td>Study of microprocessors and programmable logic used in networked environments. USB, I2C, IEEE, I394, SPI and CAN are studied. Assembly and C language interfaces used with network interfaces. Interprocessor networking using multidrop techniques. Embedded microprocessors interfaced to the web through TCP/IP connection. Written and oral reporting integral part of this course. May be appropriate for CIS and CS majors. Prerequisites: EEET 222 and ECNS 311 with grade of C- or better or Instructor Permission. Typically offered Fall.</td>
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<td>ECNS421</td>
<td>Electronic Computer Net-System</td>
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<td>Introduces students to important hardware aspects of microprocessor/microcontroller systems design. Topics include: popular computer bus characteristics and protocol; power and environmental requirements; embedded systems considerations; interface technologies; troubleshooting. Labs provide hands-on experience and observation of classroom theory. Pre-Requisites: EEET 412. Co-Requisites: EEET 422. Typically Offered Spring Only</td>
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<td>ECNS424</td>
<td>Electronic Computer Net-System</td>
<td>Undergraduate</td>
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<td>Study of devices and techniques to develop systems on a chip (SOC). VHDL and intellectual property (IP) devices will be combined to create networked and non-networked systems. Test benches will be created using VHDL to analyze timing and operational characteristics. Written and oral reports are an integral part of this course. Prerequisites: ECNS 311 and ECNS 414 with a grade of C- or better. Typically offered Spring.</td>
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<td>ECON306</td>
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**ECNS425 Electronic Computer Net-System**

This course provides an in-depth study of the technical aspects of security. Theory and technology of network security in both wired and wireless systems are examined. Topics such as: types of network attacks; how compromise through software or hardware devices occur; encryption theory and network design and technologies to detect compromise and limit vulnerability are studied. Prerequisites ECNS 315 minimum grade of C-. Typically Offered Spring Only.

In this course students will explore the mechanisms of the market’s price and quantity discovery process. We will address the determinants of market demand and supply, how changes in those relationships affect market outcomes in different contexts, and how extra-market forces such as law and government policy can interact with market forces to affect outcomes. Meets General Education for Self and Society and Self and Society Foundation. Prerequisites: MATH 109 or MATH 110 with a grade of C- or better or MATH 114 or MATH 115 MATH 109 or 110 with a grade of C- or better or MATH 114 or MATH 115 or MATH 116 or MATH 117 or MATH 118 or MATH 119 or MATH 120 or MATH 122 or MATH 126 or MATH 130 or MATH 132 or MATH 220 or MATH ACT of 19 or MATH score of 460 on the pre 2016 SAT or 500 post 2016 SAT. Typically offered Fall, Spring, Summer.

In this course students will explore the market and policy mechanisms that determine aggregate measures of economic stability such as national income, national output, unemployment and inflation rates, and business cycle fluctuations. Meets General Education for Self and Society and Self and Society Foundation. Prerequisites: ECON 201 with a C-. Typically offered Fall, Spring, Summer.

Analysis of the national income determination models using consumption, government expenditures, investment and money supply. The causes and cures of unemployment and inflation. Discussion of classical, Keynesian, monetarist, and rational expectation theories. This course meets General Education requirements: Social Awareness, and new Fall 2017 Self and Society. Pre-Requisites: ECON 202. Typically Offered On Demand.

A study of the workings of the free enterprise economy. The mechanics of markets and prices. Household consumption decisions and demand. Production and supply. Competitive and non-competitive markets and their bearing on resource allocation. Extensions of microeconomics theory and miscellaneous applications in welfare economics, international trade, and others. This course meets General Education requirements: Social Awareness, and new Fall 217 Self and Society. Pre-Requisites:ECON 202 Typically Offered Fall Only.
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<td>ECON331</td>
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<td>ECON726</td>
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This course uses tools and concepts from microeconomic theory, industrial organization, and organizational economics and applies them to managerial decision making activities for businesses. Topics include determinants of demand, competitive markets, demand estimation, forecasting, cost / benefit analysis, risk & uncertainty. Prerequisites: Economics Foundation Competencies and BUS graduate student. Typically offered: Fall, Spring, Summer.

The course provides analysis of CTE foundations knowledge and current educational practices and policies. Topics studied will include the following: History of CTE (Colonial Times to 1969), Career and Technical Education. Student Organizations, Career Information Systems, Gender Diversity Issues in CTE, Academic and Vocational Curriculum Integration, Forms of Vocational Education, Professional Associations and Organizations, Ethics and Standards, and Cooperative Programming. Prerequisites: Students must be in Junior Standing. Typically Offered in Fall, Spring, Summer.

This course introduces the student to student organizations in CTE, professional organizations, professional communication, professional development, advocacy for CTE, public relations and marketing of CTE, regional support for CTE programming, advisory groups in DTE, funding of CTE, CTE program review, local, state and federal resources for CTE (CEPDs, ISDs, MDE, DOL, BLS, etc), international and global issues, and preparations for the future through new technologies and the curriculum. Prerequisites: Students must be in Junior Standing. Typically offered Fall, Spring, Summer.

Affords students the opportunity to analyze vocational educational foundations knowledge and to apply it to a critical study of current educational practices and policies. Topics studied will include the following: philosophy and history of career technical education, practices and programs in career technical education, demographics of vocational students, labor market data, the future of career technical education, state and federal laws and regulations pertaining to cooperative education and administration of cooperative education programs. Note: Not open to students with an undergraduate vocational foundations course without advisor permission. Pre-Requisites: Graduate status. Typically Offered Fall, Spring, Summer.

Surveys the latest theory and practice of curriculum development and provide practice in the process of curriculum design and construction in CTE. The students will develop instructional materials including performance objectives, daily and unit lesson plans, and accompanying teacher materials. Note: Not open to students with an undergraduate course in curriculum design without advisor permission. Pre-Requisites: Graduate status. Typically Offered Fall, Spring, Summer.
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<td>ECTE505</td>
<td>Educational Career Tech Educat</td>
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<td>Introduces the student to the world of training and development in business, health care, government, and industry. The course is designed to identify, analyze, and assess key competencies required of individuals involved in training roles. Other important elements include organizational structures and their dynamics, the historical development of training, training components, and training practices. Pre-Requisites: Graduate status. Typically Offered Spring Only</td>
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<tr>
<td>ECTE509</td>
<td>Educational Career Tech Educat</td>
<td>3</td>
<td>Familiarizes the training and development student with the concepts, principles and application of needs analysis. Also covers job and task analysis - the foundation of skill training programs in employee training programs in employee training/retraining. Pre-Requisites: Graduate status. Typically Offered Summer Only</td>
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<tr>
<td>ECTE510</td>
<td>Educational Career Tech Educat</td>
<td>3</td>
<td>Introduces basic statistical methods and the techniques used to analyze frequency distributions, correlation, and tests of significance. Theory and practice of the design and construction of instruments used to assess cognitive, affective, and psychomotor knowledge and skill levels in education and training settings. Teacher self-appraisal and evaluation of instruction. Pre-Requisites: Graduate Status. Typically Offered Fall, Spring, Summer</td>
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<tr>
<td>ECTE515</td>
<td>Educational Career Tech Educat</td>
<td>3</td>
<td>Identify and discuss principles, philosophy, practices and innovations of workforce education and human resource professionals. Provides knowledge of the patterns of organizational behavior from the broad frame of organizational culture and explore specific skills needed to shape and direct an organization. Provides foundations for both human resource development and secondary/postsecondary technical education professionals in industry, community colleges, and high schools. Typically offered Summer.</td>
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<tr>
<td>ECTE516</td>
<td>Educational Career Tech Educat</td>
<td>3</td>
<td>Provides students with frameworks for analyzing education policies and practices in CTE settings. The frameworks are rooted to broad foundational perspectives designed to assist students in understanding selected issues in CTE by exploring historical antecedents, philosophical and theoretical assumptions, and social and ideological factors that influence current educational policies and practices. The aim is to analyze the character of assumptions and the nature of implications inherent in educational proposals, policies and activities. Pre-Requisites: Graduate status. Typically Offered Fall, Spring, Summer</td>
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<td>ECTE535</td>
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ECTE536  Educational Career Tech Educat  ED  Graduate  3
Designed for those who want to learn about digital imaging using the simplest raster-based applications available. Emphasis is on painting, montaging, illustration, logo enhancement, and similar applications. Resolution capabilities for producing images for print and multimedia will also be covered. Students will increase their electronic creativity, production knowledge through creative assignments. Team-taught by a technical expert and curriculum specialist, students receive software training, then incorporate this technology in their classrooms by creating and sharing computer-based lesson plans.  Pre-Requisites:Solid understanding of the Macintosh environment and ECTE 538. Typically Offered On Demand

ECTE537  Educational Career Tech Educat  ED  Graduate  3
Script and produce complex projects using software such as Director or Premiere, Photoshop, and SoundEdit. Students gain hands-on experience in integrating text, graphics, audio and video for multimedia presentations. Team-taught by a technical expert and curriculum specialist, students receive software training, then incorporate this technology in their classrooms by creating and sharing computer-based lesson plans.  Pre-Requisites:ECTE 539 and solid understanding of the Macintosh environment. Typically Offered On Demand

ECTE538  Educational Career Tech Educat  ED  Graduate  1
Introduces you to the basic elements of Macintosh computers. You will learn to manipulate and use the Desktop environment. You will also perform and save a find, use the Finder, and learn to manage your files.  Pre-Requisites:Graduate status. Typically Offered On Demand

ECTE539  Educational Career Tech Educat  ED  Graduate  3
Designed for those who want to learn about the raster-based software application Photoshop. Emphasis will be on scanning and image correction, photo montaging, editorial illustration, logo enhancement and similar applications. Resolution issues for producing images for print and multimedia will also be covered. Team-taught by a technical expert and curriculum specialist, students receive software training, then incorporate this technology in their classrooms by creating and sharing computer-based lesson plans.  Pre-Requisites:Solid understanding of the Macintosh environment and ECTE 538. Typically Offered On Demand

ECTE575  Educational Career Tech Educat  ED  Graduate  3
An examination of the variety of ways career and technical educators work with adults in the course of their duties. Public relations skills. Making effective decisions as part of a professional work group. Organizing and maintaining an effective advisory council. Recognizing adult learning needs and participation patterns. Selecting the best teaching style and techniques to use with an adult audience.  Pre-Requisites:Graduate Status. Typically Offered On Demand
ECTE591 Educational Career Tech Educat ED Graduate 1 TO 3
The CTE internship is designed to allow students to: 1) update their technological skills or practices in their major/minor field, or 2) work with secondary students in a non-school setting, or 3) work with secondary students through a community-service agency, 4) work in a secondary school in a non-teaching capacity, or 5) other. Determination of appropriate CTE internship placement will be made by the student and the internship coordinator. One credit equals 66 clock hours. Pre-Requisites: Graduate Status and department approval. Typically Offered Fall, Spring, Summer

ECTE595 Educational Career Tech Educat ED Graduate 1 TO 2
Allows students to participate in CTE courses, workshops, and seminars offered by universities, colleges, technical societies, professional organizations, or business and industry to improve their content/instructional skills in their subject area major or minor. The student will be required to write a scholarly paper on the CTE workshop/seminars attended. One credit equals 15 clock hours. Consult your advisor regarding appropriateness of CTE workshops/seminars. Pre-Requisites: Graduate Status and department approval. Typically Offered Fall, Spring, Summer

ECTE601 Educational Career Tech Educat ED Graduate 3
The purpose of the course is to provide an overview of the basic responsibilities of CTE administrators in funding, instructional program development and operation, student support services and data, evaluation and accountability requirements as well as other topics related to the administration of secondary and postsecondary CTE programs. Prerequisite: Graduate Status. Typically offered Spring.

ECTE607 Educational Career Tech Educat ED Graduate 3
This course includes the elements of ADDIE- analysis, design, development, implementation and evaluation. An emphasis is placed on design issues including analysis, design and evaluation. Learners work through the instructional design process to assemble a training or education project that is ready for implementation. Prerequisite: Graduate status.

ECTE608 Educational Career Tech Educat ED Graduate 3
This course will explore the most current innovations designed to increase the rigor and relevance of what students learn in school to more closely align them with the demands of the 21st century economy and workforce while creating stronger linkages between secondary and postsecondary education. Emphasis will be placed on methods to better engage students; how to improve academic and technical achievement; and how to improve the transition of college and career ready from high school to continuing education. Prerequisites: Graduate Status. Typically offered Fall and Spring.

ECTE610 Educational Career Tech Educat ED Graduate 3
This course is designed for: 1) those who wish to strengthen their grant writing skills and 2) beginners who wish to acquire and master the techniques of preparing, writing and winning proposals from various funding agencies. The center of attention will be on how to effectively tell the story that leads to funding, be it for the educator or non-profit professional. Prerequisites: Graduate Status. Typically offered Summer.
ECTE650 Educational Career Tech Educat ED Graduate 3
Clarify TQM (Total Quality Management) process and procedures and demonstrates how they can be used in the classroom. Topics will include the TQM approaches of such quality experts as Dr. W Edwards Deming & Philip Crosby; how TQM works with students, specific ways to integrate the TQM tools into the classroom (based on the Malcolm Baldrige Criteria); and conditions that are necessary for successfully implementing TQM in the classroom. Pre-Requisites: Graduate status. Typically Offered On Demand

ECTE655 Educational Career Tech Educat ED Graduate 3
Explores the various quality improvement practices of Baldrige award winning educational institutions. Provides opportunities to study formal and informal educational leadership systems and support structures for addressing key communities. Examines similarities, differences and trends in key aspects of process management, including learning-focused education design, education delivery, school services and operations as well as how key processes are designed, implemented, managed and improved to achieve better performance. Pre-Requisites: ECTE 650. Typically Offered On Demand

ECTE660 Educational Career Tech Educat ED Graduate 3
Apply the principles of total quality management and the Malcolm Baldrige National Quality Award criteria relative to (1) the formation of partnerships between education and business that have adopted the criteria; (2) strategic planning approaches for making or guiding decision, priorities, resource allocations, and school-wide management; (3) faculty and staff development strategies and satisfaction; and (4) the definition of student and stakeholder needs and expectations, and student and stakeholder satisfaction. Pre-Requisites: ECTE 650. Typically Offered On Demand

ECTE665 Educational Career Tech Educat ED Graduate 3
Examine numeric measures and indicators that quantifies input, output, and performance dimensions of process, products, services and overall school outcomes. Examine the collection, management and reporting of student performance, student and stakeholder satisfaction, faculty and staff results, and school-specific performance. Also examined are methods for identifying performance levels to comparable schools and/or appropriately selected organizations. Pre-Requisites: ECTE 650. Typically Offered On Demand

ECTE694 Educational Career Tech Educat ED Graduate 1 TO 3
Graduate level workshop/seminar courses in areas of CTE special interest. Primarily teacher/trainer in-service and professional development. Pre-Requisites: Graduate status and department approval. Typically Offered Fall, Spring, Summer

EDCD100 Education-Childhood Develop ED Undergraduate 2
Preparation for the National Child Development Association certificate (C.D.A.) Procedures and requirements for the certificate will be explained. Certificate will be given by the National Child Development association office upon completion of requirements. Typically Offered Fall, Spring
During the Introduction to Early Childhood Education course, students will explore basic concepts of interacting with young children while actively participating in an early childhood setting. An overview of the entire program will be explained, including specific concentrations available at the bachelor-level. Students will also discuss various career opportunities available within the field of early childhood education. Typically Offered Fall, Spring.

Course covers developmental trajectories and theories of development from prenatal to young children through age 12. Focus is on critical periods, attachment, and developmental milestones in social/emotional, cognitive, motor, language, and self-help skills and development. Prerequisites or Co-requisite: EDCD 101 Typically Offered Fall, Spring.

This course focuses on using various observation methods to collect and summarize progress of a young child. Strategies for observation will be presented as a flexible, practical process that will enable students to develop organizational skills necessary for individual and group lesson planning. Emphasis placed on different techniques for documenting observations of young children and making connections to learning standards. 15 hours of lab/observation required. Prerequisites or Co-requisite: EDCD 112 Typically Offered Fall, Spring.

During the Role of the Early Childhood Teacher course, students will discuss the skills and dispositions of effective early childhood teachers. Topics include teaching and learning styles, early childhood curricula, and personal and professional growth. Prerequisites or Co-requisite: EDCD 101 Typically Offered Fall, Spring.

Throughout the course of Ethical Practices in Early Childhood, students will examine ethical responsibilities to children, families, colleagues, community, and society. Topics for discussion include the ideals and principles of children's well-being, home-to-school connections, professional disposition, partnering with local resources, and contributing to the future of all young children. Prerequisites: Department Approval. Typically Offered Fall, Spring.

Course focuses on creating and evaluating optimal learning environments for young children ages zero to three. Emphasis on the importance of play and developmentally appropriate teaching methods and strategies. Semester long, part-time practicum is required. Prerequisites: Department Approval. Typically Offered Fall, Spring.

Course focuses on creating and evaluating optimal learning environments for preschool- through school-age children. Emphasis on the importance of play and developmentally appropriate teaching methods and strategies. Semester long, part-time practicum is required. Prerequisites: Department Approval. Typically Offered Fall, Spring.
EDCD285  Education-Childhood Develop  ED  Undergraduate  1
During the Introduction to the Early Childhood Education Practicum course, students will discuss the requirements for successful completion of the early childhood education practicum. Prerequisites: Department Approval. Typically Offered Fall, Spring.

EDCD295  Education-Childhood Develop  ED  Undergraduate  6
Throughout the Early Childhood Education Practicum, students will assume part-time teaching responsibilities within an early childhood center under the supervision of an eligible full-time teacher. Academic guidance and support will be provided to the students through the use of an online learning environment. Prerequisites: Department Approval. Typically Offered Fall, Spring.

EDCD308  Education-Childhood Develop  ED  Undergraduate  3
This course is designed to provide pre-service teachers with an introduction to teaching strategies designed to accommodate the needs of exceptional and diverse learners from birth through 12 years of age. Content will also include a brief historical perspective of the field of special education, particularly as it relates to early childhood education, including legislation and litigation, causes of disabilities, academic and social characteristics, and basic assessment and intervention procedures. Prerequisites: EDCD 210 or EDCD 211 (EDCD students) or EDUC 413 (ELED students). Typically Offered Fall only.

EDCD310  Education-Childhood Develop  ED  Undergraduate  3
Students will develop effective strategies for dealing with the behavior of young children. They will gather tools for supporting the long-term development of responsibility, self-confidence and self-control in children. The course includes theory and practical guidance strategies. Students will gain respect for the unique qualities of individual children while developing strategies for dealing with the many behaviors that children exhibit. Prerequisites: Completion of all 200 level EDCD courses. Typically Offered Fall semester, even years only.

EDCD350  Education-Childhood Develop  ED  Undergraduate  3
This course is designed to look at early childhood programs within and outside of the United States. The students will examine specific early childhood curriculum programs such as Reggio Emilia and Montessori and their differing curricula. The students will also look at early childhood education in a variety of countries including Canada, France, Italy, China, etc. Prerequisites: Completion of all 200 level EDCD courses. Typically Offered Fall semester, odd years only.

EDCD380  Education-Childhood Develop  ED  Undergraduate  3
Types of advocacy and the ways ECE professionals can advocate for children. Students will demonstrate their advocacy with an advocacy project. Prerequisites: Completion of EDCD 211. Meets General Education requirements for Problem Solving. Typically Offered Spring semester, even years only.

EDCD410  Education-Childhood Develop  ED  Undergraduate  3
Focus is on the role and responsibilities of an early childhood program director/administrator. Topics include leadership skills, budgeting, staff hiring and supervision, and professionalism. Prerequisites: Completion of EDCD 211. Typically Offered Spring semester, odd years only.
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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Required Course(s)</th>
<th>Description</th>
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<tbody>
<tr>
<td>EDCD425</td>
<td>Education-Childhood Develop ED</td>
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<td>This course focuses on utilizing various assessment and research methods necessary for creating developmentally appropriate lesson plans in the early childhood setting. Emphasis will be placed on creating assessment driven instructional practices (lesson plans and units of study), that are based on Early Learning Standards. Students will be required to spend time in the field throughout the semester. Typically offered: Fall, Spring</td>
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<td>EDCD430</td>
<td>Education-Childhood Develop ED</td>
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<td>EDCD 104 and EDCD 105 and EDCD 110 and EDCD 111.</td>
<td>This course will provide students with an introduction to the Child Life Specialist profession. The course will address topics specific to the profession including: separation and loss; childhood illness, injuries, diseases and disorders; abuse and neglect; therapeutic play; and family advocacy. The course will be taught by a nationally certified Child Life Specialist from Helen DeVos Children's Hospital in Grand Rapids. Prerequisites: EDCD 104 and EDCD 105 and EDCD 110 and EDCD 111. Typically offered Fall.</td>
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<td>EDCD431</td>
<td>Education-Childhood Develop ED</td>
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<td>Student will complete a 50 hour practicum at a hospital where they will be supervised by a nationally certified Child Life Specialist. Students will carry out responsibilities as assigned by their on-site supervisor and course assignments as determined by university instructor. Prerequisites: EDCD 430. Typically offered Fall.</td>
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<td>EDCD450</td>
<td>Education-Childhood Develop ED</td>
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<td>In this course the instructor and students will choose several current and/or controversial issues in the field of Early Childhood Education to study. An in-depth report, presentation or project on an individually chosen current issue will be required. Prerequisites: Completion of EDCD 211. Meets General Education requirements for Problem Solving. Typically Offered Summer Only</td>
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<td>EDCD487</td>
<td>Education-Childhood Develop ED</td>
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<td>During the Introduction to the Early Childhood Education Internship course, students will discuss the requirements for successful completion of the early childhood education internship. Prerequisites: Department Approval. Typically Offered Fall, Spring.</td>
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<td>EDCD495</td>
<td>Education-Childhood Develop ED</td>
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<td>Throughout the Early Childhood Education Internship, students will assume full-time participation within an approved early childhood setting under the supervision of an eligible early childhood professional best suited for the specific concentration (teaching, management, child life). Students will apply developmentally appropriate methods to complete a program review. Academic guidance and support will be provided to the students through the use of an online learning environment. Prerequisites: Department Approval. Typically Offered Fall, Spring.</td>
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<td>EDGP206</td>
<td>Education - Get Promoted ED</td>
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<td>Use and application of educational technology and microcomputers as instructional tools in classroom and laboratory environments. Design and development of materials for use in educational, training, and/or human services programs. Topics include basic operation of PC hardware and software. Pre-Requisites: Admission to Pro-Mo-TeD program. Typically Offered Fall, Spring, Summer</td>
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<td>EDGP207</td>
<td>Education - Get Promoted</td>
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<td>intermediate level in classroom and laboratory</td>
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<td>environments. The major emphasis on applications</td>
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<td>will be based upon underlying concepts and</td>
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<td>principles of a systems approach to instructional</td>
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<td>design. Pre-Requisites: EDGP 206. Typically Offered</td>
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<td>Fall, Spring, Summer</td>
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<td>EDGP208</td>
<td>Education - Get Promoted</td>
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<td>Use and application of educational technology and</td>
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<td>microcomputers as instructional tools in classroom</td>
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<td>and laboratory environments. Design and development</td>
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<td>of materials for use in educational, training, and/</td>
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<td>or human services programs. Pre-Requisites: EDGP</td>
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<td>207. Typically Offered Fall, Spring, Summer</td>
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<td>EDGP251</td>
<td>Education - Get Promoted</td>
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<td>A study of the biological, cognitive, social and</td>
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<td>affective domains of human growth and development</td>
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<td>from the prenatal period through toddlerhood,</td>
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<td>particularly as they apply to teaching and</td>
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<td>learning. Students are required to observe human</td>
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<td>behavior at different stages of development in a</td>
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<td>variety of cultural (field) settings. This module</td>
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<td>you will observe development from birth-36 months.</td>
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<td>Required for state teacher certification.</td>
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<td>Pre-Requisites: Admission to Pro-Mo-TeD program.</td>
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<td>Typically Offered Fall, Spring, Summer</td>
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<td>EDGP252</td>
<td>Education - Get Promoted</td>
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<td>A study of the biological, cognitive, social and</td>
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<td>affective domains of human growth and development</td>
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<td>from the early childhood through adolescence,</td>
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<td>particularly as they apply to teaching and</td>
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<td>behavior at different stages of development in a</td>
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<td>variety of cultural (field) settings. This module</td>
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<td>you will observe development from 3-18 years.</td>
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<td>Required for state teacher certification.</td>
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<td>Pre-Requisites: EDGP 251. Typically Offered Fall,</td>
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<td>EDGP253</td>
<td>Education - Get Promoted</td>
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<td>A study of the biological, cognitive, social and</td>
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<td>affective domains of human growth and development</td>
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<td>from early adulthood through death, particularly as</td>
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<td>they apply to teaching and learning. Students are</td>
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<td>required to observe human behavior at different</td>
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<td>stages of development in a variety of cultural</td>
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<td>(field) settings. This module you will observe</td>
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<td>development from 20-70 years. Required for state</td>
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<td>teacher certification. Pre-Requisites: EDGP 252.</td>
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<td>Typically Offered Fall, Spring, Summer</td>
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<td>EDGP287</td>
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<td>The psychological principles underlying classroom</td>
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<td>management, including specific strategies for</td>
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<td>managing an effective classroom. Students are</td>
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<td>required to do a 5 hour field experiences in</td>
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<td>appropriate classroom setting. Pre-Requisites:</td>
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<td>Admission to Pro-Mo-TeD program. Typically Offered</td>
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<td>EDGP288</td>
<td>Education - Get Promoted</td>
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<td>The psychological principles underlying teaching</td>
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<td>and learning: learning theory, and motivation.</td>
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<td>Students are required to do a 5 hour field</td>
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<td>experiences in appropriate classroom setting. Pre-</td>
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<td>Requisites: EDGP 287. Typically Offered Fall,</td>
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EDGP289  Education - Get Promoted  ED  Undergraduate  1
The psychological principles underlying, gender and cultural differences, individual differences, the development of self-concept. Students are required to do a 5 hour field experiences in appropriate classroom setting. Pre-Requisites: EDGP 288. Typically Offered Fall, Spring, Summer

EDGP303  Education - Get Promoted  ED  Undergraduate  1
Structure, function, and purposes of schools in society and how they are affected by various philosophies of education. Topics include traditional and contemporary philosophical views of education and the role of the school in society. 30 clock hours of field experience is required throughout the three modules. Pre-Requisites: Admission to Pro-Mo-TEd Program. Typically Offered Fall, Spring, Summer

EDGP304  Education - Get Promoted  ED  Undergraduate  1
Structure, function, and purposes of schools in society and how they are affected by various philosophies of education. Topics include financing education and the legal aspects of education. 30 clock hours of laboratory experience in schools will occur throughout the three modules. Pre-Requisites: EDGP 303. Typically Offered Fall, Spring, Summer

EDGP305  Education - Get Promoted  ED  Undergraduate  1
Structure, function, and purposes of schools in society and how they are affected by various philosophies of education. Topics include teachers' professional groups and American education and the future. 30 clock hours of laboratory experience in schools will occur throughout the three modules. Pre-Requisites: EDGP 304. Typically Offered Fall, Spring, Summer

EDGP308  Education - Get Promoted  ED  Undergraduate  1
This course is designed to provide pre-service teachers an introduction to teaching strategies and other aspects of exceptional and diverse learners. Content will include a brief historical perspective of the field of special education including legislation and litigation and basic assessment and intervention procedures. Discussions will include special education services/programming, the role of the family and community. Pre-Requisites: Admission to Pro-Mo-TEd program. Typically Offered Fall, Spring, Summer

EDGP309  Education - Get Promoted  ED  Undergraduate  1
This course is designed to provide pre-service teachers an introduction to teaching strategies and other aspects of exceptional and diverse learners. Content will include causes of disabilities and academic and social characteristics. Discussions will include special education services/programming, the role of the family and community. Course content includes issues regarding the gifted child and diverse populations. Pre-Requisites: EDGP 308. Typically Offered Fall, Spring, Summer
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<tr>
<th>Course Code</th>
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<tr>
<td>EDGP310</td>
<td>Education - Get Promoted</td>
<td>Undergraduate</td>
<td>1</td>
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<td>This course is designed to provide pre-service teachers an introduction to teaching strategies and other aspects of exceptional and diverse learners. Content will include basic assessment and intervention procedures and teaching strategies. Discussions will include special education services/programming, the role of the family and community. Course content includes issues regarding the gifted child and diverse populations. Pre-Requisites: EDGP 309. Typically Offered Fall, Spring, Summer</td>
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<th>Course Code</th>
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<tr>
<td>EDGP339</td>
<td>Education - Get Promoted</td>
<td>Undergraduate</td>
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<td></td>
<td>Analysis of instructional design theory and practice will be the FSU classroom focus. Pre-Requisites: Admission to Pro-Mo-TEd program. Typically Offered Fall, Spring, Summer</td>
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<td>EDGP340</td>
<td>Education - Get Promoted</td>
<td>Undergraduate</td>
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<td></td>
<td>Emphasis is placed on exploring a variety of teaching styles and strategies through a 45-hour field experience. Pre-Requisites: EDGP 339. Typically Offered Fall, Spring, Summer</td>
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<tr>
<td>EDGP400</td>
<td>Education - Get Promoted</td>
<td>Undergraduate</td>
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<td></td>
<td>Designed to afford students the opportunity to analyze vocational educational foundations knowledge and to apply it to a critical study of current educational practices and policies. Pre-Requisites: Admission to Pro-Mo-TEd program. Typically Offered Fall, Spring, Summer</td>
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<tr>
<td>EDGP401</td>
<td>Education - Get Promoted</td>
<td>Undergraduate</td>
<td>1</td>
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<td></td>
<td>Topics studied will include the following: philosophy and demographics of vocational students, labor market data, future of career technical education. Pre-Requisites: EDGP 400. Typically Offered Fall, Spring, Summer</td>
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<td>EDGP402</td>
<td>Education - Get Promoted</td>
<td>Undergraduate</td>
<td>1</td>
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<tr>
<td></td>
<td>Topics studied will include the following: state and federal laws and regulations pertaining to cooperative education and administration of cooperative educational programs. Pre-Requisites: EDGP 401. Typically Offered Fall, Spring, Summer</td>
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<tr>
<td>EDGP430</td>
<td>Education - Get Promoted</td>
<td>Undergraduate</td>
<td>1</td>
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<tr>
<td></td>
<td>Participants will demonstrate their ability to connect lesson plans with curriculum objectives. Pre-Requisites: Admission to Pro-Mo-TEd program. Typically Offered Fall, Spring, Summer</td>
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<tr>
<td>EDGP431</td>
<td>Education - Get Promoted</td>
<td>Undergraduate</td>
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<tr>
<td></td>
<td>Participants will demonstrate their ability to develop assessment and test items, as well assessing student performance. Pre-Requisites: EDGP 430. Typically Offered Fall, Spring, Summer</td>
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<tr>
<td>EDGP432</td>
<td>Education - Get Promoted</td>
<td>Undergraduate</td>
<td>1</td>
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<tr>
<td></td>
<td>Participants will demonstrate their ability to connect lesson plans with curriculum assessment. Practice teaching will take place in the FSU classroom. Pre-Requisites: EDGP 431. Typically Offered Fall, Spring, Summer</td>
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<tr>
<td>EDGP433</td>
<td>Education - Get Promoted</td>
<td>Undergraduate</td>
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<tr>
<td></td>
<td>Participants will demonstrate their ability to connect lesson plans with curriculum objectives and assessment. Practice assessment will take place in the FSU classroom. Pre-Requisites: EDGP 432. Typically Offered Fall, Spring, Summer</td>
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<tr>
<td>EDGP439</td>
<td>Education - Get Promoted</td>
<td>Undergraduate</td>
<td>1</td>
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<tr>
<td></td>
<td>Focus will be placed upon refining delivery techniques, evaluation and assessment and lesson plans. Pre-Requisites: Admission to Pro-Mo-TEd program. Typically Offered Fall, Spring, Summer</td>
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<tr>
<td>EDGP440</td>
<td>Education - Get Promoted</td>
<td>Undergraduate</td>
<td>1</td>
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<tr>
<td></td>
<td>Emphasis is placed on applying and refining theory into the practice of teaching through a 45-hour field experience. Pre-Requisites: EDGP 439. Typically Offered Fall, Spring, Summer</td>
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<td>EDGP443</td>
<td>Education - Get Promoted</td>
<td>ED</td>
<td>Undergraduate</td>
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<tr>
<td>EDGP444</td>
<td>Education - Get Promoted</td>
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<td>Undergraduate</td>
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<tr>
<td>EDGP445</td>
<td>Education - Get Promoted</td>
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<td>Undergraduate</td>
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<tr>
<td>EDGP501</td>
<td>Education - Get Promoted</td>
<td>ED</td>
<td>Graduate</td>
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<tr>
<td>EDGP502</td>
<td>Education - Get Promoted</td>
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<td>Graduate</td>
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<tr>
<td>EDGP503</td>
<td>Education - Get Promoted</td>
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<td>Graduate</td>
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<td>EDGP504</td>
<td>Education - Get Promoted</td>
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<td>EDGP505</td>
<td>Education - Get Promoted</td>
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<tr>
<td>EDGP506</td>
<td>Education - Get Promoted</td>
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<td>Graduate</td>
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<td>Course Title</td>
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<tr>
<td>EDGP507</td>
<td>Education - Get Promoted</td>
<td>Designed to afford students the opportunity to analyze educational foundations, knowledge and to apply it to a critical study of educational practices and policies. Topics include: financing and governance of education and the sociology of education. Observations and interviews with secondary school personnel are required. Prerequisites: EDGP 506. Typically Offered Spring only.</td>
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<tr>
<td>EDGP508</td>
<td>Education - Get Promoted</td>
<td>Designed to afford students the opportunity to analyze educational foundations, knowledge and to apply it to a critical study of educational practices and policies. Topics include: the education of exceptional children, educational reform and the history of education. Observations and interviews with secondary school personnel are required. Prerequisites: EDGP 507. Typically Offered Summer only.</td>
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<tr>
<td>EDGP509</td>
<td>Education - Get Promoted</td>
<td>Designed to survey the latest theories and practice in curriculum development. The student will develop instructional materials including assessment techniques. Prerequisites: Admitted to Troops to Teachers. Typically Offered Summer only.</td>
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<tr>
<td>EDGP510</td>
<td>Education - Get Promoted</td>
<td>The student will develop instructional materials that include performance objectives. Practice teaching will take place in the FSU classroom. Prerequisites: EDGP 509. Typically Offered Summer only.</td>
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<tr>
<td>EDGP511</td>
<td>Education - Get Promoted</td>
<td>The students will develop instructional materials including daily lesson plans with accompanying teacher materials. Practice assessment will take place in the FSU classroom. Prerequisites: EDGP 510. Typically Offered Summer only.</td>
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<tr>
<td>EDGP512</td>
<td>Education - Get Promoted</td>
<td>This course is designed to provide an introduction to the education of the exceptional learner. Content will include an historical perspective of the field of special education including legislation and litigation, special education services/programming, the role of the family and community. Prerequisites: Admission to Troops to Teachers. Typically Offered Summer only.</td>
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<tr>
<td>EDGP513</td>
<td>Education - Get Promoted</td>
<td>This course is designed to provide an introduction to the education of exceptional learners. Content will include psychological, academic, social and cognitive characteristics associated with specific handicapping conditions. Discussions will include special education services/programming, the role of the family and community. Course content includes issues regarding the gifted child and diverse populations. Prerequisites: EDGP 512. Typically Offered Fall only.</td>
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<tr>
<td>EDGP514</td>
<td>Education - Get Promoted</td>
<td>This course is designed to provide an introduction to the education of exceptional learners. Assessment and intervention procedures that include teaching strategies and differentiated instruction will be included. Discussions will include special education services/programming, the role of the family and community. Course content includes issues regarding the gifted child and diverse populations. Prerequisites: EDGP 513. Typically Offered Summer only.</td>
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<tr>
<td>EDGP540</td>
<td>Use and application of educational technology and microcomputers as instructional tools in classroom and laboratory environments. Design and development of materials for use in educational, training, and/or human services programs. Topics include basic operation of PC hardware and software. Prerequisites: Admitted to Troops to Teachers. Typically Offered Summer only. Use application of educational technology and microcomputers as instructional tools at the intermediate level in classroom and laboratory environments. The major emphasis will be on media and instruction and visual principles used in integrating technology with teaching. Prerequisites: EDGP 540. Typically Offered Spring only. Use and application of educational technology and microcomputers as instructional tools in classroom and laboratory environments. Topics will include non projected media, projected visuals, classroom audio and video, and integration techniques. Prerequisites: EDGP 541. Typically Offered Summer only. Specific strategies for applying teaching methods and effective reading comprehension skills in content areas. Topics include the reading process, pre-reading strategies and assessing knowledge of student background. Prerequisites: Admitted to Troops to Teachers. Typically Offered Summer only. Specific strategies for applying teaching methods and effective reading comprehension skills in content areas. Topics assessing and building knowledge of student background, readability, and vocabulary and concept development. Prerequisites: Admitted to Troops to Teachers. Typically Offered Summer only. Specific strategies for applying teaching methods and effective reading comprehension skills in content areas. Topics levels of comprehension and reading and study guides/strategies. Prerequisites: EDGP 544. Typically Offered Fall only. Focuses on literacy acquisition theory and practice from 0 to 3rd grade. Literacy development stages, factors that affect reading acquisition, and characteristics of fluent readers are included. Stressed are the importance of play, schema theory, language development and reading acquisition, and assessment procedures. Course includes part of the training in MLPP assessment required for all early elementary MI teachers. Prerequisites: ENGL 150 and ENGL 250 B or better. Typically Offered Fall, Spring, Summer Designed to assist pre-service elementary teachers with the creation of projects using children's literature. Criteria for evaluating and selecting developmentally appropriate text for classroom use are examined. A portion of the course covers literature as visual text and various artistic styles found in picture books are examined. The course emphasizes strategies for using literature in the classroom. Prerequisites: ENGL 150 and ENGL 250 with B or better. Typically Offered Fall, Spring, Summer</td>
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EDLA340 Education Language Arts  
Undergraduate  3  
Examines composition theory and practice and the integrated nature of the language arts. The course introduces the procedures necessary to set up a daily writer's workshop in the classroom including mini-lesson, conferencing techniques, publication procedures, preparation for the MEAP writing assessment, and evaluation of student work. Pre-Requisites: ENGL 150 and ENGL 250 with B or better. Typically Offered Fall, Spring, Summer

EDLA342 Education Language Arts  
Undergraduate  3  
Examines reader response theory and history, the role of literature circles in reading comprehension, reader performance techniques and fluency development. Reader response journals, discussion groups, evaluation rubrics, portfolio construction, and the role of the teacher as facilitator are emphasized. The comprehension piece of the MLPP training for MI teachers is included. Pre-Requisites: ENGL 150 and ENGL 250 with B or better. Typically Offered Fall, Spring, Summer

EDLA476 Education Language Arts  
Undergraduate  3  
Designed as the capstone course for the Elementary Language Arts minors. This course explores the use of the authoring cycle to support reading, writing, and inquiry as the foundation of an integrated elementary curriculum. Techniques to assist children in formulating questions, evaluating sources, and presenting findings are included. Emphasizes collaborative learning and community support within the classroom. Pre-Requisites: EDLA 207, 222, 340, and 342. Typically Offered Fall, Spring, Summer

EDLE500 Educational Leadership  
Graduate  3  
This course explores various leadership philosophies including transactional, transformational, servant, balanced and values, great-man, and moral. Students will also study the history of leadership, and ethical leadership practices. They will identify and define the various leadership roles within school districts, and apply these concepts to the development of a personal philosophy of leadership. This course is heavily research oriented, and will be examined across the domains of leadership, management, and risk management. Typically Offered Fall, Spring and Summer.

EDLE520 Educational Leadership  
Graduate  3  
This course explores practices related to instructional leadership, including issues of school reform, accreditation, state and national standards, individual education plans, education development plans, and curricular processes. Students will apply these practices across the domains of leadership, management, and risk management. Prerequisites: EDLE 500. Typically Offered Fall, Spring and Summer.
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<th>Course Code</th>
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<tr>
<td>EDLE525</td>
<td>Educational Leadership</td>
<td>3</td>
<td>This course explores the personnel management functions of school administration including legal issues, policy practices, communication practices, discipline of staff and students, evaluation of personnel, working with bargaining units and unions, hiring/&quot;rightsizing&quot;/firing practices, and nurturing staff and students. These topics will be explored through the domains of leadership, management, risk management, and futuring. Students are expected to complete field-based activities. Typically Offered Fall, Spring and Summer.</td>
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<tr>
<td>EDLE530</td>
<td>Educational Leadership</td>
<td>3</td>
<td>This course explores the management functions of school administration including legal issues, strategic planning, facilities management, terminology, funding and finance. These topics will be explored through the domains of leadership, risk management, management and futuring. Students are expected to complete field-based activities. Prerequisites: EDLE 500 Typically Offered Fall, Spring and Summer.</td>
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<tr>
<td>EDLE540</td>
<td>Educational Leadership</td>
<td>3</td>
<td>Examines the dynamics of the interface between the public schools and the community. Special attention is given to the findings of research in relation to school-community power, types, and organizational influences. Outcomes include research paper which outlines a plan for developing supportive school-community relations. Prerequisites: EDLE 500. Typically Offered Fall, Spring and Summer.</td>
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<tr>
<td>EDLE545</td>
<td>Educational Leadership</td>
<td>3</td>
<td>The focus of this course is on current theories, principles and practices relevant to the organization, administration and operation of educational programs, including adult community education. Each topic will be examined through four lenses: leadership management, risk management and futuring. It is expected that the student spend time interviewing and observing building administrators. Prerequisites: Instructor Permission. Typically Offered: Fall, Spring.</td>
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<tr>
<td>EDLE691</td>
<td>Educational Leadership</td>
<td>3</td>
<td>This course serves to apply the strategies and skills developed in the theoretical course work within a school organization. Students are expected to complete one 3-credit hour session, a semester-long program, working with the administrators of a school district which has agreed to sponsor their internship; thus this course requires support and commitment of a local school district. During the internship, students will plan and complete a substantive project which will benefit the district in which they are working. Prerequisites: EDLE 500, 520, 525, 530 and 540. Typically Offered Spring, Summer and Fall.</td>
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This three-credit semester course is designed for EDLE students to apply the leadership strategies and skills within an educational organization. Under the supervision of approved supervisor, student interns participate in leadership activities that address the leadership framework approved by the Michigan Department of Education. Additionally, students will create a portfolio that demonstrates their ability to apply, evaluate, and synthesize theoretical principles of educational leadership discussed throughout their course work and internship. Prerequisites: EDLE 500 AND EDLE 520 AND EDLE 525 AND EDLE 530 AND EDLE 540. Typically offered Fall, Spring, Summer.

Use and application of educational technology and microcomputers as instructional tools in classroom and laboratory environments. Design and development of materials for use in educational, training, and/or human services programs. Topics include basic operation of PC hardware and software. Prerequisites: Admission to ProMoTed TBI program. Typically Offered Fall, Spring and Summer.

Use and application of educational technology and microcomputers as instructional tools at the intermediate level in the classroom and laboratory environments. The major emphasis on applications will be based upon underlying concepts and principles of a systems approach to instructional design. Prerequisites: EDPB 206. Typically Offered Fall, Spring and Summer.

Use and application of educational technology and microcomputers as instructional tools in classroom and laboratory environments. Design and development of materials for use in educational, training, and/or human services programs. Prerequisites: EDPB 207. Typically Offered Fall, Spring and Summer.

The psychological principles underlying classroom management, including specific strategies for managing an effective classroom. Students are required to do a 5 hour field experiences in appropriate classroom setting. Prerequisites: Admission to ProMoTed TBI program.

The psychological principles underlying teaching and learning: Learning theory, and motivation. Students are required to do a 5 hour field experiences in appropriate classroom setting. Prerequisites: EDPB 287. Typically Offered Fall, Spring and Summer.

The psychological principles underlying, gender and cultural differences, individual differences, exceptional learners, the development of self-concept. Students are required to do a 5 hour field experiences in appropriate classroom setting. Prerequisites: EDPB 288. Typically Offered Fall, Spring and Summer.

Analysis of instructional design theory and practice will be the FSU classroom focus. Prerequisites: Admission to ProMoTed TBI program.

Emphasis is placed on exploring a variety of teaching styles and strategies through a 45-hour field experience. Prerequisites: EDPB 339. Typically Offered Fall, Spring and Summer.
EDPB400  Education Promoted Business  ED  Undergraduate  1  
Designed to afford students the opportunity to analyze vocational educational foundations knowledge and to apply it to a critical study of current educational practices and policies. Prerequisites: Admission to ProMoTed TBI program. Typically Offered Fall, Spring and Summer.

Topics studied will include the following: philosophy and demographics of vocational students, labor market data, and future of career technical education. Prerequisites: Admission to ProMoTed TBI. Typically Offered Fall, Spring and Summer.

EDPB402  Education Promoted Business  ED  Undergraduate  1  
Introduces the Training in Business and Industry major to the world of training and development in business, health care, government, and industry. The module is designed to include organizational structures and their dynamics and the historical development of training within organizations. Prerequisites: Admission to ProMoTed TBI program. Typically Offered Fall, Spring and Summer.

EDPB404  Education Promoted Business  ED  Undergraduate  1  
Introduces the Training in Business and Industry major to the world of training and development in business, health care, government, and industry. The module is designed to include organizational structures and their dynamics and the historical development of training within organizations. Prerequisites: Admission to ProMoTed TBI program. Typically Offered Fall, Spring and Summer.

EDPB405  Education Promoted Business  ED  Undergraduate  1  
Introduces the Training in Business and Industry major to the world of training and development in business, health care, government, and industry. The module is designed to include organizational structures and their dynamics and the historical development of training within organizations. Prerequisites: Admission to ProMoTed TBI program. Typically Offered Fall, Spring and Summer.

EDPB406  Education Promoted Business  ED  Undergraduate  1  
Introduces the Training in Business and Industry major to the world of training and development in business, health care, government, and industry. The module is designed to include organizational structures and their dynamics and the historical development of training within organizations. Prerequisites: Admission to ProMoTed TBI program. Typically Offered Fall, Spring and Summer.

EDPB407  Education Promoted Business  ED  Undergraduate  1  
Introduces the Training in Business and Industry major to the world of training and development in business, health care, government, and industry. The module is designed to include organizational structures and their dynamics and the historical development of training within organizations. Prerequisites: Admission to ProMoTed TBI program. Typically Offered Fall, Spring and Summer.

EDPB430  Education Promoted Business  ED  Undergraduate  1  
Participants will demonstrate their ability to connect lesson plans with curriculum objectives. Prerequisites: Admission to ProMoTed TBI program. Typically Offered Fall, Spring and Summer.

EDPB431  Education Promoted Business  ED  Undergraduate  1  
Participants will demonstrate their ability to connect lesson plans with curriculum objectives. Prerequisites: Admission to ProMoTed TBI program. Typically Offered Fall, Spring and Summer.

EDPB432  Education Promoted Business  ED  Undergraduate  1  
Participants will demonstrate their ability to connect lesson plans with curriculum objectives. Prerequisites: Admission to ProMoTed TBI program. Typically Offered Fall, Spring and Summer.

EDPB433  Education Promoted Business  ED  Undergraduate  1  
Participants will demonstrate their ability to connect lesson plans with curriculum objectives. Prerequisites: Admission to ProMoTed TBI program. Typically Offered Fall, Spring and Summer.
Focus will be placed upon refining delivery techniques, evaluation and assessment, and lesson plans. Prerequisites: Admission to ProMoTEd TBI. Typically Offered Fall, Spring and Summer.

Emphasis is placed on applying and refining theory into the practice of teaching through a 45-hour field experience. Prerequisites: EDPB 439. Typically Offered Fall, Spring and Winter.

An examination of the variety of ways career and technical educators work with adults in the course of their duties. Recognizing adult learning needs and participation patterns. Prerequisites: Admission to ProMoTEd TBI. Typically Offered Fall, Spring and Summer.

Activity will be on activities that combine growth and development physically as well as cognitively, socially and emotionally. Safety, equipment, skills, and rules or guidelines will be covered. Pre-Requisites: Physical Education Minor students only. Typically Offered Fall Only, Odd Years

A study of human motor development and the sequencing of motor learning, movement skills and teaching methods appropriate to the development stage. Pre-Requisites: PSYC 150 & Physical Education Minor students only. Typically Offered Spring Only, Odd Years

This course focuses on the main components of health-related fitness: cardiovascular endurance, muscular strength and endurance, flexibility, and body composition. Topics include health-related fitness, nutrition, stress management, injury prevention, and the goal setting process are covered to enhance the students' awareness, knowledge and ability to make healthy choices. Pre-Requisites: BIOL 109 or Instructor approval. Typically Offered Spring Only, Even Years
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<th>Course Code</th>
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<th>Prerequisites/Notes</th>
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<tr>
<td>EDPE329</td>
<td>Education Physical Education</td>
<td>ED</td>
<td>Undergraduate</td>
<td>3</td>
<td>Physical education teaching methods and strategies will be included with specific emphasis on designing, delivery of learning experiences and tasks, providing an appropriate learning environment, and assessment. Instructional content development, student motivation, and inclusion techniques, along with observation tools will be covered.</td>
<td>Pre-Requisites: EDPE 215, EDUC 289 or Instructor approval. Typically Offered Spring Only, Odd Year</td>
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<tr>
<td>EDPE338</td>
<td>Education Physical Education</td>
<td>ED</td>
<td>Undergraduate</td>
<td>3</td>
<td>Mechanical principles, concepts, and methods. The understanding of human movement. The quantitative and qualitative aspects of sports movement are explored as they relate to the musculoskeletal system, neuromuscular development, sport and fitness activities, mechanical concepts, and skill analysis techniques.</td>
<td>Pre-Requisites: BIOL 109 and Junior Status. Typically Offered Spring Only</td>
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<tr>
<td>EDPE426</td>
<td>Education Physical Education</td>
<td>ED</td>
<td>Undergraduate</td>
<td>3</td>
<td>Sport reflects and influences values and dynamics of contemporary culture. Explores issues of race, gender, socialization, economics, media, ethics, and other societal institutions in relation to sport and athletics; specific problems and possible solutions in sport.</td>
<td>Pre-Requisites: SOCY 121 or Instructor approval. Typically Offered Fall Only, Odd Year</td>
</tr>
<tr>
<td>EDPE436</td>
<td>Education Physical Education</td>
<td>ED</td>
<td>Undergraduate</td>
<td>3</td>
<td>This course explores communication, mental, and emotional strategies that will have impact on exercise and performance in physical education and sport.</td>
<td>Pre-Requisites: PSYC 150 and EDPE 220. Typically Offered Fall Only, Even Year</td>
</tr>
<tr>
<td>EDPE499</td>
<td>Education Physical Education</td>
<td>ED</td>
<td>Undergraduate</td>
<td>3</td>
<td>Students, as part of the physical education capstone course will be introduced to technology applications for physical education classrooms, be introduced to professional organizations, learn how to network with colleagues and community program resources, develop a professional portfolio, and complete the required teacher emergency training under Michigan State Law.</td>
<td>Pre-Requisites: Senior status and Physical Education Minor students only. Typically Offered Fall Only, Even Year</td>
</tr>
<tr>
<td>EDPH503</td>
<td>Philanthropy</td>
<td>ED</td>
<td>Graduate</td>
<td>3</td>
<td>This course is an overview of philanthropy including: a historic view of philanthropy, definitions of philanthropy from a variety of perspectives, service-learning as a teaching method, civil society, core democratic values and founding documents of American democracy, altruism and its developmental stages, and the personal awareness of the impact of philanthropy on the students' lives. The objective is to introduce students to the significance of philanthropy in a civil society as well as in their personal lives.</td>
<td>Pre-Requisites: Graduate status. Typically Offered Summer Only</td>
</tr>
</tbody>
</table>
EDPHS16 Philanthropy Education ED Graduate 2
This course is a philosophical analysis of philanthropy from a variety of political, ethnic, cultural, religious, ethical, gender, and global perspectives. Recent research on philanthropy from cultures around the world will be reviewed. The students will analyze and synthesize different philosophical perspectives and develop a personal philanthropy philosophy. Pre-Requisites: EDPH 503 and EDPH 531. Typically Offered Summer Only

EDPHS21 Philanthropy Education ED Graduate 3
This course is an overview of the purpose, structure, size and scope of the nonprofit sector. Especially designed for educators, it will briefly cover the philosophical, social, religious and historic origins of the sector in American Democracy. The economic, social and political effects of the sector will be explored in depth. Typically offered Spring.

EDPHS24 Philanthropy Education ED Graduate 3
This course will examine the state of ‘civil society’ by looking at institutions of different societies and cultures used to address common concerns, how voluntary organizations are established and function, and whether the traditions of philanthropy can be imported and nurtured. It will consider whether ‘civil society’ is a universal feature of social life and always a desirable one, by scrutinizing the experience of other countries and cultures. Typically Offered Fall only.

EDPHS31 Philanthropy Education ED Graduate 3
This course explores the integrated concepts of philanthropy in the four major social studies taught at the K-12 level: economics, geography, history, and government. Attention will be given to original source documents and supporting literature. Specific attention will be paid to the social studies standards and benchmarks and how philanthropy education can enhance student understanding of these core concepts. The objective will be to acquaint students with key social studies concepts, standards and benchmarks as they relate to philanthropy education. Pre-Requisites: Graduate status. Typically Offered Summer Only

EDPHS33 Philanthropy Education ED Graduate 1
This is a highly interactive and creative course the objective of which is to engage the student in teaching philanthropy through the arts (visual, performance, music, dance). In addition, the students will analyze the inter-relationship of philanthropy in support of the arts and civil society. Pre-Requisites: EDPH 503 and EDPH 531. Typically Offered Summer Only

EDPH620 Philanthropy Education ED Graduate 3
This course will involve students in writing and piloting an original classroom unit that teaches philanthropy as an integrated component of the school curriculum. The unit will include at least one service-learning teaching experience and will be written to a standardized template that includes direct ties to the education standards and benchmarks. The objectives for students to use an exemplary integrated unit writing model to create practical philanthropy lessons. Prerequisites: EDPH 503 and EDPH 531. Typically Offered Summer Only
EDPH626 Philanthropy Education  
ED  Graduate  3  
This course introduces innovative national programs that support and are related to the mission of philanthropy education. The course will focus on the curriculum-based Learning to Give initiative. It will highlight the key concepts and teaching strategies involved in related efforts such as: teaching tolerance, character education, cooperative learning, life skills, partnership studies, multiple intelligences, and brain-based instruction. The students will gain knowledge and experience in intentionally integrating into their classroom and lessons instructional strategies for teaching a more civil society.  
Pre-Requisites: Graduate status. Typically Offered Summer Only

EDPH641 Philanthropy Education  
ED  Graduate  3  
This capstone course will result in a project, thesis or portfolio on furthering the understanding and the application of philanthropy education inschool. Students will identify a project area and research the topic during their Action Research course. This course will require the application of the knowledge acquired during the Masters Degree studies. Project, thesis or Portfolio requires prior approval of a proposal by the course instructor. 
Prerequisites: EDUC 660, EDPH 516, EDPH 533 and EDPH 620. Typically Offered Spring only.

EDUC101 Education  
ED Undergraduate  1  
Ethics, preparation for the MTTC, professional culture, conceptual framework, dispositions, pathways to certification, and the use of digital portfolios.  
Typically offered Spring and Fall.

EDUC251 Education  
ED Undergraduate  3  
A study of the biological, cognitive, social, and affective domains of human growth and development from the prenatal period through death, particularly as they apply to teaching and learning. Students are required to observe human behavior at different stages of development in a variety of cultural (field) settings. Required for state teacher certification.  
Pre-Requisites: EDUC 101. Typically Offered Fall, Spring, Summer

EDUC289 Education  
ED Undergraduate  3  
The psychological principles underlying teaching and learning: learning theory, motivation, the exceptional learner, gender and cultural differences, individual differences, the development of self-concept, and classroom management strategies. Students are required to do field experiences in appropriate classroom settings. 
Prerequisites: EDUC 101. Meets General Education requirements for Collaboration and Problem Solving. Typically Offered Fall, Spring, Summer

EDUC303 Education  
ED Undergraduate  3  
Structure, function, and purposes of schools, in society and how they are affected by various philosophies of education. Topics include financing education, traditional and contemporary philosophical views of education, the role of the school in society, the legal aspects of education, teachers’ professional groups, and American education and the future. Course work includes laboratory experiences in schools, (30 clock hours).  
Prerequisites: ENGL 250 and EDUC 101 both with a C grade or better. Typically Offered Fall, Spring, Summer
This course emphasizes the development of the professional teacher. Participants will explore planning instruction, write a unit online, mini lesson plans, student outcomes, and connect learning, teaching, and delivery styles with assessment techniques. Broad instructional strategies will be discussed for specific audiences. A 40-hour field experience in the schools is required.

Prerequisite: Junior Status. Typically offered Fall and Spring.

EDUC378 Education ED Undergraduate 2
Planning, preparing, and using selected instructional media for use in individual, small group, and large group presentations. Content will include: development and application exercises in media software and operation of conventional media hardware. Pre-Requisites: Department approval. Typically Offered Fall Only

EDUC391 Education ED Undergraduate 4 TO 8
Paid work experience in the student's Career/Technical teaching specialty (minimum of 18 and a maximum of 40 hours per week). Internship will be approved for 4 credits (250 hours per semester) or 8 credits (500 hours per semester) for a maximum of 8 credits. Pre-Requisites: Department approval. Typically Offered Summer

EDUC413 Education ED Undergraduate 4
This course will introduce pre-service teachers to strategies to accommodate the needs of exceptional and diverse learners in K-12 classrooms. Also included will be a brief historical perspective of the field of special education, particularly as it relates to K-12 education, including legislation and litigation, causes of disabilities, academic and social characteristics, basic assessment and intervention procedures, special education services/programming, the role of the family and community, and accommodating gifted and talented students. Prerequisites: Department Permission. Typically offered Fall and Spring

EDUC415 Education ED Undergraduate 3
Examines theories and research-based principles of reading instruction from emergent literacy to literacy acquisition within the framework of English Language Arts standards for Grades K-4. Includes investigations of family and socio-cultural influences on literacy acquisition, cognitive, child, and language development, balanced literacy, assessment/evaluation, and strategies for preventing reading failure. Develops strategies for organizing instruction within a literate/print-rich, literature-based environment, promoting basic conventions/rules for successful literacy acquisition, and designing instruction to meet all student's needs. Pre-Requisites: Teacher Education students only. Co-Requisites: EDUC 413. Typically Offered Fall, Spring, Summer

EDUC420 Education ED Undergraduate 3
EDUC421 Education ED Undergraduate 3

Moves from emergent literacy to mature reading by examining research-based principles and methodologies for engaging students in meaningful reading/literacy instruction within the framework of English Language Arts standards (Grades 3-8). Explores concepts that enhance literacy independence and provides investigations of variables that influence reading success. Examines links to the writing process and other content areas through the integration of English Language Arts into the other content areas through thematic units. Pre-Requisites: EDUC 420. Co-Requisites: EDUC 431, 432 and 433. Typically Offered Fall, Spring, Summer

EDUC431 Education ED Undergraduate 3

Examines current social studies content and instructional methodology that children engage in reading, writing, and inquiry as they study the six basic social studies themes consistent with state and national standards: history, geography, economics, civics, public discourse/decision making, and citizen involvement. Investigates those themes within an interdisciplinary context that promotes reading and writing. Includes organizing for instruction, unit development, standards-based, classroom assessment models, and integrating language arts into social studies. 40 hour field experience required in authentic setting. Pre-Requisites: EDUC 413 and EDUC 420. Co-Requisites: EDUC 421, 432 and 433. Meets General Education requirements for Collaboration. Typically Offered Fall, Spring

EDUC432 Education ED Undergraduate 3

This course provides students with a vision and understanding of elementary mathematics and science curricula which reflect state and national standards. Emphasis placed upon the Assessment-Instruction-Evaluation-Intervention Teaching Model, appropriate use of concrete models, manipulatives and applications of technology. Investigation of current best practices of instruction and effective assessment strategies emphasized. Students will explore mathematics strands as they integrate into the science topics of constructing, reflecting and using scientific knowledge. 40 hour field experience requirement in authentic setting. Pre-Requisites: EDUC 413 and EDUC 420. Co-Requisites: EDUC 421, EDUC 431 and EDUC 433. Meets General Education requirements for Collaboration. Typically Offered Fall, Spring

EDUC435 Education ED Undergraduate 3

The purpose of this course is to integrate health physical education components into regular classroom settings. Health/Physical education teaching methods and strategies will be included with specific emphasis on designing, delivery of learning experiences and tasks, providing an appropriate learning environment and assessment. Students are introduced to health concepts that should be a part of every class as well as health related components of physical fitness that can be integrated with academics. Prerequisite: Level II admission. Co-requisite: EDUC 431 and EDUC 432. Meets General Education requirements for Collaboration. Typically Offered Fall and Spring.
The focus of this course is to continue development of teaching and learning skills by writing and delivering mini lessons, practicing managing a field classroom, exploring evaluation techniques, writing objective test questions, rubrics, matching tests/exercises, and discussing standardized testing. Participants will apply their major and minor content specialties to delivery of lessons and specific audiences. An 80-hour field experience in the schools is required. Prerequisite: EDUC 338. Meets General Education requirements for Collaboration. Typically Offered Fall, Spring.

EDUC443
Education | ED | Undergraduate | 3
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Specific strategies for applying teaching methods and effective reading comprehension skills in content areas. Topics include the reading process, assessing and building knowledge of student background, readability, prereading strategies, levels of comprehension, vocabulary and concept development, reading and study guides/strategies. Pre-Requisites: Department approval. Typically Offered Fall, Spring, Summer

During this 15-week experience, non-certified lead teachers are under the direct supervision of an on-site supervisor/administrator, as well as a university supervisor, assume all duties of a regular lead classroom teacher. [Refer to State Board of Education Administrative Rules, Public Act 289 and/or FSU-SOE Policy] This experience is supported by regular participation in the online community where innovative instruction and assessment methods, as well as major topic of interest, subject area, classroom management, and pedagogy are discussed. Pre-Requisites: Teacher Education students only. Typically Offered Fall, Spring, Summer

EDUC492
Education | ED | Undergraduate | 1 TO 12
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Workshop/seminar courses in areas of special interest. Primarily practical experience under guidance of supervising teachers in planning for teaching, managing the classroom, directing the learning activities of pupils. Student teachers are given increasing responsibility for directing the activities of the classroom group to the point of assuming full responsibility. Student teaching in a postsecondary school. Co-Requisites: EDUC 499. Typically Offered Fall, Spring

EDUC494
Education | ED | Undergraduate | 2 TO 6
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Practical experience under guidance of supervising teachers in planning for teaching, managing the classroom, directing the learning activities of pupils. An experience at the post-secondary level during which an experienced teacher, under the direct supervision of an on-site and university supervisor assumes all duties of a regular classroom teacher. The experienced teacher will be required to maintain an instructional notebook. Co-Requisites: EDUC 499. Typically Offered Fall, Spring
During this 15-week experience, student teachers receive practical experience under the guidance of supervising teachers in planning for teaching, managing classrooms, and directing learning activities of pupils. Student teachers are given increasing responsibility for directing the activities of the classroom group to the point of assuming the responsibility of a co/lead teacher. Student teaching is assigned at the appropriate levels in elementary or secondary schools, and is supported by regular participation in the online community where innovative instruction and assessment methods, as well as topics of interest, subject area, classroom management, and pedagogy are discussed. Prerequisites: Department Approval. Meets General Education requirements for Problem Solving. Typically Offered Fall, Spring

Designed to promote the study of psychology as it applies to the teaching & learning process. Current theory and methodology involved in establishing an environment effective to learning is emphasized. This course is designed to assist secondary classroom teachers, who will examine their experiences and assumptions as learners and teachers, contrasting them with psychological, sociological and anthropological theories about learning. Classroom observations and interviews with secondary school personnel are required. NOTE: Not open to students with an undergraduate principles of teaching and learning course without advisor permission. Pre-Requisites: Education students only. Typically Offered Fall, Spring, Summer

Students are required to do a field experience in an appropriate public school classroom setting where they serve as a teacher aide, tutor and guest teacher. Students will observe, record, discuss and evaluate student-teacher relationships and behaviors as well as research and develop instructional materials. Pre-Requisites: EDUC 501 & EDUC 503. Co-Requisites: EDUC 504. Typically Offered Fall, Spring

Designed to afford students the opportunity to analyze educational foundations knowledge and to apply it to a critical study of educational practices and policies. Topics studied will include: teaching as a profession, the financing and governance of education, the education of exceptional children, educational reform, the sociology of education, and philosophy and history of education. Observations of secondary classrooms and interviews with secondary school personnel are required. NOTE: Not open to students with an undergraduate foundations of education course without advisor permission. Pre-Requisites: Education students only. Typically Offered Fall, Summer
EDUC504 Education ED Graduate 3
This course is designed to survey the latest theory and practice of curriculum development and provide practice in the process of curriculum design & construction. The student will develop instructional materials including performance objectives, daily and unit lesson plans, accompanying teacher materials, assessment techniques in a number of micro-teaching experiences. Not open to students with an undergraduate course in curriculum design without advisor permission. Pre-Requisites: EDUC 501 and EDUC 503. Co-Requisites: EDUC 502. Typically Offered Fall, Spring

EDUC508 Education ED Graduate 3
This course is designed to provide an introduction to the education of exceptional learners. Content will include an historical perspective including legislation and litigation, psychological, academics, social and cognitive characteristics associated with specific handicapping conditions, assessment and intervention procedures, special education services/programming and the role of family, community and current issues related to special education. Pre-Requisites: Graduate Status. Typically Offered Fall, Spring, Summer

EDUC513 Education ED Graduate 4
Theory with applied practice in planning instruction, classroom delivery techniques, and evaluating student performance. A clinical lab includes a 30-hour field experience in an educational environment as a non-teaching assistant. Simulated classroom activities will involve students in their first microteaching experience. Pre-Requisites: EDUC 501 and EDUC 503. Typically Offered Fall, Spring

EDUC514 Education ED Graduate 2
State and federal laws, rules, and regulations pertaining to cooperative education; cooperative role and responsibilities; agreements between schools and employers; the promotion of cooperative education programs; and the employment of students. Student/employer education plans are designed and developed. Pre-Requisites: Graduate Status. Typically Offered Spring, Summer

EDUC516 Education ED Graduate 3
Provides students with a framework for analyzing educational policies and practices in school and non-school settings. The framework is rooted to a broad foundational perspective designed to assist students in understanding selected issues in education by exploring historical antecedents, philosophical and theoretical assumptions, and social and ideological factors that influence current educational policies and practices. The aim is to analyze the character of assumptions and the nature of implications inherent in educational proposals, policies & activities. Pre-Requisites: Graduate Status. Typically Offered Fall, Spring
EDUC518 Education ED Graduate 3

Students will explore individual and group differences in the context of various education and human service settings. The course focuses on sources of biological, psychological, and sociocultural differences, the development of an individual's cultural identity, and the nature of cross-cultural interactions. Students will connect issues of diversity to the culture of various education and human service settings, explore contextual factors related to professional practice, & develop strategies for teaching in diverse educational settings. Pre-Requisites: Graduate Status. Typically Offered Fall, Spring, Summer

EDUC520 Education ED Graduate 3

Examines theories and research-based principles of reading instruction from emergent literacy to literacy acquisition within the framework of English Language Arts standards for Grades K-4. Includes investigations of family and socio-cultural influences on literacy acquisition, cognitive, child and language development, balanced literacy, assessment/evaluation, and strategies for preventing reading failure. Develops strategies for organizing instruction within a literate/print-rich, literature-based environment, promoting basic conventions/rules for successful literacy acquisition, and designing instruction to meet the needs of all students. Pre-Requisites: EDUC 501, EDUC 503. Corequisite: EDUC 513. Typically Offered Fall, Spring, Summer

EDUC521 Education ED Graduate 3

Moves from emergent literacy to mature reading by examining research-based principles and methodologies for engaging students in meaningful reading/literacy instruction within the framework of English Language Arts standards (Grades 3-8). Explores concepts that enhance literacy independence and provides investigations of variables that influence reading success, strategic teaching and reading practices, materials, programs, and interventions. Examines links to the writing process and other content areas through the integration of English language Arts into the other content areas through thematic units. Pre-Requisites: Graduate Status and EDUC 520. Co-Requisites: EDUC 531, 532 and 533. Typically Offered Fall, Spring, Summer

EDUC531 Education ED Graduate 3

Examines current social studies content and instructional methodology that children engages in reading, writing, and inquiry as they study the six basic social studies themes consistent with state and national standards: history, geography, economics, civics, public discourse/decision making, and citizen involvement. Investigates those themes within an interdisciplinary context that promotes reading and writing. Includes organizing for instruction, unit development, standards-based, classroom assessment models and integrating language arts into social studies. Pre-Requisites: EDUC 513 and 520. Co-Requisites: EDUC 521, 532 and 533. Typically Offered Fall, Spring, Summer
EDUC532 Education ED Graduate 3
Provides the prospective teacher with a vision and understanding of elementary mathematics and science curricula which reflect state and national content standards. Emphasis will be placed upon the Assessment-Instruction-Evaluation-Intervention Teaching Model, appropriate use of concrete models and appropriate manipulatives and applications of technology. Investigation of current best practices of instruction and effective assessment strategies will be emphasized. Students will explore the mathematics strands as they integrate into the science topics of constructing, reflecting and using scientific knowledge. Pre-Requisites: EDUC 513 and 520. Co-Requisites: EDUC 521, 531, and 533. Typically Offered Fall, Spring, Summer

EDUC535 Education ED Graduate 3
The purpose of this course is to integrate health physical education components into regular classroom settings. Health/Physical education teaching methods and strategies will be included with specific emphasis on designing, delivery of learning experiences and tasks, providing an appropriate learning environment and assessment. Students will write a research paper detailing how health related components of physical fitness can be integrated with academics in their content area. Prerequisite: Level II admission. Co-requisite: EDUC 531 and EDUC 532. Typically Offered Fall and Spring.

EDUC540 Education ED Graduate 3
Designed to prepare secondary classroom teachers for the inclusion of media and technology in their lessons. Students will prepare media that are examples of both older, time-tested technology as well as those that are emerging primarily because of the advent of the personal computer. Topics include: media and instruction, visual principles, hardware for the classroom, non-projected media, projected visuals, classroom audio, classroom video, and integrating technology with teaching. Note: Not open to students with an undergraduate educational technology course without advisor permission.
Pre-Requisites: Education students only. Typically Offered Fall, Spring, Summer

EDUC543 Education ED Graduate 3
Specific strategies for teaching effective reading comprehension skills in any content area. Topics include the reading process, assessing and building knowledge of student background, readability, prereading strategies, levels of comprehension, vocabulary and concept development, reading and study guides/strategies, and the application of reading methods in the content areas. Provides students an opportunity to implement strategies learned.
Pre-Requisites: Education students only. Typically Offered Fall, Spring, Summer

EDUC560 Education ED Graduate 3
This course allows those already proficient with the basics of using media and technology in the classroom to explore ideas currently beyond their capacity. Advanced Web page design, hypermedia development, scripting and/or programming, authoring, teaching with multimedia, managing online learning groups, and the internet.
Pre-Requisites: EDUC 540. Typically Offered On Demand
EDUC570 Education ED Graduate 3

Designed to provide the opportunity to implement advanced concepts of teaching and learning in the classroom. Emphasis will be placed on the assessment and evaluation of an effective learning environment; adapting instruction to meet individual needs and at-risk students; creating activities which motivate students and enable learners to retain information and transfer learning. The course will focus on the connection of learning theories to classroom practice as they relate to teaching and learning in a diverse classroom. Pre-Requisites: Graduate Status. Typically Offered On Demand

EDUC591 Education ED Graduate 1 TO 3

The M.ED. internship is a supervised work internship in an appropriate K-12 public school setting. The intern will be required to create a portfolio. One credit of EDUC 591 equals 66 clock hours. During the semester that you are enrolled for EDUC 591, a FSU internship supervisor will be assigned to visit your internship site and discuss your progress. Pre-Requisites: Graduate Status and department approval. Typically Offered Fall, Spring, Summer

EDUC593 Education ED Graduate 1 TO 8

An experience at the appropriate grade level during which an experienced, non-certified teacher, under the direct supervision of an on-site and university supervisor assumes all duties of a regular classroom teacher. The experienced teacher will be required to maintain an instructional notebook. Pre-Requisites: Graduate Status. Co-Requisites: EDUC 599. Typically Offered Fall, Spring

EDUC595 Education ED Graduate 1 TO 2

This course is designed to allow students to participate in courses, workshops, and seminars offered by universities, colleges, technical societies, professional organizations, or business and industry to improve their content/instructional skills in their subject area major or minor. The student will be required to write a scholarly paper on the workshop/seminars attended. One credit equals 15 clock hours. Consult your advisor regarding appropriateness of workshops/seminars. Pre-Requisites: Graduate Status and department approval. Typically Offered Fall, Spring, Summer

EDUC599 Education ED Graduate 12

During this 15-week experience, student teachers receive practical experience under the guidance of supervising teachers in planning for teaching, managing classrooms, and directing learning activities of pupils. Student teachers are given increasing responsibility for directing the activities of the classroom group to the point of assuming the responsibility of a lead teacher. Student teaching is assigned at the appropriate levels in elementary or secondary public schools or post-secondary school settings, and is supported by regular participation in the online community where innovative instruction and assessment methods, as well as major topics of interest, subject area, classroom management, and pedagogy are discussed. Prerequisites: Department Approval. Typically Offered Fall, Spring
EDUC610  Education  ED  Graduate  2
A study of public and private policy and programs in the United States and selected foreign countries, such as ARA, MOTA, and JTPA designed to provide training and employment to citizens as a means of alleviating unemployment and creating additional state and federal revenue and reducing costs of public maintenance of the unemployed. Pre-Requisites: Graduate Status. Typically Offered Fall, Spring

EDUC620  Education  ED  Graduate  3
Assists the student in developing and evaluating new and innovative curriculum processes for middle and high school settings. The course will concentrate on aligning curriculum content to national regional, state and local standards and building teamwork for curriculum integration. In addition, it will increase the student’s ability to use technology as a curriculum tool. Pre-Requisites: Graduate status. Typically Offered Fall, Spring, Summer

EDUC630  Education  ED  Graduate  3
The course will use fundamental legal principles found in federal and state law, the constitutions of the United States and Michigan, case law and regulations to inform and prepare the student to apply the law to school administration. These topics will be explored through the domains of leadership, management, risk management, and futuring. Outcomes include an analysis of current school handbooks in relation to these concepts. Pre-Requisites: Graduate Status. Typically Offered Fall, Summer

EDUC663  Education  ED  Graduate  4
This course will provide students with a comprehensive overview of the information and processes used to make data driven decisions in an educational environment. This will include a survey of standard research approaches, data acquisition methods, interpretation of data and application of results. This course is the prerequisite to the Capstone course in all Masters of Education programs. Prerequisites: Graduate status, Instructor permission.

EDUC681  Education  ED  Graduate  3
A capstone designed by graduate students in SOE with assistance of instructor and Faculty Capstone committee. A thesis, project, reflective portfolio, or comprehensive examination will demonstrate the synthesis of knowledge acquired in all master’s degree courses with focus on the student’s career endeavors. All capstone activities must be pre-approved and the application filed appropriately along with three-chapter proposal; students will present their completed capstone to a Faculty Capstone Committee. Prerequisites: EDUC 663 and graduate standing. Typically offered Fall, Spring, Summer. Graduate level workshop/seminar courses in areas of special interest. Primarily teacher/trainer in-service and professional development. Pre-Requisites: Graduate Status. Typically Offered Fall, Spring, Summer
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Program</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>EEET110</td>
<td>Electrical Electronics</td>
<td>3</td>
<td>TE</td>
<td>An introduction to basic drafting, graphing, and diagramming techniques, as well as personal computer hardware, firmware, and software, as those topics relate to the electronics technology field. An objective of this course is to provide the student with some prerequisite tools and techniques to be used in other electronic courses for lab and project reports, and testing and homework responses. Pre-Requisites: Industrial Electronics students only. Typically Offered Fall Only</td>
</tr>
<tr>
<td>EEET111</td>
<td>Electrical Electronics</td>
<td>1</td>
<td>TE</td>
<td>Mobile Robots explores modern robots through design, construction, and performance test. The course will also look at the broader aspect of different engineering disciplines working together in the robotic field. All students are welcome. Typically Offered Fall Only</td>
</tr>
<tr>
<td>EEET114</td>
<td>Electrical Electronics</td>
<td>4</td>
<td>TE</td>
<td>An introduction to the basic principles of electric circuits including voltage, current, power, resistance, series, parallel and combination circuit analysis. The course approaches these topics from a systems viewpoint which emphasizes the application of basic concepts to actual circuits and devices. Co-Requisites: MATH 115 or Department Approval. Typically Offered Spring and Fall.</td>
</tr>
<tr>
<td>EEET122</td>
<td>Electrical Electronics</td>
<td>4</td>
<td>TE</td>
<td>Study of basic digital concepts including logic gates, Boolean algebra, number systems, logic functions, flip-flops, counters, registers and memory devices. VHDL will be used with programmable logic devices to implement logic functions. Written and oral reports are an integral part of this course. Prerequisite: EEET 114 with a grade of C- or better. Typically Offered Spring Only</td>
</tr>
<tr>
<td>EEET124</td>
<td>Electrical Electronics</td>
<td>4</td>
<td>TE</td>
<td>A continuation of Electric Circuits 1. This course examines capacitance, inductance, RC circuits, RL circuits, transformer theory and applications, AC signals and waveforms, oscilloscopes, power supplies and higher level devices. The course approaches these topics from a systems viewpoint which emphasizes the application of basic concepts to actual circuits and devices. Prerequisites: EEET 114 minimum grade C- and MATH 115 or a minimum score of 24 on ACT Math or 580 on SAT16 Math or 560 on old SAT Math. Typically Offered Spring and Fall</td>
</tr>
<tr>
<td>EEET201</td>
<td>Electrical Electronics</td>
<td>3</td>
<td>TE</td>
<td>An introductory course covering the principles of electricity as applied to DC and AC circuits and operation of common electrical devices and apparatus. Topics are presented in lecture and practiced in hands-on lab activities. Basic measurements of current, voltage, and power are presented. Course introduces magnetism, inductance, capacitance, generators, 3-phase power, power flow, power factor, transformers, motors and power supplies. Pre-Requisites: MATH 116 or MATH 120 or MATH 126 or MATH 130 or MATH 216 or MATH 220 or ACT MATH score 24 or higher. Typically Offered Fall, Spring</td>
</tr>
<tr>
<td>Course Code</td>
<td>Course Title</td>
<td>Degree</td>
<td>Credits</td>
<td>Prerequisites/Co-Requisites</td>
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<tr>
<td>EEET210</td>
<td>Electrical Electronics</td>
<td>Eng Tec</td>
<td>Undergraduate 3</td>
<td>Pre-Requisites: EEET 124 minimum grade of C-; Co-Requisites: EEET 212 And EEET 216</td>
</tr>
<tr>
<td>EEET211</td>
<td>Electrical Electronics</td>
<td>Eng Tec</td>
<td>Undergraduate 3</td>
<td>Pre-Requisites: EEET 124 minimum grade of C-</td>
</tr>
<tr>
<td>EEET212</td>
<td>Electrical Electronics</td>
<td>Eng Tec</td>
<td>Undergraduate 4</td>
<td>Pre-Requisites: EEET 122 minimum grade of C-</td>
</tr>
<tr>
<td>EEET214</td>
<td>Electrical Electronics</td>
<td>Eng Tec</td>
<td>Undergraduate 3</td>
<td>Pre-Requisites: EEET 124 with a grade of C- or better and MATH 126 or MATH 216</td>
</tr>
<tr>
<td>EEET216</td>
<td>Electrical Electronics</td>
<td>Eng Tec</td>
<td>Undergraduate 3</td>
<td>Pre-Requisites: EEET 124 with minimum grade of C-</td>
</tr>
<tr>
<td>EEET221</td>
<td>Electrical Electronics</td>
<td>Eng Tec</td>
<td>Undergraduate 3</td>
<td>Pre-Requisites: EEET 210 minimum grade of C-, EEET 212 minimum grade of C- and EEET 216 minimum grade of C-; Co-Requisite: EEET 226</td>
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<td>EEET222</td>
<td>Electrical Electronics</td>
<td>Eng Tec</td>
<td>Undergraduate 4</td>
<td>Pre-Requisites: EEET 212 minimum grade of C-</td>
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<td>EEET224</td>
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<td>EEET226</td>
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<td>EEET301</td>
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<td>EEET313</td>
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<td>EEET323</td>
<td>Electrical Electronics Eng Tec</td>
<td>Undergraduate</td>
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</table>

**EEET224 Electrical Electronics**

Introduces automation; review of magnetics; DC motors, AC induction motors, three-phase, transformers; programmable logic controllers, input sensors, ladder logic, wire diagrams, and electric heat controls. Pre-Requisites: EEET 124 with a grade of C- or better. Typically Offered Spring Only

**EEET226 Electrical Electronics**

The course is a continuation of EEET 216. Study will include multi-transistor circuits, JFET's, MOSFET's and classes of amplifiers. Differential amplifiers and op-amps will be studied. Pre-Requisites: EEET 216 with minimum grade of C- and MATH 130 with minimum grade of C-. Typically offered in Spring semester.

**EEET301 Electrical Electronics**

A second course that builds on principles taught in EEET 201 and applies them to industrial automation systems. Sensor and actuator control elements are presented. Ladder diagrams and fluid power symbology emphasized. Solenoids, starters, timers, counters, relays, contactors, heaters, motors, 3-phase power, PLC's, other I/O devices are discussed and applied to manufacturing applications. Safety standards, and other system integration issues are presented. Pre-Requisites: EEET 201 minimum grade of C-. Typically Offered Fall, Spring

**EEET313 Electrical Electronics**

Covers in-depth study of DC motors and generation, polyphase motors, single phase motors and synchronous motors; other topics covered are machine efficiency and heating, three-phase power and power factor, transformers, and variable frequency drives. Prerequisites EEET 224 minimum grade of C- or EEET 301 minimum grade of C-. Typically Offered Fall Only

**EEET321 Electrical Electronics**

Course builds on DC and AC theory. Covers derivative and integral relations for capacitive and inductive components; transient and steady state solutions with differential equations; initial and final conditions; first and second order circuits characterized by responses. Laplace Transforms as a tool for solving linear networks and determining stability of control systems. Use of transfer functions to describe input/output relations. Review of Bode Plots and the introduction of Fourier Analysis. Written and/or oral reports required. Pre-Requisites: EEET 124 with a grade of C- or better and MATH 230 with a grade of C- or better. Typically Offered Fall semester.

**EEET323 Electrical Electronics**

Advanced topics in PLC and process control. Includes an introduction to robotics, PIO control, the PC as a controller, PLC topics include I/O devices, timers, counters, arithmetic instructions, subroutines, sequencer instructions, PLC to PLC and PLC to host communications. Prerequisites EEET 224 minimum grade of C- or EEET 301 minimum grade of C-. Typically Offered Fall Only
EEET325 Electrical Electronics  
Eng Tec  
TE  
Undergraduate  
3  
An introduction to data acquisition (DAQ), control analysis, and presentation using the graphical programming language LabVIEW. Sensors, transducers and signal conditioning is introduced. LabVIEW may be used to: acquire data into a computer via GPIB, serial ports, and plug-in DAQ boards. LabVIEW is also used to provide process control, analysis of data (in both real time and post process) and present the associated information in an end user friendly format. Prerequisites: EEET 122 minimum grade of C- and EEET 124 minimum grade of C-. Typically offered Fall semester.

EEET357 Electrical Electronics  
Eng Tec  
TE  
Undergraduate  
3  
As a continuation of EEET-221, advanced concepts in electronics will be covered impacting energy conversions, hybrid drive and green energy applications. Emphasis will be placed on circuits in motor control, photovoltaic and battery charging technologies. This includes DC/DC converters (Buck, Boost, Flyback, Inductorless), AC inversion, H-Bridge applications and PWM circuits including class D amplifiers. Prerequisites: EEET 211 with a grade of C- or better and EEET 222 with a grade of C- or better. Typically offered Fall.

EEET393 Electrical Electronics  
Eng Tec  
TE  
Undergraduate  
4  
Industrial experience where students can apply their previously learned skills for the mutual benefit of the intern and the employer (400 hours minimum). Weekly activity reports are required during the internship, as well as a midterm and final formal report. Employers also submit a performance report on the intern. Students are required to complete a cover letter and resume’ prior to seeking the internship. Pre-Requisites: Department Approval. Typically Offered Summer Only

EEET411 Electrical Electronics  
Eng Tec  
TE  
Undergraduate  
3  
As a continuation of EEET 210, this course will focus on advanced modulation techniques, digital transmission and reception, high order switched capacitor filter analysis as well as antennas and transmission lines. CAD tools will be used for analysis of filter topologies and then realized in lab. Introduction o the Smith Chart for lossless and lossy transmission line analysis will be covered in theory and practice. Prerequisites: EEET 210 with a grade of C- or better. Co-requisite: EEET 321. Typically offered Fall, Spring.

EEET414 Electrical Electronics  
Eng Tec  
TE  
Undergraduate  
4  
Fundamentals of industrial Process Communications are presented. A foundation in transmission media and standard are reviewed. A heavy emphasis is given on Industrial control networks and applications. PLC to PLC, PLC to MMI, PLC to SCADA, PLC to Remote I/O, PLC to Motion Controllers, PLC to Sensors, PLC to Devices, and PLC to PC communications are emphasized, connected and tested. Pre-Requisites: EEET 323 minimum grade of C- Typically Offered Spring Only
EEET418  Electrical Electronics Eng Tec  TE  Undergraduate  2
Learn the principles of managing senior project, including project definition, project specs, Gantt chart preparation, cost analysis, documentation and presentation. Written and oral reports are an integral part of this course. Pre-Requisites: Senior status in Elect/Electronic Eng or Computer Network Sys. Meets General Education requirements for Collaboration and Problem Solving. Typically Offered Fall Only

EEET424  Electrical Electronics Eng Tec  TE  Undergraduate  4
Fundamentals of Industrial Motion control are presented. A foundation in Servo Systems and components are introduced. Basic Control Theory with S-Plane analysis is presented. A heavy emphasis is given to industrial applications where motion control is used in manufacturing operations. Also included is an introduction to industrial digital servo systems. Pre-Requisites: EEET 313 with a grade of C- or better and EEET 321 with a grade of C- or better. Typically Offered Spring Only

EEET428  Electrical Electronics Eng Tec  TE  Undergraduate  2
Actual construction phase of senior project. Project developed in project management course is completed. Primarily a lab class. Includes the construction, demonstration, and formal documentation of the project. Timely project status reports are required. Oral reports are an integral part of this course with formal oral report at conclusion of project. Pre-Requisites: EEET 418 minimum grade of C-. Meets General Education requirements for Collaboration and Problem Solving. Typically Offered Spring Only

ENGL074  English AS  Undergraduate  4
An introduction to college writing strategies and skills through guided practice and instruction in pre-writing through revision stages in composition. How to use writing-support systems, establish a writing portfolio, and develop analytic skills. Typically Offered Fall, Spring

ENGL150  English AS  Undergraduate  3
Organize and develop papers for diverse audiences and purposes; including how to discover and focus on a topic, develop ideas, gather support, and draft and revise papers effectively. Fundamental language skills and introduction to library research and argumentation. Pre-Requisites: ENGL 074 or a minimum score of 14 on ACT or a minimum score of 370 on pre 2016 SAT or 450 on SAT Evidence Based Reading and Writing. Meets General Education requirements for Written Communication. Typically Offered Fall, Spring, Summer

ENGL211  English AS  Undergraduate  3
English 211 is a basic course designed to prepare the student to write successfully on the job as an employee or a first-line supervisor. It includes basic forms of business and technological writing to assist the student in developing sound communication practices. This course meets General Education requirements: Communication Competence, and new Fall 2017 Written Communication. Pre-Requisites: ENGL 150 with a grade of C- or better. Typically Offered Fall, Spring
ENGL222 English AS Undergraduate 3
The study and practice of various techniques used in writing poetry and fiction. Students will read and critique examples of contemporary literature and produce a collection of original writings, including at least one exercise in both poetry and fiction. Other genres, such as drama or creative nonfiction, may be included at the discretion of the instructor. This course meets General Education requirements: Cultural Enrichment, and new Fall 2017 Culture. Pre-Requisites: ENGL 150 with a grade of C or better.

ENGL250 English AS Undergraduate 3
The second of a two course sequence. Focuses on research. Students will learn how to use the library resources to produce a longer documented paper, how to evaluate conflicting claims and evidence to write an extended argument, and how to write papers based on primary research. Stresses problem solving and reasoning skills, but also includes grammatical structure, diction, and style appropriate to professional writing situations. This course meets General Education requirements Communication Competence, and new Fall 2017 Written Communication. Pre-Requisites: ENGL 150 with a grade of C- or better. Typically Offered Fall, Spring, Summer

ENGL260 English AS Undergraduate 3
This course provides a framework for students to study texts in a variety of forms and genres. It prepares students to discuss, analyze, and write critically about texts, with an awareness of and appreciation for their contexts and theoretical bases, using the terminology, conventions, and scholarship of the discipline. Pre-requisite: ENGL 150. Co-requisite: ENGL 250. Meets General Education requirements for Collaboration and Problem Solving Typically offered: Spring

ENGL280 English AS Undergraduate 1
Students will be introduced to issues and concerns in the professional communication profession and the goals of the TPC/ITC program. Through group projects, the students will develop their teamwork, collaboration, and project management skills while working with, students at all levels. Each semester, students will complete a different semester project directed by a TPC/ITC program faculty member. Typically Offered Fall, Spring

ENGL291 English AS Undergraduate 4
Provides writing experience on commercial publication including community newspapers, as well as radio stations and public relations offices. Students are required to work 160 - 180 hours at the internship site. Typically Offered Summer Only

ENGL301 English AS Undergraduate 3
Linguistics will enable students to follow and contribute to public debates about language-related issues, observe and facilitate their own and their children’s language development, work more effectively with the structure of language, and appreciate the complex richness of their own language. Pre-Requisites: ENGL 250 Or 211 with a grade of C or better. Typically Offered On Demand
ENGL302  English  AS  Undergraduate  3
- Designed to strengthen knowledge of Edited American English grammar for the purpose of developing a range of writing strategies. Students will study grammar in terms of form and function in order to generate rhetorically effective grammar strategies. Prerequisite: ENGL 150 with C or higher.
- Typically offered Spring.

ENGL311  English  AS  Undergraduate  3
- An advanced course designed to train the student as a technical communicator. The student is taught to present technical concepts, facts, data analysis and evaluation to both a scientific or technical audience. Included are skills in editing, organization, and development of technical articles for publication, abstracting, proposals, memorandum reports, project/progress reports, technical descriptions, professional and technical letters, and the protocols of formal research reporting. Pre-Requisites: ENGL 211 or ENGL 250 with a grade of C or better. Meets General Education requirements for Written Communication. Typically Offered Fall, Spring, Summer

ENGL321  English  AS  Undergraduate  3
- Builds on rhetorical and stylistic skills/techniques; prepares for successful writing experiences in the professional world and helps develop the thinking and organizing skills needed for effective written expression. Some professional emphasis sections of the course are regularly set aside for students in health-related fields, social work, and product design. These sections are designated by program in the semester roster of courses and carry an "enrollment by permit only" requirement. Meets General Education requirements for Written Communication. Pre-Requisites: ENGL 211 or 250 with a grade of C or better. Typically Offered Fall, Spring, Summer

ENGL323  English  AS  Undergraduate  3
- Proposal writing background and training in applying for sponsored project funds. Skills and techniques needed for organizing and writing a full-scale, formal proposal, the process of writing contract proposals submitted in response to specific bid solicitation, writing in connection with preliminary proposal planning, writing a letter proposal, the history of grants and grant-making, philosophies and strategies in project idea development, and methods for finding funding sources. Meets General Education requirements for Written Communication. Pre-Requisites: ENGL 250 or 211 with a grade of C or better. Typically Offered Fall, Spring

ENGL325  English  AS  Undergraduate  3
- Continues skills begun in ENGLISH 2, with focus on typical types of problems and documents used in Business. Emphasis on audience and rhetorical analysis, working with multiple documents, primary and secondary research skills, and completion of a major analytical report. Meets General Education requirements for Written Communication. Pre-Requisites: ENGL 250 or 211 with a grade of C or better. Typically Offered Fall, Spring, Summer
ENGL380 English AS Undergraduate 3

The problems of editing and revising written texts through the study of style. Students begin studying contemporary editing practices. They examine the changes in correctness, eloquence, and theories of rhetoric from classical to modern theorists. Using samples of written (English) texts, students examine their assumptions of "good style" and consider the importance of rhetorical concerns: appropriateness, audience awareness, and stylistic choices. Pre-Requisites: ENGL 311 or ENGL 321 or ENGL 323 or ENGL 325 with a grade of C+ or better. Typically Offered Spring.

ENGL382 English AS Undergraduate 3

This course offers critical reading practices by interrogating the function of genres, and how they function/interact with the history of literacy. Through rhetorical genre and literacy studies, students examine and respond to how genres evolve and function in various social systems that account for ideology, purpose, and power. Pre-Requisites: ENGL 250 with a grade of C or better. Typically Offered Fall, Spring.

ENGL411 English AS Undergraduate 4

An advanced course required of TPC and JTC majors and minors to develop professional viewpoints of technical communication: writer, editor, writing/publication production manager, and member of project work teams. Class assignments apply macro- and micro-editing principles, project management, document production, visual rhetoric, and rhetorical analysis. Pre-Requisites: ENGL 311 or ENGL 321 or ENGL 323 or ENGL 325 with a grade of C+ or better. Meets General Education Requirements for Collaboration and Problem Solving. Typically Offered Fall Only.

ENGL413 English AS Undergraduate 3

Present and future teachers will examine the issues and conflicts surrounding the implementation of literacy programs. In addition to defining traditional literacy, the course will explore the contemporary literacy debate at the classroom, school system and community levels. Students will be evaluated on a number of projects, including portfolios, article critiques, and a research project. Pre-Requisites: ENGL 321 with a grade of C or better. Typically Offered On Demand.

ENGL415 English AS Undergraduate 3

Designed for majors in English education and BA English/composition as a program capstone. This course examines composition theories and requires a professional development component and portfolio. Pre-Requisites: ENGL 321 or department approval. Typically Offered Fall.

ENGL416 English AS Undergraduate 3

This course will focus on critical approaches to textual production and consumption. Students will apply rhetorical and literary theory to analyze historical, cultural and technological influences on the creation and reception of texts. Meets General Education requirements for Collaboration and Problem Solving. Co-requisite: ENGL 321. Typically offered: Fall, Spring.
Visual Rhetoric & Document Design examines the art and science of designing documents, websites, and other visual artifacts to communicate technical information effectively to various audiences. Primarily a tools- and project-oriented course that focuses on presenting information professionally, ENGL 417 will equip students with a robust set of skills that are increasingly in demand in professional communication settings. Pre-Requisites: ENGL 311 or ENGL 321 or ENGL 323 or ENGL 325 with a grade of C+ or better. Meets General Education requirements for Problem Solving and Collaboration. Typically Offered On Demand.

Preservice teachers study, discuss, demonstrate, and reflect on the underlying beliefs, principles, and best practices of effective English language arts teaching and student engagement. Aligning literacy theory and pedagogy, the course includes planning, conducting, assessing, and reflecting on teaching approaches that promote students’ growth as readers and writers. This course also provides opportunities for the development of, and participation in, professional life through conferences, memberships, readings, research, and scholarship. Prerequisite: Department Approval. Typically offered Spring.

Advanced Scientific Writing (ENGL 421) is a professional writing course designed specifically for students in the sciences. The primary focus will be on the formal preparation of a review of research. Other writing assignments may include: scientific book review; prospectus; analysis of trade vs. research articles; abstracts; empirical research study. Pre-Requisites: ENGL 250 with a grade of D- or better and Junior status. Typically Offered Fall, Spring.

An advanced course in the study and practice of various techniques used in writing poetry and fiction. Students will read and critique examples of contemporary literature and produce a collection of original writings in the genre of their choice. Other genres, such as drama or creative nonfiction, may be considered at the discretion of the instructor. Pre-Requisites: ENGL 222 with a grade of C or better.

The internship provides students with actual work experience in a technical communication setting. Since the internship is scheduled to be taken during the summer between the students’ junior and senior years, the exposure to an actual employment setting provides helpful insight into the technical communication career and knowledge of business practices. This experience helps reinforce concepts presented in classes taken during the senior year. A 4 credit internship requires 20 hours per week and an 8 credit internship requires 40 hours per week. Pre-Requisites: ENGL 311 and 321 with a grade of D- or better. Typically Offered on demand.

This course explores the opportunities available to liberal arts graduates. Students will engage in individual assessment and professional development. Pre-requisite: By Department Permission. Typically offered: On Demand.
ENGL499 English AS Undergraduate 4
This capstone course for the TPC/JTC program takes an in-depth look at the professional communication profession. The seminar emphasizes the artistic and humanistic elements of document design and expression of technical information. It examines the ethics of technical communication and looks at models of communication and looks at models of technical writing. Through the seminar students prepare portfolios that contain writing, layout, and design work they have done samples of the writing, layout, and design work they have done in the classes building toward their degree. Pre-Requisites: ENGL 311 or ENGL 321 or ENGL 323 or ENGL 325 with a grade of C+ or better. Meets General Education Requirements for Collaboration and Problem Solving. Typically Offered Spring Only

ENGL510 English AS Graduate 3
In the context of current theories of writing acquisition, this course will evaluate the available methods of writing assessment. Students will also learn how to design assessment activities, develop effective rating instruments, implement the assessment, and evaluate its effectiveness. Political and ideological influences on assessment will be examined. Pre-Requisites: Graduate status or instructor approval. Typically Offered Spring Only

ENGL582 English AS Graduate 3
The course will examine the history of the English language from its Indo-European roots to the present time. The course will also focus on structure within a comparative grammars framework; traditional grammar, structural grammar and transformational-generative grammar will be studied. This background in English history and structure will be particularly helpful to English Education graduate students and to teachers presently teaching English in high schools and junior colleges. Pre-Requisites: Graduate status. Typically Offered Spring, Summer

ENGP321 English Professional AS 1st Professional 3
Builds on rhetorical and stylistic skills/techniques; prepares for successful writing experiences in the professional world and helps develop the thinking and organizing skills needed for effective written expression. Some professional emphasis sections of the course are regularly set aside for students in health-related fields, social work, and product design. These sections are designated by program in the semester roster of courses and carry an “enrollment by permit only” requirement. Prerequisites: ENGL 250 or ENGL 211. Typically Offered Fall, Spring and Summer.

ENGP421 English Professional AS 1st Professional 3
Advanced Scientific Writing (ENGP 421) is a professional writing course designed specifically for students in the sciences. The primary focus will be on the formal preparation of a review of research. Other writing assignments may include: scientific book review; prospectus; analysis of trade vs. research articles; abstracts; empirical research study. Prerequisites: Professional Program. Typically Offered Fall and Spring.
ERLA501 Education Reading
Language Art ED Graduate 3
Examines the theoretical and research bases for understanding reading and writing development and how children become literate. Explores the nature of language and how social, cultural and environmental factors influence its development. Describes the stages of literacy development and how differences among learners influence their development. Provides an overview of current methodologies, research-based programs, and various models of assessment and instruction. Includes technology and classroom application components.
Pre-Requisites: Graduate Status. Typically Offered Fall, Spring.

ERLA511 Education Reading
Language Art ED Graduate 3
Examines theoretical & research bases for content literacy instruction in the framework of English Language Arts/other subject matter Content Standards. Explores interrelationship of reading & writing as to the development of conceptual learning/higher-order thinking in all content areas. Focuses on the role of the teacher and curriculum, working with students with special needs, promoting lifelong learning. Describes methodologies, assessment, and best practices promoting meaningful reading & writing in a variety of purposes/contexts. Includes technology/classroom application components.
Pre-Requisites: Graduate Status. Typically Offered Fall, Spring.

ERLA515 Education Reading
Language Art ED Graduate 3
Identifies national and international literacy leaders in history, as well as the roles literacy leaders currently perform at the local, state, and national levels. Examines the administrative/supervisory considerations related to planning, organizing, and implementing literacy programs. Provides experience in grant writing and conducting an action research project at the local level. Includes technology/school or community applications.
Pre-Requisites: Graduate Status. Typically offered Fall only.

ERLA516 Education Reading
Language Art ED Graduate 3
Explores current trends and issues in literacy within a historical overview of the American educational system and comparison of educational systems world-wide. Examines research related to differing philosophies and controversial issues in literacy and learning. Focuses on investigating local problems and issues in literacy and seeking viable solutions. Provides experience in researching a topic or issue and presenting the information in varying formats dependent upon the intended audience. Includes technology/school or community applications.
Pre-Requisites: Graduate Status. Typically offered Summer Only.
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<tr>
<th>Course Code</th>
<th>Title</th>
<th>Degree</th>
<th>Credits</th>
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<td>ERLA530</td>
<td>Education Reading Language Art</td>
<td>ED Graduate</td>
<td>3</td>
<td>Identifies current principles of assessment/evaluation and how they inform/support literacy instruction. Examines assessment/evaluation techniques/practices based on research in literacy and language development. Describes aligning/assessment/instruction in English Language Arts Standards and Benchmarks/school district curriculum. Focuses on selecting/creating formal/informal literacy assessment tools, administering/interpreting them, communicating results. Includes technology/classroom application components. Pre-Requisites: Graduate Status. Typically Offered Spring Only</td>
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<tr>
<td>ERLA533</td>
<td>Education Reading Language Art</td>
<td>ED Graduate</td>
<td>3</td>
<td>Examines nature/multiple causes of reading difficulties based on literacy research, language development, learning theories. Explores impact of social, cultural, emotional, physical, and environmental factors on students with reading difficulties. Identifies assessment principles/practices that inform and support literacy instruction. Focuses on methodologies, research-based programs, and best practices for prevention, intervention, and remediation of reading difficulties at all grade levels. Emphasizes creating partnerships with parents, families. Includes technology and classroom application components. Pre-Requisites: Graduate Status. Typically Offered Spring, Summer</td>
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<td>ERLA550</td>
<td>Education Reading Language Art</td>
<td>ED Graduate</td>
<td>3</td>
<td>Provides overview of research on how differences among learners influence literacy development. Explores influence of factors on that development, including language, culture, intellect. Examines theoretical/research bases for developmentally appropriate learning environments fostering literacy growth. Focuses on methodologies, research-based programs, best practices promoting literacy and language development; examines interrelationship of assessment/instruction. Describes creating inclusive learning communities that promote literacy growth, respect for all learners, and family and community involvement. Involves technology/classroom applications. Pre-Requisites: Graduate Status. Typically Offered Summer Only</td>
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<tr>
<td>ERLA591</td>
<td>Education Reading Language Art</td>
<td>ED Graduate</td>
<td>1 TO 3</td>
<td>Designed to allow students opportunity to engage in literacy, language arts and reading development, primarily in K-12 schools. This internship could encompass: a) Reading Recovery training; b) MLPP training; c) school district reading assessment programs. Designed to be separate from the normal teaching load in order to provide reading, literacy and language arts growth. Determination of appropriate internship placement and design will be made by the student and advisor. One credit equals 66 clock hours. Pre-Requisites: Department approval and graduate status. Typically Offered Fall, Spring, Summer</td>
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<td>Course Code</td>
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<td>Level Type</td>
<td>Units</td>
<td>Description</td>
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<td>ERLA595</td>
<td>Education Reading Language Art</td>
<td>Graduate</td>
<td>1 TO 2</td>
<td>Designed to allow students to participate in courses, workshops, and seminars offered by universities, colleges, technical societies, professional organizations, or business and industry to improve their Reading and Literacy teaching skills. The student will be required to write a scholarly paper on the workshops/seminars attended. One credit equals 15 clock hours. Prerequisit...</td>
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<tr>
<td>ERLA694</td>
<td>Education Reading Language Art</td>
<td>Graduate</td>
<td>1 TO 6</td>
<td>Graduate level workshop/seminar courses in areas of special interest in Reading, Literacy and Language Arts. Primarily for teacher/trainer in-service and professional development. Prerequisites: Graduate Status and department approval. Typically Offered Fall, Spring, Summer</td>
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<tr>
<td>ESLC090</td>
<td>English Second Language Comm</td>
<td>Undergraduate</td>
<td>4</td>
<td>Special Topics in ESLC- 000 Level. This course covers various topics taught by diverse faculty and may not be offered every semester. Typically Offered On Demand This beginning level speaking and listening course is designed for ESL learners whose verbal communication skills are not ready to start ESL level 1 speaking and listening course. This course helps the students understand basics verbal communication standards in a variety of contexts and situations. Prerequisites: Placement into the course based on the Intensive English Program placement test.</td>
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<td>ESLP010</td>
<td>English Second Language Prog</td>
<td>Undergraduate</td>
<td>3</td>
<td>This course is designed for the learners of English as a second language whose listening and speaking skills are in the high beginning to low intermediate level to improve oral proficiency skills. Prerequisites: Successful completion of the beginning level speaking and listening course or placement into the course based on the Intensive English Program Placement Test.</td>
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<tr>
<td>ESLP011</td>
<td>English Second Language Prog</td>
<td>Undergraduate</td>
<td>3</td>
<td>This course is designed for the learners of English as a second language whose listening and speaking skills are in the low intermediate to high intermediate level to improve their overall communications skills. Prerequisites: Successful completion of the lower level speaking and listening course or placement into the course based on the Intensive English Program placement test.</td>
</tr>
<tr>
<td>ESLP012</td>
<td>English Second Language Prog</td>
<td>Undergraduate</td>
<td>3</td>
<td>This course is designed for the learners of English as a second language whose listening and speaking skills are in the high intermediate to low advanced level to improve their overall communication skills. Prerequisites: Successful completion of the lower level speaking and listening course or placement into the course based on the Intensive English Program placement test.</td>
</tr>
<tr>
<td>ESLP013</td>
<td>English Second Language Prog</td>
<td>Undergraduate</td>
<td>3</td>
<td>This beginning level grammar course is designed for ESL learners whose knowledge of English grammar are not ready to start ESL level 1 grammar course. This course helps the students master basic rules of English sentences. Prerequisites: Placement into the course based on the Intensive English Program placement test.</td>
</tr>
<tr>
<td>ESLP020</td>
<td>English Second Language Prog</td>
<td>Undergraduate</td>
<td>3</td>
<td>This course is designed for the learners of English as a second language whose listening and speaking skills are in the high intermediate to low advanced level to improve their overall communication skills. Prerequisites: Successful completion of the lower level speaking and listening course or placement into the course based on the Intensive English Program placement test.</td>
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<tr>
<td>Course Code</td>
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<td>Credit Hours</td>
<td>Type</td>
<td>Description</td>
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| ESLP021    | English Second Language Prog CP Undergraduate 3 | This course is designed for the learners of English as a second language whose knowledge of English grammar is at the high beginning level to improve their overall understanding of English structures and expressions. Prerequisites:
Successful completion of beginning grammar course or placement into the course based on the Intensive English Program placement test. | Successful completion of beginning grammar course or placement into the course based on the Intensive English Program placement test. |
| ESLP022    | English Second Language Prog CP Undergraduate 3 | This course is designed for the learners of English as a second language whose knowledge of English grammar and expressions are in the intermediate level to improve their overall knowledge and application of English grammar so that their written and verbal communication skills become more effective and efficient. Prerequisites: Successful completion of the grammar level 1 course or placement into the course based on the Intensive English Program placement test. | Successful completion of the grammar level 1 course or placement into the course based on the Intensive English Program placement test. |
| ESLP023    | English Second Language Prog CP Undergraduate 3 | This course is designed for the learners of English as a second language whose knowledge of English grammar is in the high intermediate to low advanced level to improve their knowledge and application of English grammar and expressions so that they can communicate effectively and efficiently in both written and verbal communication. Prerequisites: Successful completion of the grammar level 2 course or placement into the course based on the Intensive English Program placement test. | Successful completion of the grammar level 2 course or placement into the course based on the Intensive English Program placement test. |
| ESLP030    | English Second Language Prog CP Undergraduate 3 | This beginning level reading course is designed for ESL learners whose vocabulary and reading skills of English are not sufficient to begin the ESL level 1 reading course. This course helps the students build essential vocabulary for everyday and college life, gain knowledge of phonics and spelling, explore English structure, and prepare to start reading academic materials. Prerequisites: Placement into the course based on the Intensive English Program placement test. | Placement into the course based on the Intensive English Program placement test. |
| ESLP031    | English Second Language Prog CP Undergraduate 3 | This course is designed for the learners of English as a second language whose reading skills range from a high beginning to low intermediate level to develop reading fluency and comprehension skills, expanding vocabulary and exploring English structures. Prerequisites: Successful completion of the Beginning Level reading course or placement into the course based on the Intensive English Program placement test. | Successful completion of the Beginning Level reading course or placement into the course based on the Intensive English Program placement test. |
| ESLP032    | English Second Language Prog CP Undergraduate 3 | This course is designed for the learners of English as a second language whose reading skills are in the low intermediate to high intermediate level to develop reading fluency and comprehension skills, expanding vocabulary and exploring English structures. Prerequisites: Successful completion of the level 1 reading course or placement into the course based on the Intensive English Program placement test. | Successful completion of the level 1 reading course or placement into the course based on the Intensive English Program placement test. |
This course is designed for the learners of English as a second language whose reading skills at a high intermediate to low advanced level to enhance vocabulary and reading strategies to improve reading comprehension and critical reading/thinking skills. Prerequisites: Successful completion of the level 2 reading course or placement into the course based on the Intensive English Program placement test.

ESLP040 English Second Language Prog CP Undergraduate 3

This beginning level writing course is designed for ESL learners whose writing skills of English are not sufficient to begin the ESL level 1 writing course. This course teaches students to write short coherent texts using simple sentence structures. Prerequisites: Placement into the course based on the Intensive English Program placement test.

ESLP041 English Second Language Prog CP Undergraduate 3

This course is designed for the learners of English as a second language whose writing skills are at the high beginning to low intermediate level to increase their overall writing skills. Prerequisites: Successful completion of the level 1 writing course or placement into the course based on the Intensive English Program placement test.

ESLP042 English Second Language Prog CP Undergraduate 3

This course is designed for the learners of English as a second language whose writing skills and knowledge of written expressions are at the low intermediate to high intermediate level to increase their overall writing skills. Prerequisites: Successful completion of the lower level writing course or placement into the course based on the Intensive English Program placement test.

ESLP043 English Second Language Prog CP Undergraduate 3

This course is designed for the learners of English as a second language whose writing skills and knowledge of written expressions are at the high intermediate to low advanced level to increase their overall writing skills. Prerequisites: Successful completion of the level 2 writing course or placement into the course based on the Intensive English Program placement test.

ESLP091 English Second Language Prog CP Undergraduate 2

This course is designed to provide supplemental conversation field experience to ESL students. Students will meet with native-speaking conversation partners and participate in on campus and community activities and events to improve conversation skills, enhance understanding of university and American culture, and integrate into the campus community. Prerequisite: Admission into the IEP Program.

ESLP092 English Second Language Prog CP Undergraduate 3

This practicum course is designed to provide supplemental service learning experience to ESL students. Students will participate in service learning projects coordinated by the course instructor to improve receptive and productive English language skills, enhance understanding of university and American culture, and integrate into the campus community. Prerequisite: Admission into the IEP Program and permission of program coordinator.
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<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
<th>Level</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>ESLP098</td>
<td>English Second Language Prog</td>
<td>3</td>
<td>Undergraduate</td>
<td>This course is designed to help English as a Second Language Learners in graduate programs develop research and academic writing skills that are relevant to the composing and writing stages of research papers, thesis, or a course related projects at the graduate level. Typically Offered Fall, Spring, Summer.</td>
</tr>
<tr>
<td>ESLP099</td>
<td>English Second Language Prog</td>
<td>3</td>
<td>Undergraduate</td>
<td>This course is designed to provide the field of experience for the advanced ESL students by applying their linguistic, academic, and cultural skills in an authentic classroom setting. Perquisites: Must have 475 or above on the ipt TOEFL or equivalent deter minded by the IEP Coordinator.</td>
</tr>
<tr>
<td>ESPN502</td>
<td>Education Special Needs</td>
<td>3</td>
<td>Graduate</td>
<td>This course is designed to develop the interpersonal and intrapersonal skills necessary to effectively communicate, consult and collaborate when serving individuals with special needs in the public schools. Pre-Requisites:Graduate Status. Typically Offered Fall, Spring, Summer</td>
</tr>
<tr>
<td>ESPN503</td>
<td>Education Special Needs</td>
<td>3</td>
<td>Graduate</td>
<td>This course will explore a variety of behavioral theories to provide a foundation for building effective strategies in the management of students with special needs in the classroom. Roles and responsibilities of teacher, parent, student and other school personnel will be explored. Pre-Requisites:Graduate Status. Typically Offered Fall, Spring, Summer</td>
</tr>
<tr>
<td>ESPN505</td>
<td>Education Special Needs</td>
<td>3</td>
<td>Graduate</td>
<td>This course is designed to give students the opportunity to review a variety of assessment tools used in identifying students with special needs and assessing progress of individual students. Discussion includes standardized tests, curriculum-based assessments, portfolio assessments, teacher made tests, and norm referenced tests. Students will have an opportunity to practice administration and interpretation of assessments and linking results to the curriculum and students individual education plan. Pre-Requisites:Graduate Status. Typically Offered Fall, Spring, Summer</td>
</tr>
<tr>
<td>ESPN510</td>
<td>Education Special Needs</td>
<td>3</td>
<td>Graduate</td>
<td>Review current research and policies related to the education of infants and young children with special needs. Topics include historical perspectives of early childhood special education, efficacy information, and the future of early childhood special education. Familiarize the student with research studies and classroom application. Pre-Requisites:Graduate Status. Typically Offered Fall, Spring, Summer</td>
</tr>
<tr>
<td>ESPN512</td>
<td>Education Special Needs</td>
<td>3</td>
<td>Graduate</td>
<td>This course is designed to increase the student's awareness of the many assessment tools used in the evaluation of young children with special needs. Students will get hands on experience evaluating and interpreting test results for young children. Topics will include play-based assessment, curriculum-based assessment, standardized assessment, and functional assessment. The importance of parent input will also be covered. Pre-Requisites:Graduate Status. Typically Offered Fall, Spring, Summer</td>
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<tr>
<td>Course Code</td>
<td>Course Title</td>
<td>Department</td>
<td>Credit</td>
<td>Description</td>
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<tr>
<td>ESPN514</td>
<td>Education Special Needs</td>
<td>ED</td>
<td>3</td>
<td>Provides theory and practices regarding understanding and helping parents deal with their young child with special needs. Issues regarding family coping, parent-professional partnerships and parent training are emphasized. Pre-Requisites: Graduate Status. Typically Offered Fall, Spring, Summer</td>
</tr>
<tr>
<td>ESPN515</td>
<td>Education Special Needs</td>
<td>ED</td>
<td>3</td>
<td>Provides skills in assessment-intervention-evaluation programming philosophy. Different aspects of intervention and their common elements are covered. A developmental focus with consideration of child's functional needs is emphasized. Pre-Requisites: Graduate Status. Typically Offered Fall, Spring, Summer</td>
</tr>
<tr>
<td>ESPN520</td>
<td>Education Special Needs</td>
<td>ED</td>
<td>3</td>
<td>This course is designed to familiarize the student with learning disabilities. Emphasis will be on the history of learning disabilities, understanding learning problems, identifying learning disorders, diagnosis and remediation of learning disorders. Pre-Requisites: Graduate Status. Typically Offered Fall, Spring, Summer</td>
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<tr>
<td>ESPN522</td>
<td>Education Special Needs</td>
<td>ED</td>
<td>3</td>
<td>This course is designed to give students a more in-depth look at learning disabilities and remediation skills. Emphasis will be on developing strategies that will assist the future teacher in teaching students with learning disabilities. Skill development will be in ameliorating thinking, reading, writing, spelling, arithmetic, and other skill deficiencies. Pre-Requisites: Graduate Status. Typically Offered Fall, Spring, Summer</td>
</tr>
<tr>
<td>ESPN524</td>
<td>Education Special Needs</td>
<td>ED</td>
<td>3</td>
<td>This course will provide students with the knowledge of formal and informal assessments used to determine eligibility, interventions, and strategies for students with learning disabilities. Following the review of assessments, students will administer and interpret results to establish curricular goals. Students will also learn strategies to monitor progress and make the appropriate adjustments to instruction based on assessment results. Pre-requisite: Department approval. Typically offered: Fall, Spring</td>
</tr>
<tr>
<td>ESPN525</td>
<td>Education Special Needs</td>
<td>ED</td>
<td>3</td>
<td>This course is designed to familiarize the student with the basic requirements of the Individual Education Program for students with learning disabilities. Emphasis will be on linking assessment with goals and objectives, team meetings, and implementation. Pre-requisite: Department approval. Typically offered: Fall</td>
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<tr>
<td>ESPN528</td>
<td>Education Special Needs</td>
<td>ED</td>
<td>3</td>
<td>Students in this course will examine legislation and recommended practices related to person-centered transition planning for students with learning disabilities. Students will apply knowledge of learning disabilities (LD) to explore transition needs for students in the areas of post-school and adult life, including postsecondary education, employment, community participation, and independent living. Additionally, students will explore how students with disabilities have been viewed in society, gaining an understanding of state initiatives, community trends and resources, and professional organizations and networks, related to secondary transition. Typically offered: Fall, Spring</td>
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<tr>
<td>Course Code</td>
<td>Course Title</td>
<td>Credits</td>
<td>Prerequisites</td>
<td>Offered</td>
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<tr>
<td>ESPN530</td>
<td>Education Special Needs</td>
<td>3</td>
<td>Graduate Status</td>
<td>Fall, Spring, Summer</td>
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<tr>
<td>ESPN532</td>
<td>Education Special Needs</td>
<td>3</td>
<td>Graduate Status</td>
<td>Fall, Spring, Summer</td>
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<tr>
<td>ESPN534</td>
<td>Education Special Needs</td>
<td>3</td>
<td>Graduate Status</td>
<td>Fall, Spring, Summer</td>
</tr>
<tr>
<td>ESPN535</td>
<td>Education Special Needs</td>
<td>3</td>
<td>Graduate Status</td>
<td>Fall, Spring, Summer</td>
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<tr>
<td>ESPN538</td>
<td>Education Special Needs</td>
<td>3</td>
<td>Department approval</td>
<td>Fall, Spring</td>
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<tr>
<td>ESPN540</td>
<td>Education Special Needs</td>
<td>3</td>
<td>Graduate Status</td>
<td>Fall, Spring, Summer</td>
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This course is designed to give an in-depth look at mental impairments. Topics such as causes, rate of occurrence, affects on family, educational concerns, assessment, and pre-vocation and vocational needs will be covered. A look at current research on mental impairments will be reviewed and discussed.

This course will discuss the various methods used in teaching students with mild mental impairments. The student will develop a portfolio of a variety of modifications and strategies to be used with the mentally impaired student. A discussion of curriculum-based assessment tools as well as how they are linked to the students individual program plan will be included.

This course will introduce the student to the student with moderate to severe mental impairments. Topics will include assessment of academic strengths and weaknesses, the curriculum needs of the student, modifications and adaptations, transition issues, and pre-vocation and vocational concerns. The student will develop a portfolio of ideas to be used with moderate to severely impaired student.

This course is designed to familiarize the student with the basic requirements of the Individual Education Program for students with cognitive impairments. Emphasis will be on linking assessment with goals and objectives, team meetings, and implementation. Pre-requisite: Department approval. Typically offered: Fall, Spring

Students in this course will examine legislation and recommended practices related to person-centered transition planning for students with cognitive impairments. Students will apply knowledge of cognitive impairments (CI) to explore transition needs for students in the areas of post-school and adult life, including postsecondary education, employment, community participation, and independent living. Additionally, students will explore how students with disabilities have been viewed in society, gaining an understanding of state initiatives, community trends and resources, and professional organizations and networks, related to secondary transition. Typically offered: Fall, Spring

Students will gain an understanding of autism and it's many facets. Course content will include definitions of the different types of disabilities that fall under the Autistic category including Asperger's Syndrome, characteristics including language development, social interactions, behavioral issues, intellectual functioning, etc., causes, and prevalence. Pre-Requisites: Graduate Status. Typically Offered: Fall, Spring, Summer
ESP542 Education Special Needs  ED  Graduate  3
Students will gain skills in modifying curriculum for students with autism. Curriculum will include working with the child in developing personal adjustment skills and prevocational training. Students will also gain skills in interacting with their colleagues and assisting in providing a systematic curriculum for students with autism. Pre-Requisites: Graduate Status. Typically Offered: Fall, Spring, Summer.

ESP544 Education Special Needs  ED  Graduate  3
Students will understand the roles of language and communication including traits, characteristics, and interventions related to ASD, for example, pragmatic functions of communication and language such as the relationships of communication, language, behavior, and social skills: expressive and receptive language development and patterns; effects of medication on language; developing communication systems such as alternative and augmentative systems and assistive technology across environments. Prerequisites: Graduate Status. Typically offered in Summer.

ESP545 Education Special Needs  ED  Graduate  3
This course is designed to familiarize the student with the basic requirements of the Individual Education Program for students with autism spectrum disorders. Emphasis will be on linking assessment with goals and objectives, team meetings, and implementation. Pre-requisite: Department approval. Typically offered: Fall, Spring.

ESP546 Education Special Needs  ED  Graduate  3
Students will gain knowledge in home/school interactions. Students will gain knowledge of family and community support services for children with autism. Course discussion will include accessing information related to services already in the community and how to access services outside the community. Skills in interacting with parents and families to create a positive relationship between home and school will also be included. Pre-Requisites: Graduate Status. Typically Offered: Fall, Spring, Summer.

ESP548 Education Special Needs  ED  Graduate  3
Students in this course will examine legislation and recommended practices related to person-centered transition planning for students with autism spectrum disorder. Students will apply knowledge of autism spectrum disorder (ASD) to explore transition needs for students in the areas of post-school and adult life, including postsecondary education, employment, community participation, and independent living. Additionally, students will explore how students with disabilities have been viewed in society, gaining an understanding of state initiatives, community trends and resources, and professional organizations and networks, related to secondary transition. Pre-requisite: Department approval. Typically offered: Fall, Spring.
This course will provide the student with the foundations of working with students with emotional impairments. It will cover the identification, etiology, diagnosis, characteristics, classifications of emotional impairment, including psychiatric terminology and research-based models. Students will gain working knowledge of the various agencies involved with students with emotional impairment, the need to collaborate with parents and service providers and the need of integrating academic instruction and curriculum with affective educational strategies. Typically Offered Spring only.

This course will provide the student with the knowledge and expertise to integrate academic instruction and curriculum with affective educational strategies for students with emotional impairment. They will learn to adapt, accommodate and modify the general education curricula for students with emotional impairment. Typically Offered Fall only.

This course will provide students with knowledge and experience in the areas of assessment related to collecting indirect and direct data on academic, social and emotional functioning of students in order to develop reports and design, manage, and monitor interventions. The students will be involved in researching, developing, implementing and evaluating individualized behavior and classroom management strategies and plans. Typically Offered Fall odd year.

This course is designed to familiarize the student with the basic requirements of the Individual Education Program for students with emotional impairments. Emphasis will be on linking assessment with goals and objectives, team meetings, and implementation. Pre-requisite: Department approval. Typically offered: Fall, Spring

Students in this course will examine legislation and recommended practices related to person-centered transition planning for students with emotional impairments. Students will apply knowledge of emotional impairments (EI) to explore transition needs for students in the areas of post-school and adult life, including postsecondary education, employment, community participation, and independent living. Additionally, students will explore how students with disabilities have been viewed in society, gaining an understanding of state initiatives, community trends and resources, and professional organizations and networks, related to secondary transition. Typically offered: Fall, Spring
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<th>Course Code</th>
<th>Program</th>
<th>Level</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>ESPN592</td>
<td>Education Special Needs</td>
<td>ED Graduate</td>
<td>5</td>
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<tr>
<td>ETEC140</td>
<td>Engineering Technology</td>
<td>TE Undergraduate</td>
<td>3</td>
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<tr>
<td>FILM222</td>
<td>Film</td>
<td>AS Undergraduate</td>
<td>3</td>
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<tr>
<td>FILM253</td>
<td>Film</td>
<td>AS Undergraduate</td>
<td>3</td>
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<tr>
<td>FILM353</td>
<td>Film</td>
<td>AS Undergraduate</td>
<td>3</td>
</tr>
<tr>
<td>FILM360</td>
<td>Film</td>
<td>AS Undergraduate</td>
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</table>

**ESPN592 Education Special Needs**

The field experience is designed to give students the opportunity to work with students with special needs in both integrated as well as segregated settings. The student is required to complete a field experience working under the direct supervision of a special education teacher. The student will be supervised by a faculty member from the University. Students will engage in an online community with other students who are engaged in the field experience. Pre-requisite: Department approval. Typically offered: Fall, Spring, Summer.

**ETEC140 Engineering Technology**

Comprehensive introductory course which integrates technical drawing fundamentals, 2-D CAD, and 3-D Cad. Drawing fundamentals will focus on understanding and recognizing the standards which guide the creation of technical drawings, reading and interpreting technical drawings, and creating standards compliant sketches. The CAD portion of the course will focus on basic competence in turning sketched ideas into 2-D CAD drawings and basic 3D computer models that meet design intent and are ready for future analysis. Typically Offered Fall, Spring, Summer.

**FILM222 Film**

Introduction to the invention of film technology and its early forms (documentary, experimental, narrative) and to the analysis and interpretation of film as a visual art form. This course meets the General Education requirements Cultural Enrichment, and new Fall 2017 Culture. Prerequisites: ENGL 150. Typically Offered Fall Even Years.

**FILM253 Film**

Various genres common to American films: historical and social impacts on society as a result of the film industry; films not merely as entertainment, but as a serious art form. This course meets General Education requirements: Cultural Enrichment, and new Fall 2017 Culture. Typically Offered Fall, Spring, Summer.

**FILM353 Film**

Although film is a collaborative art, much is to be gained by studying film directors. The course will focus on from one to five directors per semester, varying by instructor. Styles, themes, and histories of the directors will be used to understand films. This course meets the General Education requirements: Cultural Enrichment and new Fall 2017 Culture. Prerequisites: ENGL 250. Typically offered Spring Odd Years.

**FILM360 Film**

Gender and Race in Film will provide a study of the social construction of gender and race through the study of women and race in film. An understanding of film, gender, and race will be developed through analysis of film and culture based on viewing films, reading critical articles and discussing ideas relevant to the understanding of film and the understanding of gender and race. This course meets General Education requirements: Race/Ethnicity/Gender Issues and Cultural Enrichment and new Fall 2017 Culture and U.S. Diversity. Prerequisites: ENGL 150. Typically Offered Fall, Spring Summer.
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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Degree</th>
<th>Level</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td>FINC201</td>
<td>Finance BU Undergraduate 3</td>
<td>Introduces the knowledge and techniques associated with major financial planning problems encountered by individuals and families such as savings and investments, insurance, taxes, budgeting and major purchases, retirement and estate planning. Typically Offered Fall, Spring</td>
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<tr>
<td>FINC280</td>
<td>Finance BU Undergraduate 3</td>
<td>Introduces commercial banking, including the roles of banking in the business world; emphasizes the history, philosophy, and practices of commercial banking; provides an overview of banking functions and operations such as bank lending, management of assets and liabilities and management of bank services. Pre-Requisites: Sophomore Status. Typically Offered Spring Only</td>
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<tr>
<td>FINC300</td>
<td>Finance BU Undergraduate 3</td>
<td>Provides the knowledge of the mathematical functions in finance to assist with both organizational and personal financial management; concentrates on techniques for dealing with simple interest, compound interest, discounted interest, ordinary annuities, annuities due, forborne annuities, deferred annuities, corporate bond, municipal bond and capital budgeting decisions. Pre-Requisites: MATH 114 or 115 with a grade of C- or better or MATH 116, 117, 118, 119, 120, 126, 130, 132, 135 or a minimum score of 24 on ACT or 560 on the pre 2016 SAT or 580 post 2016 SAT. Typically Offered Fall, Spring, Summer</td>
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<tr>
<td>FINC310</td>
<td>Finance BU Undergraduate 3</td>
<td>Financing sources for real estate, documents used, related laws, and financial impact on borrowers, lenders and the economy. Covers the real estate finance process from loan application to foreclosure. Pre-Requisites: MATH 114, 115, 116, 117, 118, 119, 120, 126, 130, 132, 135 or ACT 24 or pre 2016 SAT 560 or post 2016 SAT 580. Typically Offered Fall Only</td>
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<tr>
<td>FINC312</td>
<td>Finance BU Undergraduate 3</td>
<td>Introduces financial markets and institutions, including a brief review of the financial system of the United States; emphasizes institutions, instruments, and procedures for meeting the demands for funds by business (both short and long term), consumers, federal, state, and local governments; considers international finance. Pre-Requisites: ECON 202 Typically Offered Fall, Spring</td>
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<tr>
<td>FINC322</td>
<td>Finance BU Undergraduate 3</td>
<td>The environment, goals, and techniques of financial management; emphasizes both investment and financing decisions; incorporates control techniques including ratio analysis, budgeting, and forecasting; includes time value of money, bond and stock values, the use of operating and financial leverage, capital budgeting techniques, cost of capital, and basic information concerning international financial management. Meets General Education requirements for Collaboration and Problem Solving. Pre-Requisites: ACCT 202 with a C- or better. Typically Offered Fall, Spring, Summer</td>
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<td>Course Code</td>
<td>Course Title</td>
<td>Degree Type</td>
<td>Level</td>
<td>Credits</td>
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<tr>
<td>FINC323</td>
<td>Finance</td>
<td>BU</td>
<td>Undergraduate</td>
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<td>Continues FINC 322, with emphasis on risk and rates of return; bond and stock evaluation models; financial markets, institution and interest rates; risk analysis in capital budgeting; a more in depth look at the use of preferred stock, long term debt and leasing; the investment banking process; dividend policy; stock splits and re-purchases; mergers, divestitures, holding companies and LBO's. Pre-Requisites: FINC 322 and FINC 300. Typically Offered Spring Only.</td>
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<tr>
<td>FINC375</td>
<td>Finance</td>
<td>BU</td>
<td>Undergraduate</td>
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<td>This course provides the basic concepts and financial tools to evaluate financial decisions by analyzing financial statements in order to understand the linkages between management decisions and financial performance and the economic value of the business. Prerequisites: FINC 322. Typically offered Spring.</td>
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<td>FINC410</td>
<td>Finance</td>
<td>BU</td>
<td>Undergraduate</td>
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<td>An introduction to the field of stock and bond investing. Topics covered include: developing investment strategies, sources of investment information, common stock fundamental analysis and evaluation, technical analysis, bond investing, convertible securities, options, commodities, financial futures, mutual funds and monitoring an investment portfolio. Pre-Requisites: FINC 322. Typically Offered Fall Only.</td>
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<tr>
<td>FINC451</td>
<td>Finance</td>
<td>BU</td>
<td>Undergraduate</td>
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<td>Application of computer-based models in solving financial problems. Computer applications such as Microsoft Excel, Risk simulation program, and other applications will be used extensively in the course. Pre-Requisites: FINC 323 and ISYS 105. Typically Offered Fall Only.</td>
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<td>FINC452</td>
<td>Finance</td>
<td>BU</td>
<td>Undergraduate</td>
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<td>Focuses on modern portfolio theory, specifically on the Markowitz applied in the construction of a hypothetical portfolio. The use of instruments that are available in today's market, such as stock index futures and options is also studied. Pre-Requisites: FINC 451. Typically Offered Spring Only.</td>
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<td>FINC454</td>
<td>Finance</td>
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<td>Undergraduate</td>
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<td>Emphasizes the application of the principles of financial management to the solution of specific, realistic financial problems in such areas as forecasting funds requirements, working capital management, capital budgeting, long-term capital structure, leasing, and dividend policy; uses the case method. Pre-Requisites: FINC 323 or Instructor approval. Typically Offered Fall Only.</td>
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<tr>
<td>FINC465</td>
<td>Finance</td>
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<td>Adds depth to the student's background in financial management and investments; includes analyzing articles dealing with principal areas and issues in both of these fields of finance, emphasizes both practical and theoretical concepts. Pre-Requisites: FINC 323 Or Instructor approval. Typically Offered On Demand.</td>
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<tr>
<td>FINC475</td>
<td>Finance</td>
<td>BU</td>
<td>Undergraduate</td>
<td>3</td>
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</tbody>
</table>
FINC491 Finance BU Undergraduate 1 TO 6  
Work experience can be with employer organizations in business, industry, government and education. It is designed to be relevant to the student's academic pursuits, personal development, and professional preparation. Department head approval is required, and the internship must meet all College of Business requirements. Typically Offered Fall, Spring and Summer.

FINC616 Finance BU Graduate 3  
This course is designed to develop analytical skills with fundamental finance concepts for the financial management and decision making in various situations that a firm generally faces. All topics to be covered are addressed along a spectrum of risk and return, which are two most critical dimensions in any financial decision making. The main focus is on how financial decision making impacts the value and risk of the firm. The topics include interpreting financial statements information, financial forecasting, handling projected growth, financial markets, financing decisions, discounted cash flow approach, and investment assessments. In most cases, the course places you in the position of a financial manager in a firm. Prerequisites: ACCT 614 w/C or higher, BUS graduate student. Typically offered Fall, Spring, Summer.

FMAN321 Facility Management TE Undergraduate 3  
An introduction to basic methods, concepts and procedures of facility planning, programming, budgeting, project management, office productivity measurements, and operations management. Emphasis is placed on the facility management process, terminology and organizational development. Pre-Requisites: Enrollment in Facility Management or instructor permission. Typically Offered Fall Only

FMAN322 Facility Management TE Undergraduate 3  
Overview of facility project management concepts, phases and processes. Course topics include: development of project plans and teams, sequencing of activities, development of schedules, estimating of resources, coordinating and monitoring of facility projects, and review of project delivery methods and contracts. Prerequisites: FMAN 321 or permission. Meets General Education requirements for Collaboration. Typically Offered Fall, Spring.

FMAN331 Facility Management TE Undergraduate 3  
Course will enable students to understand the role of the facility manager in working with organizations and the users of space to identify facility related needs and present them to design professionals. Students will also learn the facility manager’s role in strategic planning, facilitating the organization's business plan, and working with outside consultants to develop facilities. Pre-Requisites: FMAN 321. Typically Offered Spring Only

FMAN393 Facility Management TE Undergraduate 4  
Ten weeks (400 total hours minimum) of supervised industry training experience in the facility management environment. Prerequisites: Completion of Junior year or instructor permission. Typically Offered Summer Only
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Type</th>
<th>Grade</th>
<th>Description</th>
<th>Prerequisites</th>
<th>Offered</th>
</tr>
</thead>
<tbody>
<tr>
<td>FMAN431</td>
<td>Facility Management</td>
<td>TE</td>
<td>Undergraduate</td>
<td>3</td>
<td>Introduction to space planning concepts; office layouts and furniture systems. Space development and furniture systems will be examined in terms of how they serve the business goals of organizations, including growth and contraction forecasting. The course will include an historical overview of office facilities; development of architectural programs; and teamwork exercises to expose students to multiple roles in the facility development team. Pre-Requisites: Enrollment in FMAN program. Meets General Education requirements for Collaboration. Typically Offered Fall Only</td>
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<tr>
<td>FMAN432</td>
<td>Facility Management</td>
<td>TE</td>
<td>Undergraduate</td>
<td>3</td>
<td>Overview of the elements of interior design and their application. Students apply the principles of interior design with regard to program requirements, context, environment, ergonomics, code and regulatory issues. The visual effects and physical attributes of various components of the interior space are studied. Pre-Requisites: FMAN 431. Typically Offered Spring Only</td>
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<tr>
<td>FMAN441</td>
<td>Facility Management</td>
<td>TE</td>
<td>Undergraduate</td>
<td>3</td>
<td>Introduction to principles and processes of real estate development. The public sector's role in approving and regulating development will be examined along with the roles and responsibilities of the development team. Leasing practice from the landlord and tenant perspective is examined. Areas of study also include; history of real estate development, market analysis, demographics, zoning, feasibility studies and finance, and development practices and trends. Pre-Requisites: FMAN 321 and BLAW 301. Typically Offered Fall only</td>
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<tr>
<td>FMAN451</td>
<td>Facility Management</td>
<td>TE</td>
<td>Undergraduate</td>
<td>3</td>
<td>A survey of the operating systems within facilities, and the methodologies used to keep those systems operational. Introduction to concepts such as life cycle costs, value engineering and building diagnostics will be introduced along with methods for estimating and planning staff and financial resources. Common problems associated with selected systems will also be discussed. Pre-Requisites: FMAN 321. Typically Offered Fall, Summer</td>
<td>Development of proposal and preliminary research for Capstone Thesis project. The course will include an introduction to and review of research methods.Prerequisites: Senior standing in FM program. Typically Offered Fall only.</td>
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<tr>
<td>FMAN489</td>
<td>Facility Management</td>
<td>TE</td>
<td>Undergraduate</td>
<td>1</td>
<td>Development and completion of individual or group thesis projects that reflect understanding of the core competencies of facility management: leadership and management; operation and maintenance; planning and project management; communication; finance; human and environmental factors; quality management and assessment; and real estate. Pre-Requisites: FMAN 489. Meets General Education requirements for Problem Solving. Typically Offered Spring Only</td>
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<tr>
<td>FMAN499</td>
<td>Facility Management</td>
<td>TE</td>
<td>Undergraduate</td>
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<td>Course Code</td>
<td>Course Title</td>
<td>Department</td>
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<tr>
<td>FREN100</td>
<td>French AS Undergraduate 3</td>
<td>French</td>
<td>Undergraduate</td>
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</tbody>
</table>
**FREN 100** stresses basic language survival skills for a potential business traveler-tourist in France. The course endeavors to establish a heightened cultural awareness of the international francophone community while enabling students to develop survival skills in the target language. This course meets General Education requirements: Cultural Enrichment and Global Consciousness and new Fall 2017 Culture and Global Diversity. Typically Offered Spring, Summer.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Department</th>
<th>Degree</th>
<th>Level</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>FREN101</td>
<td>French AS Undergraduate 4</td>
<td>French</td>
<td>Undergraduate</td>
<td>4</td>
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</tbody>
</table>
**FREN 101** stresses pronunciation, essentials and basics of French grammar, practice in conversation of everyday topics, and composition. This course meets General Education requirements: Global Consciousness, Cultural Enrichment and new Fall 2017 Global Diversity and Culture. Typically Offered Fall, Spring, Summer.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Department</th>
<th>Degree</th>
<th>Level</th>
<th>Credits</th>
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<tbody>
<tr>
<td>FREN102</td>
<td>French AS Undergraduate 4</td>
<td>French</td>
<td>Undergraduate</td>
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</tr>
</tbody>
</table>
**FREN 102** stresses pronunciation, essentials and basics of French grammar, practice in conversation of everyday topics, and composition. This course meets General Education requirements: Global Consciousness, Cultural Enrichment and new Fall 2017 Global Diversity and Culture. Typically Offered Spring Only.

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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Department</th>
<th>Degree</th>
<th>Level</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>FREN201</td>
<td>French AS Undergraduate 4</td>
<td>French</td>
<td>Undergraduate</td>
<td>4</td>
<td></td>
</tr>
</tbody>
</table>
**FREN 201** stresses pronunciation, essentials and basics of French grammar, practice in conversation of everyday topics, and composition. This course meets General Education requirements: Global Consciousness, Cultural Enrichment and new Fall 2017 Global Diversity and Culture. Typically Offered Fall Only.

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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Department</th>
<th>Degree</th>
<th>Level</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>FREN202</td>
<td>French AS Undergraduate 4</td>
<td>French</td>
<td>Undergraduate</td>
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</tbody>
</table>
**FREN 202** stresses pronunciation, essentials and basics of French grammar, practice in conversation of everyday topics, and composition. This course meets General Education requirements: Global Consciousness, Cultural Enrichment, new Fall 2017 Global Diversity, Culture. Typically Offered Spring Only.

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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Department</th>
<th>Degree</th>
<th>Level</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>FREN280</td>
<td>French AS Undergraduate 3</td>
<td>French</td>
<td>Undergraduate</td>
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</tbody>
</table>
**FREN 280** stresses exploration of Francophone literature in English translation focusing primarily on the colonial era in the African countries colonized by the French, French Acadian literature, and the plantation society of the French Antilles, from 1690 to 1848. This course meets General Education requirements: Cultural Enrichment and Global Consciousness, and new Fall 2017 Culture and Global Diversity. Typically Offered Fall, Spring.

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<tr>
<th>Course Code</th>
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</thead>
<tbody>
<tr>
<td>FREN301</td>
<td>French AS Undergraduate 4</td>
<td>French</td>
<td>Undergraduate</td>
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</tbody>
</table>
**FREN 301** stresses exploration of Francophone literature in English translation focusing primarily on the colonial era in the African countries colonized by the French, French Acadian literature, and the plantation society of the French Antilles, from 1690 to 1848. This course meets General Education requirements: Cultural Enrichment and Global Consciousness, and new Fall 2017 Culture and Global Diversity. Typically Offered Fall Only.
Continued advanced practice in composition, grammar, and conversation in French using media and readings related to the Francophone world. Introduction to major French authors. This course is taught in French. This course meets General Education requirements: Cultural Enrichment, and new Fall 2017 Culture. Pre-Requisites: FREN 301 with a grade of D- or better. Typically Offered Spring Only

This is a course in French culture and history. It is an overview of France’s impact and place of importance in the world, historically, and in the world of the 21st century. This course will strive to illuminate and stimulate the student in and about the greatness of the French and their legacy. This course meets General Education requirements: Cultural Enrichment and Global Consciousness and new Fall 2017 Culture and Global Diversity. Typically Offered Fall, Summer

Developing strategies for managing the changes that impact first-year students in order to enhance their opportunity for college success. Includes discussions on how to network and build relationships, manage time and money, use support services including academic advising, FSU program offerings and the library. Also deals with issues of diversity, wellness and personal responsibility and how to improve basic study habits. Typically Offered Fall, Spring, Summer

Developing strategies that promote student connections to the university community, their academic program, and their career paths. The course will include discussions on how to develop peer and professional networks, manage money, improve appreciation for diverse cultures and ethnic groups, and improve study skills. The course will also allow students to explore the career paths related to their academic program. Typically Offered Fall, Spring

Work experience of specialized training designed to enhance the student’s academic pursuits, personal development, and professional preparation. The work experience, number of weeks, and total hours worked must be approved by the BIS program coordinator. Normally, 3-6 semester credit hours will be granted for a 15-week cooperative education experience. FSUS 491 may be repeated for a maximum of 9 credit hours. FSUS 491 is graded as pass/fail. Pre-Requisites: Junior status and department approval. Typically Offered Fall, Spring, Summer

Capstone course for all students enrolled in the BIS degree program. Course includes an exploration of long-term career goals and objectives, construction of a personal professional portfolio, and an assessment of learning and development in the BIS program, in general education, and in the workplace. Pre-Requisites: Senior status. Typically Offered Fall, Spring, Summer
<table>
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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Degree</th>
<th>Credits</th>
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<tbody>
<tr>
<td>GCOM131</td>
<td>Graphic Communication</td>
<td>BU</td>
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<td></td>
<td>This course is designed to teach students how to build digital documents for various types of graphic media workflows. The student will learn the fundamentals of capturing and manipulating raster images, creating vector art, and producing digital documents in professional graphic media software applications. Typically offered: Fall.</td>
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<tr>
<td>GCOM132</td>
<td>Graphic Communication</td>
<td>BU</td>
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<td></td>
<td>This course is designed to introduce the students to Portable Document Files (PDF) and prepress workflow. The primary emphasis of the course is to teach students procedures for creating PDF documents for various digital media workflows. The student will also learn digital image capture and digital file preparation for prepress workflow. Typically offered Fall.</td>
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<td></td>
<td>Designed to develop theoretical and basic operation knowledge of offset presses, digital presses, wide-format inkjets, and bindery/finishing equipment. Extensive demonstration and operation of the equipment will take place to give practical experience in statistical data analysis, problem-solving, troubleshooting and color management. Includes care, maintenance, and performance capabilities of modern graphic media equipment. Typically Offered Fall.</td>
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<tr>
<td>GCOM161</td>
<td>Graphic Communication</td>
<td>BU</td>
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<td></td>
<td>Designed to develop theoretical and basic operation knowledge of offset presses, digital presses, wide-format inkjets, and bindery/finishing equipment. Extensive demonstration and operation of the equipment will take place to give practical experience in statistical data analysis, problem-solving, troubleshooting and color management. Includes care, maintenance, and performance capabilities of modern graphic media equipment. Typically Offered Fall.</td>
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<tr>
<td>GCOM232</td>
<td>Graphic Communication</td>
<td>BU</td>
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<td>This course is designed to develop the student’s knowledge/skill in creating digital color documents for various graphic workflows. Specific topics of applied knowledge include color correction, color management, image editing, color page layout applications, file optimization, scanning, digital photography, and digital color proofing. Typically Offered Fall.</td>
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<tr>
<td>GCOM243</td>
<td>Graphic Communication</td>
<td>BU</td>
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<td>This course is designed to introduce the student to imposition and Raster Image Processor (RIP) automation in a digital prepress environment. Specific topics of applied knowledge include job planning, digital imposition, digital trapping, Raster Image Processors, JDF automation, and computer-to-plate output. Typically Offered Spring.</td>
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<td>Designed to introduce the media production student to the basics of substrates including paper, vinyl, and various plastics, inks, and toners, and the various coating materials being used today. Students will learn basic the characteristics of these items and how they interact with one another, their production capabilities, limitations, and the afterlife in the environment. Typically offered Spring.</td>
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<tr>
<td>GCOM273</td>
<td>Graphic Communication</td>
<td>BU</td>
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<td>This course is designed to provide an introduction to the unique needs of packaging manufacturing. Students will learn about Die-lines, how to adapt artwork and production equipment to meet the needs of the customer. Various legal and ethical requirements will be discussed. Quality considerations and measures for color, burst and scuffing. Typically offered: Spring.</td>
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<tr>
<td>GCOM285</td>
<td>Graphic Communication</td>
<td>BU</td>
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<tr>
<td></td>
<td>This course is designed to introduce the students to Portable Document Files (PDF) and prepress workflow. The primary emphasis of the course is to teach students procedures for creating PDF documents for various digital media workflows. The student will also learn digital image capture and digital file preparation for prepress workflow. Typically offered Fall.</td>
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<tr>
<td></td>
<td>Designed to develop theoretical and basic operation knowledge of offset presses, digital presses, wide-format inkjets, and bindery/finishing equipment. Extensive demonstration and operation of the equipment will take place to give practical experience in statistical data analysis, problem-solving, troubleshooting and color management. Includes care, maintenance, and performance capabilities of modern graphic media equipment. Typically Offered Fall.</td>
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Ferris State University
GCOM299 Graphic Communication BU Undergraduate 3
This course is designed to develop the student’s knowledge in project management by placing the student in charge of graphic media projects from imaging to getting the product out the door. Students will work in groups and take on challenging projects that require; deadlines, project plans, equipment, and digital automation knowledge. Prerequisite: GCOM 161 w/C- or higher. Typically offered Spring.

GEOG100 Geography AS Undergraduate 3
Geography and the world—terms, concepts, basic place locations, map and atlas usage. Emphasized are the demographic, cultural, economic, political and physical aspects of the major regions of both the technologically developed and developing regions of the world: Europe, CIS, USA, Canada, Latin America, Africa, Asia and Pacific regions. This course meets General Education requirements: Social Awareness, Global Consciousness, Race/Ethnicity/Gender Issues, Social Foundations and new Fall 2017 Self and Society, Self and Society Foundation, Global Diversity and U.S. Diversity. Typically Offered Fall, Spring, Summer

GEOG111 Geography AS Undergraduate 4
Study of the natural habitat in which people have developed economic, cultural, and political structures. Emphasizes maps showing world patterns of climates, landforms, surface waters, soils and earth materials, and vegetation. This course meets General Education requirements: Scientific Understanding and new Fall 2017 Natural Sciences and Natural Sciences Lab. Typically Offered Fall, Spring

GEOG112 Geography AS Undergraduate 3
World and local cultural-social aspects of geography including: terms and concepts, demographic trends and problems, architectural features and patterns resulting from peoples use of the earth, historic pattern of rural to urban settlement changes and innovations for the future, evolution of transportation systems, language and religion patterns, popular culture, and people-food-environmental relationships. Individual case studies and descriptions of world culture groups. This course meets General Education requirements: Social Awareness, Global Consciousness; Race/Ethnicity/Gender Issues; Social Foundations and new Fall 2017 Global Diversity, U.S. Diversity and Self and Society Foundations. Typically Offered Fall, Spring

GEOG121 Geography AS Undergraduate 3
A study of the elements controlling the weather. Weather maps and basic forecasting devices, pollution, and climatic change are topics of discussion. Related human problems of world hunger and the human role in weather and climate alteration are treated. This course meets General Education requirements: Scientific Understanding and new Fall 2017 Natural Sciences. Typically Offered Spring Only
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Degree Level</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>GEOG201</td>
<td>Geography</td>
<td>Undergraduate</td>
<td>3</td>
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<td></td>
<td>Study of the differing natural environments of Anglo-America including the variety of rural and urban settlement patterns, problems, resources, and land uses one would expect to find when traveling in these nations. This course meets General Education requirements: Social Awareness and new Fall 2017 Self and Society. Typically Offered Fall, Spring, Summer</td>
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<tr>
<td>GEOG202</td>
<td>Geography</td>
<td>Undergraduate</td>
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<td></td>
<td>Study of and descriptions by text, slides and videos of the continental regions of the predominately non-western, technologically developing cultures and people of the world. Emphasized are aspects of ethnic groups, historic and contemporary economic contributions, political relationships, resources, potentials, transportation, demographic concerns, and physical attractiveness of regions. Atlas use and place locations skills are reinforced. Typically Offered On Demand</td>
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<tr>
<td>GEOG241</td>
<td>Geography</td>
<td>Undergraduate</td>
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<td>Maps are analyzed as tools for communication, social interaction, societal patterns, and individual perceptions of place. Map generalization and symbolization, continuous surface, data classification, and other cartographic theories are used to critically analyze expression of spatial phenomenon in the social sciences, the media, in politics, demographics, and history. Topographic and popular reference maps are studied using fundamental concepts of scale, projection, and measurement. Students use GIS to create thematic maps. This course meets General Education requirements: Social Awareness, and new Fall 2017 Self and Society. Typically Offered Spring Only, Even Ye</td>
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<tr>
<td>GEOG301</td>
<td>Geography</td>
<td>Undergraduate</td>
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<td></td>
<td>Description and study of the major freshwater region on earth which includes Ontario, Michigan, and parts of seven other U.S. states. Focus is on aspects of physical environment, resources, history, political organization, economy, trade and tourist attractions, demographic trends, interstate water management organizations, problems, publications and maps. This course meets General Education requirements: Social Awareness, Race/Ethnicity/Gender Issues. Recommended one prior Social Awareness course, and new Fall 2017 US Diversity and Self and Society. Pre-Requisites:One Social Awareness Foundations Course. Typically Offered Fall, Spring</td>
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<tr>
<td>GEOG311</td>
<td>Geography</td>
<td>Undergraduate</td>
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<td></td>
<td>Introduction to basic concepts underlying computerized Geographic Information Systems (GIS) applied to the various social sciences. An overview of GIS principles and practical social science applications in the analytic use of spatial information. Topics covered include: basic cartographic concepts, spatial databases, GIS analysis of social needs and services, spatial queries, spatial analysis, data capture and acquisition, and mapping with GIS. Introduce students to a major GIS software package. Pre-Requisites:Junior Status. Typically Offered Fall</td>
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</table>
GEOG372 Geography AS Undergraduate 3

This course provides the student with an understanding of the basic principles and themes of geography as they are applied to the study of health and disease in an international setting. Health-related topics are holistically examined within a variety of physical and cultural systems. Case studies from Latin America, Africa, Asia, Europe, and North America are discussed from the perspective of medical geography. This course meets General Education requirements: Social Awareness and Global Consciousness and new Fall 2017 Self and Society and Global Diversity. Typically Offered Spring Only

GEOG421 Geography AS Undergraduate 3

Study and description of the natural history and economic development of the earth’s unique natural wonders. Emphasis on understanding physical processes in creating the park features, problems of human use, and protection in the emerging global economy. Photography and maps used to aid appreciation. This course meets General Education requirements: Global Consciousness, Social Awareness and new Fall 2017 Global Diversity, and Self and Society. Recommended one prior Social Awareness course. Pre-Requisites: One Social Awareness Foundations Course. Typically Offered Fall Only

GEOG424 Geography AS Undergraduate 3

Studies which focus on the great variety of situations involving human use and abuse of the planet. Possible topics for study include: over population, hunger, agricultural innovations, the diversity of environmental degradation, natural hazards, human conflicts, energy concerns and possible solutions. This course meets General Education requirements: Social Awareness, Global Consciousness and new Fall 2017 Self and Society, and Global Diversity. Recommended one prior Social Awareness course. Pre-Requisites: One Social Awareness Foundations course. Typically Offered On Demand

GEOG450 Geography AS Undergraduate 3

This course focuses on both the theoretical and practical aspects of planning, implementing, and assessing the teaching of geography in the secondary schools. It will examine the role and function of geography in the schools and the school curriculum, critical, pedagogical approaches, current issues, book selection, planning objectives, intra- and inter-disciplinary relationships, classroom pedagogical activities, faculty collegiality, and assessment of both student learning and teacher performance. Co-Requisite: EDUC 430. Generally offered Spring semester.
GEOL121  Geology  AS  Undergraduate  4
Explores the processes that continuously interact to cycle rock and water through the earth system, thus shaping the surface of our dynamic earth. Plate tectonics is the thread that ties the study of earthquakes, volcanoes, and mountain belts; weathering, erosion, and deposition. The interrelation of humans and the earth system is a recurring theme. This course meets General Education requirements: Scientific Understanding, Lab and new Fall 2017 Natural Sciences and Natural Sciences Lab. Typically Offered On Demand

GEOL131  Geology  AS  Undergraduate  3
Examines the geologic factors important to making wise land-use decisions. Hazards of development in areas prone to earthquakes, volcanoes, flooding, mass-wasting, and shoreline erosion are considered, together with hazard reduction measures. The impact of development on resources such as soil and groundwater is also considered. This course meets General Education requirements: Scientific Understanding, Lab and new Fall 2017 Natural Sciences Lab. Pre-Requisites: Surveying Eng & Environmental Hlth students only. Typically Offered Fall Only

GEOL210  Geology  AS  Undergraduate  3
Geological problems are explored using field and laboratory methods. Typically Offered Summer Only

GEOL221  Geology  AS  Undergraduate  3
Students will be introduced to current understandings of the formation and evolution of the Earth system. We will explore how the geosphere, hydrosphere, atmosphere and biosphere have interacted and evolved since Earth formed. We will learn about significant events in Earth’s history and about how geologists are able to unravel a story that spans 4.6 billion years. A special emphasis will be placed on the geologic history of Michigan. This course meets General Education requirements: Scientific Understanding, and new Fall 2017 Natural Sciences. Prerequisites: PHSC 110 or GEOL 121 or GEOL 210 or GEOG 121 all course with a grade of D- or better. Typically Offered Spring.

GEOL321  Geology  AS  Undergraduate  4
Investigates various essential aspects of groundwater including geologic controls on its occurrence, storage, and movement; principles of flow through saturated and unsaturated media; sources and movement of pollutants; and groundwater remediation techniques. Field methods for conducting various groundwater investigations. This course meets General Education requirements: Scientific Understanding, Lab. Pre-Requisites: MATH 115 or a minimum score of 24 on ACT or 560 on pre 2016 SAT or 580 post 2016 SAT; & GEOL 121. Typically Offered Spring Only

GERM100  German  AS  Undergraduate  3
German 100 stresses basic language survival skills for a potential business associate-tourist in Germany. It is also cultural in its orientation, focusing on the Germans, Germany and German-speaking world. This course meets General Education requirements: Cultural Enrichment and Global Consciousness and new Fall 2017 Culture and Global Diversity. Typically Offered Spring Only
GERM101  German  AS  Undergraduate  4  Listening, speaking, reading and writing skills will be developed with emphasis on pronunciation, conversation and beginning grammar. This course meets General Education requirements: Global Consciousness; Cultural Enrichment and new Fall 2017 Global Diversity and Culture. Typically Offered Fall Only

GERM102  German  AS  Undergraduate  4  Continuation of GERM 101. Continuing development of listening, speaking, reading and writing skills with emphasis on pronunciation, conversation and grammar. This course meets General Education requirements: Global Consciousness; Cultural Enrichment and new Fall 2017 Global Diversity and Culture. Typically Offered Spring Only

GERM201  German  AS  Undergraduate  4  Speaking, writing and a thorough grammar review. Conversation and reading center on daily life in German-speaking countries. This course meets General Education requirements: Global Consciousness; Cultural Enrichment and new Fall 2017 Global Diversity and Culture. Typically Offered Fall Only

GERM202  German  AS  Undergraduate  4  Functioning effectively in all aspects of the German language, including composition. Readings from literature and contemporary publications. This course meets General Education requirements: Global Consciousness; Cultural Enrichment, new Fall 2017 Global Diversity; Culture. Typically Offered Spring Only

GERM331  German  AS  Undergraduate  3  Studies in the history and culture of contemporary Germany including customs, arts, politics, current events and everyday life through readings, discussion and film. Knowledge of German language not required. Typically Offered Spring, Summer

GERM341  German  AS  Undergraduate  3  Study of fiction, memoir, film and memorial representing the Nazi Holocaust of the European Jewry. The history of racial Antisemitism and rise of Nazism is introduced as a context for a textual analysis of the Holocaust representations. Students will examine literary and filmic form as productive to social awareness of the causes, events, and aftermath of the Holocaust. Texts and films will represent various generations and cultures in their attempt to represent the “Final Solution” and it’s continued impact on our lives. (Cause taught in English). This course meets General Education Requirements for: Global Consciousness, Cultural Enrichment, Race-Ethnicity-Gender and new Fall 2017 Culture, Global Diversity and US Diversity. Typically offered Fall, Spring, Summer.

GISC224  Geographic Information Science  TE  Undergraduate  3  This course deals with fundamental principles of Geographic Information Systems (GIS) and its applications including vector, raster data models, coordinate systems datums, map projections, aerial and satellite images, data entry and editing, digital spatial data, attribute data, data standards and quality, and spatial analysis. Students will work with vector GIS software packages. Typically offered Fall, Spring, Summer.
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<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Division</th>
<th>Degree</th>
<th>Credits</th>
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<td>GISC225</td>
<td>Geographic Information Science</td>
<td>TE</td>
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<tr>
<td>GISC239</td>
<td>Geographic Information Science</td>
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<td>GISC282</td>
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<td>GISC382</td>
<td>Geographic Information Science</td>
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<tr>
<td>GISC414</td>
<td>Geographic Information Science</td>
<td>TE</td>
<td>Undergraduate</td>
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</table>

**GISC225** - This course will explore fundamental principles of Geographic Information Systems (GIS) and its applications including hardware and software. Topics covered include: database concepts, algorithms to manage spatial data, cost benefit analysis, GIS project management, and digital data dissemination methods using internet technologies. Students will work with database management, raster and vector GIS applications software on various case studies including nature and environmental conservation, real estate administration, marketing and city management. Prerequisites: Basic computer skills. Typically Offered Spring.

**GISC239** - This course explores the fundamental principles of remote sensing as they relate to engineering and environmental problems. Topics covered include energy interactions, reflectance, scanning systems, satellite sensors, digital image process, and image classification. Students will work with image processing software. Typically Offered Spring.

**GISC282** - Continuation of GISC 224 which describes spatial data collection techniques, and land information systems. Spatial data collection techniques such as land surveying, Global Positioning System, photogrammetric mapping, remote sensing, Lidar, and mobile mapping will be studied. Geodetic and Cartographic data from Federal Government will be explored as well as mapping procedures and accuracy standards. Principles of the cadastre system will be taught including the public land survey system, property descriptions, and boundary surveys. Prerequisites: GISC 224 or GISC 225 with a C- or better. Typically Offered Summer only.

**GISC382** - Key topics include the point process and network analysis, and the advanced surface operations (interpolation, line of sight, volume calculation, drainage, contour line mapping, and 3D visualization). Students will perform an independent research on one GIS specialty application (e.g., homeland security and criminal justice, transportation, health care, natural resources, environment and nature protection, city and county management, utilities, and public administration). Prerequisites: GISC 224 or GISC 225 with a C- or better. Typically offered Summer only.

**GISC414** - This is a continuation of GISC 382 and involves advanced spatial analysis, spatial estimation and interpolation of data, spatial data models and modeling. It also deals with data standards and quality. Advanced topics include Web GIS, Geospatial Mashups, Mobile GIS, Geoportals, NSDI, and applications such as e-government. It will also explore the publicly available data both national and international. The course will require a design and implementation for a GIS project. Pre-requisite GISC 382. Typically offered: Summer.
GISC425 Geographic Information Science  
Advanced concepts of geographic information systems and modern cartography will be studied. Topics covered include: metadata, federal and state spatial databases, map generalization, map labeling, advanced spatial data analysis, Digital Elevation Model (DEM), interpolation methods, DEM analysis such as slope, aspect, watershed, line of sight and grid operations. These topics will be linked to the data collection courses photogrammetry, remote sensing, land surveying and geodesy. Laboratory assignments will be project oriented using existing raster and vector GIS software. Prerequisites: GISC 225. Typically offered Fall.

GMAN310 Graphic Media Management  
This course is designed to introduce students to emerging technologies in digital and variable data publishing (VDP). The impact of these technologies on traditional print markets and new digital printing markets are explored. Students examine specific digital printing technologies including color toner-based print engines, inkjet, and direct to press offset presses. Students complete projects utilizing databases and variable data publishing software, servers and digital presses to produce unique cross-media marketing campaigns. Typically offered: Spring.

GMAN351 Graphic Media Management  
A course designed to give the student a working knowledge of estimating the cost of a job in the graphic media industry. Involves the estimating of materials and labor relative to current industry practices for the production of a printed product. Emphasis will be on estimating by analyzing the product to be produced and deciding the most economical ways of production. Students will be introduced to the use of cost controls used in Graphic Media. The course includes break-even charts, budgeted hourly rates, cash flow projection, return-on-investment analysis, budget forecasting, and contribution analysis. Typically offered Spring.

GMAN361 Graphic Media Management  
This course will teach a systemic and analytical approach to achieve an efficient production system in all areas of media production, print production, and material controls. Analyzing and planning jobs for most economical means of production, production scheduling systems and record-keeping including inventory systems will be examined. Typically offered Fall.

GMAN393 Graphic Media Management  
A 10-week minimum work experience in a print media or cross-media production company or with a company directly related to the graphic communications industry. Must be taken the summer prior to graduation and must be a management-related position. Orientation sessions, which must be completed the semester prior to the internship, will focus on resume writing and the job search. Also required will be one all-day session on campus during the proceeding semester to present your experience to others in the program. Pre-requisite: Instructor approval. Typically offered Fall, Spring & Summer.
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<tr>
<th>Course Code</th>
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<th>Level</th>
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<td>GMAN425</td>
<td>Graphic Media Management</td>
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<td></td>
<td>This course is designed to advance student’s knowledge in engineering digital workflows and integration into existing production workflows. The primary emphasis of this course is to bring an understanding of how digital automation is built into efficient graphic media workflows. Meets General Education requirements for Collaboration and Problem Solving. Typically offered Spring.</td>
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<td>GMAN440</td>
<td>Graphic Media Management</td>
<td>BU</td>
<td>Undergraduate</td>
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<td>This course is focused on developing a basic understanding of color science and the complex processes of color management as applied to the graphic media industry. Specific topics of applied knowledge include device calibration, characterization, and conversion in an ICC color management workflow. Typically offered Fall.</td>
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<tr>
<td>GMAN462</td>
<td>Graphic Media Management</td>
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<td>Designed for students to gain a holistic experience of how a print or cross-media company’s processes interrelate and affect the overall operation of the business. Students will analyze production data and make recommendations to improve processes and their outcomes. How the combination of production data and metadata is used to improve an organization’s quality and production objectives will be examined. Customer relations, customer contact skills, along with people management skills will be stressed. Meets General Education requirements for Collaboration and Problem Solving. Typically offered Spring.</td>
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<td>GMAN498</td>
<td>Graphic Media Management</td>
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<td>Current events related to the Graphic Media Industry and its employers will be discussed. Employers expect graduates to have knowledge of current issues that affect their business. Typically Offered Spring.</td>
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<td>HCSA120</td>
<td>Health Care Services Admin</td>
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<td>This course provides an introduction to health services administration. It explores the unique role of the administrator in the health care selling, the dual power structure in health care agencies, and the impact of the organization's culture on the role of the administrator. It also includes the administrative roles of planning, inventory control, facility and equipment management, and productivity management, staffing and work distribution. Typically Offered Fall and Spring</td>
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<td>HCSA202</td>
<td>Health Care Services Admin</td>
<td>HP</td>
<td>Undergraduate</td>
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<td>This course introduces the legal issues facing the healthcare industry. It provides students with knowledge of health law, law creation, federal and state regulations and standards (such as HIPAA, JCAHO, EMT ALA), legal release of information, subpoenas, and court orders, criminal and civil liabilities for healthcare providers. Students will review cases and role-play to understand the value of conflict resolution, arbitration, mediation, and facilitation. Prerequisites: COHP 101 with grade of C or above. Typically Offered Fall, Spring, Summer</td>
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<td>Overview of computer use in health care agencies. Topics to be studied include clinical and administrative systems, use of the internet, extranet, electronic records, telemedicine, computerized medical devices, compatibility issues, billing via the Web, litigation issues surrounding the use of computer technology in health care and emerging technologies and their impact on health care agencies. Pre-Requisites: ISYS 105. Typically Offered Fall Only</td>
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<td>HCSA225</td>
<td>Health Care Services Admin</td>
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<td>Undergraduate 3</td>
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<td>Diverse international healthcare systems. The course content includes a comparison of the United States health care system with other developed and undeveloped world health care systems. Prerequisites: COHP 101 with grade of C or above. Typically Offered Fall and Spring</td>
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<td>HCSA260</td>
<td>Health Care Services Admin</td>
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<td>Undergraduate 3</td>
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<td>This course introduces the student to the internal and external environment of long term care, including a summary of the providers and customers of long term care services. Prerequisites: COHP 101 with grade of C or above. Meets General Education requirements for Collaboration. Typically Offered Fall and Spring</td>
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<td>HCSA310</td>
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<td>This course introduces the theory of managerial planning for capital and operational budgeting in health care as well as the regulatory constraints related to capital expenditures. Students will have the opportunity utilizing Excel to prepare a capital budget proposal as well as to gain practical skills in operational budgeting preparation and related analysis. Prerequisites: (HCSA 210 or MRIS 221) and ACCT 201 with grades of C or above. Meets General Education requirements for Problem Solving. Typically Offered Fall, Spring, and Summer</td>
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<td>HCSA326</td>
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<td>Students will study the various Human Resource components unique to the health care industry. Topics include aspects of Human Resource; Health Care bargaining units, licensing, and credentialing and accreditation requirements for health care personnel. This course will also address health care mandates pertaining to the employment process. Prerequisites: HCSA 120 with grade of C or above. Typically Offered Fall and Spring</td>
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<td>HCSA336</td>
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<td>Students will study and discuss theory and practice of management in health care facilities with an emphasis placed on conducting meetings, performance appraisals, interview processes, and corrective actions. Students will develop policies and procedures, job descriptions, and orientation/training topics. Skills in team building, coaching, counseling, conflict management, networking and delegation will be addressed. Prerequisites: COHP 101 with grade of C or above. Typically Offered Fall and Spring</td>
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<td>HCSA345</td>
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<td>This course is designed to provide the expectations and responsibilities of the internship experience. This will be accomplished through class discussions, presentations, guest speakers, and assignments. Pre-Requisites: Departmental approval. Typically Offered Fall, Spring, Summer</td>
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<td>This course is designed to provide the expectations and responsibilities of the internship experience. This will be accomplished through class discussions, presentations, guest speakers, and assignments. Pre-Requisites: HCSA 345 with a grade of C or better. Typically Offered Fall, Spring, Summer.</td>
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<td>HCSA402</td>
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<td>This course builds on the basics in Health Care Law 1. Students will examine contracts, regulations affecting leases, physician, and healthcare executive compensation. It will explore various legal entities and forms of healthcare corporations. Students will analyze issues impacting hospital/physician mergers and joint ventures with special attention for Stark, Anti-kickback, and IRS concerns for non-profit entities. Public health structure and governance will be discussed. Prerequisites: HCSA 202 with grade of C or above. Typically Offered Fall and Spring.</td>
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<td>This course focuses on managerial and financial analysis with special emphasis on the revenue cycle and payment systems in myriad health care settings. Students will have the opportunity to interpret and analyze administrative reports common in health care. Prerequisites: HCSA 310 with grade of C or above. Typically Offered Fall and Spring.</td>
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<td>This course will provide the student with insight and practical experience in the use of Lean Management principles within the healthcare industry. Through use of simulated scenarios, students will identify, measure and analyze inefficiencies and design system to eliminate waste and non-value added actions. Prerequisites: MGMT 492. Typically offered Fall, Spring, Summer.</td>
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<td>This course surveys the various genres of long term care, including nursing homes, assisted living facilities, senior housing, adult day care, hospice, and home care. It explores administrative responsibilities, management, community activities, public relations, ethical practices, and state and federal requirements in long-term care. Pre-Requisites: HCSA 120 or HCSA 220 or HCSA 320 with grade of C or above. Typically Offered Fall, Spring, Summer.</td>
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<td>This course focuses on the skills and information needed to be a successful nursing home administrator. The course content includes state and federal regulations, financial systems, human resource management, resident rights, ethical issues and other topics related to managing a licensed nursing facility. Prerequisites: HCSA 260 with grade of C or above. Typically Offered Fall, Spring, Summer.</td>
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<td>This course provides the student with the opportunity to explore the roles and responsibilities of interdisciplinary health care professionals in a long term care setting. The collaborative roles of nurses, therapists, dieticians and physicians will be examined. Prerequisites: HCSA 260 with grade of C or above. Typically Offered Spring.</td>
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<td>HEQT100</td>
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<td>TE</td>
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<td>HEQT101</td>
<td>Heavy Equipment Technology</td>
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<td>HEQT110</td>
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<td>HEQT160</td>
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<td>HEQT193</td>
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<td>Undergraduate</td>
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</table>
HEQT200  Heavy Equipment Technology  TE  Undergraduate  2  Manual and computerized procedures used in preventive maintenance systems. Course will include P.M. inspection procedures. Typically Offered Fall, Spring

HEQT201  Heavy Equipment Technology  TE  Undergraduate  3  Principles of transport refrigeration will be covered to include trouble-shooting and repair of these units. Typically Offered Fall

HEQT210  Heavy Equipment Technology  TE  Undergraduate  3  Theory and application of heavy duty electrical systems, including repair and adjustment of charging, cranking, ignition, and accessory circuits. Proper trouble-shooting procedures will be emphasized. Typically Offered Fall, Spring

HEQT230  Heavy Equipment Technology  TE  Undergraduate  4  A study of the traditional and electronically controlled diesel fuel systems. Emphasis is placed on the major systems in use today with diagnostic and tune-up procedures on running engines in the dynamometer laboratory. Pre-Requisites:HEQT 120 and 210. Typically Offered Fall

HEQT240  Heavy Equipment Technology  TE  Undergraduate  3  The theory and application of braking, suspension, and steering systems on various types of on and off road vehicles. State of the art measuring and adjusting equipment will be utilized. Pre-Requisites:HEQT 101. Typically Offered Fall, Spring

HEQT270  Heavy Equipment Technology  TE  Undergraduate  3  The theory of operation and application of various mechanical gearing and driveline components. Pre-Requisites:HEQT 101. Typically Offered Fall, Spring

HEQT271  Heavy Equipment Technology  TE  Undergraduate  4  Automatic transmissions and control systems, which have application to the trucking, construction, agricultural, forestry, and auxiliary power industries will be presented. Pre-Requisites:HEQT 160 and HEQT 270. Typically Offered Fall, Spring

HEQT282  Heavy Equipment Technology  TE  Undergraduate  4  Function, operation, repair, adjustment, and troubleshooting of alternating current electrical power generation systems. Pre-Requisites:MATH 110. Typically Offered On Demand

HEQT285  Heavy Equipment Technology  TE  Undergraduate  4  Application of various types of practical generator switch gear and other types of auxiliary power components and controls. Pre-Requisites:HEQT 282. Typically Offered On Demand

HIST121  History  AS  Undergraduate  3  A history of the United States from its founding to 1877. The social, cultural, political, and economic developments of this period. The emergence of the United States will be viewed as part of a continuum of western and nonwestern political and cultural expansion. This course meets General Education Requirements: Cultural Enrichment and new Fall 2017 Culture. Typically Offered Fall, Spring, Summer

HIST122  History  AS  Undergraduate  3  A history of the United States from 1877 to the present. The social, cultural, political, and economic developments of this period as well as the European and nonwestern influence on our society. This Course meets General Education Requirements: Cultural Enrichments and new Fall 2017 Culture. Typically Offered Fall, Spring, Summer
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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Degree Level</th>
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<tr>
<td>HIST151</td>
<td>History of the origins and development of civilizations in the ancient Near East, Greek and Roman civilizations, the collapse of Rome, the Middle Ages, and the Renaissance. This course meets General Education Requirements: Cultural Enrichment and new Fall 2017 Culture. Typically Offered Fall, Spring.</td>
<td>Undergraduate</td>
<td>3</td>
<td>A history of Western civilization including the Reformation, scientific revolution, Enlightenment, the French Revolution, the industrial revolution, nationalism, liberalism, socialism, the rise of mass society, communism, totalitarianism, the decline of European supremacy, WWI and WWII, and post-WWII European society. This course meets General Education requirements: Cultural Enrichment, Global Consciousness and new Fall 2017 Culture and Global Diversity. Typically Offered Fall, Spring.</td>
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<tr>
<td>HIST152</td>
<td>A history of Western civilization including the Reformation, scientific revolution, Enlightenment, the French Revolution, the industrial revolution, nationalism, liberalism, socialism, the rise of mass society, communism, totalitarianism, the decline of European supremacy, WWI and WWII, and post-WWII European society. This course meets General Education requirements: Cultural Enrichment, Global Consciousness and new Fall 2017 Culture and Global Diversity. Typically Offered Fall, Spring.</td>
<td>Undergraduate</td>
<td>3</td>
<td>History of African-Americans and their impact on American politics, economy, and culture. The emergence of a unique black consciousness is traced from the slave experience to the modern era where the quest for civil rights has found expression in the arts, economic boycotts, and political ideology. This course meets General Education Requirements: Cultural Enrichment, Race/Ethnicity/Gender, and new Fall 2017 Culture, US Diversity. Prerequisites: ENGL 150. Typically Offered On Demand.</td>
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<tr>
<td>HIST201</td>
<td>History AS Undergraduate</td>
<td>3</td>
<td>History of African-Americans and their impact on American politics, economy, and culture. The emergence of a unique black consciousness is traced from the slave experience to the modern era where the quest for civil rights has found expression in the arts, economic boycotts, and political ideology. This course meets General Education Requirements: Cultural Enrichment, Race/Ethnicity/Gender, and new Fall 2017 Culture, US Diversity. Prerequisites: ENGL 150. Typically Offered On Demand.</td>
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<tr>
<td>HIST211</td>
<td>Course surveys earliest world civilizations, classical civilizations that followed, origins of today's most popular religions, impact of both Eastern and Western thought, medieval period, civilizations of the Americas, Africa, and Asia prior to and following contact with Europeans, growth of trade, etc. Course will consider broader questions and trends of these world civilizations and eras, including comparisons of their economies, societies, politics, cultures, and religions. This course meets General Education requirements: Cultural Enrichment, and new Fall 2017 Culture. Prerequisites: ENGL 150. Typically Offered Fall and Spring.</td>
<td>Undergraduate</td>
<td>3</td>
<td>Course surveys earliest world civilizations, classical civilizations that followed, origins of today's most popular religions, impact of both Eastern and Western thought, medieval period, civilizations of the Americas, Africa, and Asia prior to and following contact with Europeans, growth of trade, etc. Course will consider broader questions and trends of these world civilizations and eras, including comparisons of their economies, societies, politics, cultures, and religions. This course meets General Education requirements: Cultural Enrichment, and new Fall 2017 Culture. Prerequisites: ENGL 150. Typically Offered Fall and Spring.</td>
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<tr>
<td>HIST212</td>
<td>Course surveys rise of European nation states; European exploration and conquest; rise of Gunpowder Empires; Early Modern China and Japan; rise of science and the Enlightenment; global trends of industrialization, revolution, nationalism, communism, mass society, and imperialism; World Wars and Cold War, post-war struggles for independence and nationhood, and economic transformation of East Asia. Course will consider broader questions and trends of world civilizations and eras, including comparisons of economies, societies, politics, cultures, and religions. This course meets General Education requirements: Cultural Enrichment and Global Consciousness, and new Fall 2017 Culture and Global Diversity. Prerequisites: ENGL 150. Typically Offered Fall and Spring.</td>
<td>Undergraduate</td>
<td>3</td>
<td>Course surveys rise of European nation states; European exploration and conquest; rise of Gunpowder Empires; Early Modern China and Japan; rise of science and the Enlightenment; global trends of industrialization, revolution, nationalism, communism, mass society, and imperialism; World Wars and Cold War, post-war struggles for independence and nationhood, and economic transformation of East Asia. Course will consider broader questions and trends of world civilizations and eras, including comparisons of economies, societies, politics, cultures, and religions. This course meets General Education requirements: Cultural Enrichment and Global Consciousness, and new Fall 2017 Culture and Global Diversity. Prerequisites: ENGL 150. Typically Offered Fall and Spring.</td>
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<td>Course Code</td>
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<td>HIST230</td>
<td>History</td>
<td>AS</td>
<td>Undergraduate</td>
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<td>Development of Michigan's past and its place in the present. State and local events as they mirror larger national trends; what is both unique and universal about the Wolverine State. This course meets General Education Requirements: Cultural Enrichment, and new Fall 2017 Culture. Prerequisites: ENGL 150. Typically Offered On Demand</td>
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<td>HIST251</td>
<td>History</td>
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<td>This course will establish a historical context for the scientific study and debate over race. This course will examine the origins and development of race and racism from the Enlightenment to the present. The course will examine how scientific ideas about race were shaped by slavery, nationalism, colonialism and imperialism. Topics will include the origins of the classification of humans into racial groups; the debates over polygenesis, Social Darwinism, eugenics and the Bell Curve theory. This course meets General Education requirements: Cultural Enrichment, Global Consciousness and Race/Ethnicity/Gender, new Fall 2017 Culture, Global Diversity and US Diversity. Prerequisites: English 150. Typically Offered Fall Odd Years.</td>
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<tr>
<td>HIST253</td>
<td>History</td>
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<td>Course will examine phenomenon of European imperialism in 19th and 20th centuries in terms of origins, purpose, geographic scope, and impact on Asia, Africa, and Middle East. Students will learn how and why European imperialism happened, as well as discover its political, economic, social (class, gender, and ethnicity), and cultural impact on both Europe and those colonized. Course will address the fall of most European empires and resulting consequences for those living in the former empires. This course meets General Education requirements Cultural Enrichment and Global Consciousness, and new Fall 2017 Culture and Global Diversity. Prerequisites: ENGL 150. Typically Offered Fall Odd Years.</td>
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<td>HIST255</td>
<td>History</td>
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<td>The course will consider the impact of the encounter between Europeans and Americans following Columbus' first voyage in 1492: Why and how the encounter happened, who was involved, and the ramifications for the Americas and Europe, if not the world. Key figures and topics to be examined include Columbus and Montezuma II of the Aztecs, the Columbian Exchange, the Atlantic slave trade, as well as the economic, ecological, religious, social and political consequences of the contact. This course meets General Education requirements: Cultural Enrichment, and new Fall 2017 Culture. Prerequisites: ENGL 150. Typically Offered Fall Even Years.</td>
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The course will examine the phenomenon of terrorism in the 19th and 20th centuries in terms of its origins, scope, purpose, and impact throughout the world. Students will examine terrorism by the state and against the state; ideological and theological justifications of terrorism; and how modern terrorist networks operate in a global setting. Finally, they will examine the threat terrorism poses to the state and how the modern state has responded to this threat. This course meets General Education requirements: Cultural Enrichment and Global Consciousness, and new Fall 2017 Culture and Global Diversity. Prerequisites: ENGL 150. Typically Offered Fall Even Years.

Course will consider political, social, intellectual, religious, and economic history of Ancient Greece and of Ancient Rome. Emphasis on Greece will consider its geography's impact on its political and economic development; social and political institutions of Athens and Sparta; Greek philosophy; and Greek culture throughout Mediterranean. Emphasis on Rome will cover birth of the Republic and its political organization; transition from Republic to Empire; expansion of the Empire, as well as eventual decline. This course meets General Education requirements: Cultural Enrichment, and new Fall 2017 Culture. Prerequisite: ENGL 150 Typically Offered Spring Even Years.

This course will examine the origins of feminist activism and will consider activism at the local, national, and global levels. Emphasis will be placed on the nineteenth and twentieth centuries. Settings to be examined include Europe, Africa, the Middle East, Asia, Latin America and the United States. Global arenas of activism will include labor, health and reproductive rights, peace movements, environmentalism, anti-poverty, ethnic cleansing, and violence against women. This course meets General Education requirements: Cultural Enrichment, Global Consciousness and Race/Ethnicity/Gender Issues, and new Fall 2017 Culture, Global Diversity and US Diversity. Prerequisites: ENGL 150. Typically Offered on Demand.

This course will serve as an introduction to the theory and craft of public history. Students will focus on developing an understanding of the creation, management, and presentation of historical records. It emphasizes the practical applications of a history career in a variety of settings including agencies, libraries, historical societies and museums. Students will complete a public history project such as a finding aid, exhibit or other activity which can be placed in a portfolio. Prerequisites: HIST 250; Consent of Professor. Typically Offered Spring only.
HIST276 History AS Undergraduate 3
The history of science and technology from ancient times to the present with special emphasis on developments in the twentieth century. This course meets General Education requirements: Cultural Enrichment, and new Fall 2017 Culture. Typically Offered On Demand

HIST277 History AS Undergraduate 3
Major developments in American business history from the colonial period to the present, tying together the role of government, technology, unions, and banks on business enterprise in America. This course meets General Education requirements: Cultural Enrichment, and new Fall 2017 Culture. Typically Offered On Demand

HIST280 History AS Undergraduate 3
A history of medicine and health care from Babylonian and Egyptian origins to the present with a special emphasis on its social, political, and economic consequences. This course meets General Education requirements: Cultural Enrichment, and new Fall 2017 Culture. Prerequisites: ENGL 150. Typically Offered On Demand

HIST285 History AS Undergraduate 3
A history of amateur and professional sports throughout the world with an emphasis on the nineteenth and twentieth centuries. Athletics and their social, political, cultural, and economic ramifications. This course meets General Education requirements: Cultural Enrichment, and new Fall 2017 Culture. Pre-Requisites: ENGL 150. Typically Offered On Demand

HIST300 History AS Undergraduate 3
Students will learn how to practice the craft of studying the past by developing “Historical Thinking Skills” that are essential for reading and analyzing primary and secondary sources. Students will also develop and apply research skills in terms of searching the Internet and using full-text electronic databases. Throughout the semester, students will develop and practice writing various analytical essays, as well as prepare a book review essay, an annotated bibliography, a literature review essay, and a small research paper. Students will also apply peer review skills for various writing assignments. Meets General Education for Collaboration and Problem Solving. Pre-Requisites: ENGL 250. Typically offered Spring semester.

HIST309 History AS Undergraduate 3
This course covers the social, cultural, political, and economic trends from 1900 to 1945. This course meets General Education requirements: Cultural Enrichment, new Fall 2017 Culture. Pre-Requisites: ENGL 250. Typically Offered On Demand

HIST310 History AS Undergraduate 3
Major historical events and trends from WWII to the present. Emphasis on the social, cultural, political, and economic impact of subjects such as the Cold War, consumer culture, Baby Boom generation, Civil Rights movement, Vietnam War, Watergate, women's rights, student protests, Reagan revolution, influence of the global economy, and the impact of changes in Eastern Europe, Africa, South America, and the Middle East on the U.S. This course meets General Education requirements: Cultural Enrichment, and new Fall 2017 Culture. Pre-Requisites: ENGL 250. Typically Offered On Demand
### HIST311 History AS Undergraduate 3

This course will examine the history of Jim Crow segregation using the collection of racist memorabilia (objects and ephemera) housed in the Jim Crow Museum. Students will learn about the history and evolution of key racial stereotypes, rooted to the American institution of slavery and used as a socio-cultural device to dehumanize African Americans since the end of slavery. The course is designed to introduce students to the ways public museums address racial issues in their exhibition strategies and how these exhibition strategies educate the public about controversial ideas and events. This course involves applied learning, with the Jim Crow Museum’s holdings providing a rich array of primary source materials for learners to study and analyze. This course meets General Education Requirements: Cultural Enrichment, Race/Ethnicity/Gender, and new Fall 2017 Culture and U.S. Diversity. Pre-Requisite: ENGL 250. Typically offered Spring semester.

### HIST315 History AS Undergraduate 3

This course examines current debates revolving around the historical narrative of the Civil Rights Movement. What time frame or chronology should be used? Who should serve as heroes or icons of the movement? Should the Civil Rights Movement be seen as the story of grassroots activism or judicial and legislative change? We will not resolve these larger polemical questions by semester’s end; however, we will examine recent scholarship that has begun to question the popular narrative of the Modern Civil Rights Movement. The course will challenge that narrative by studying lesser known events and personalities as well as work to restore the significance of grassroots activism and foster a multifaceted narrative of the Modern Civil Rights Movement. This course meets General Education Requirements: Cultural Enrichment, Race/Ethnicity/Gender, and new Fall 2017 Culture and U.S. Diversity. Pre-Requisites: ENGL 250. Typically Offered Fall Semester.

### HIST320 History AS Undergraduate 3

Focuses on early Vietnamese history; French rule in Indochina; U.S. involvement before and after WWII; the political, economic, military, cultural, and social nature of that intervention; consequences of the war. This course meets General Education Requirements: Cultural Enrichment, Global Consciousness, and new Fall 2017 Culture, Global Diversity. Pre-Requisites: ENGL 250. Typically Offered On Demand

### HIST325 History AS Undergraduate 3

Social, cultural, political, and economic experiences of women within society. Women's experiences as wives and mothers, wage earners, and social-political reformers from the colonial era to the present. This course meets General Education Requirements: Cultural Enrichment, Race/Ethnicity/Gender and new Fall 2017 Culture and US Diversity. Pre-Requisites: HIST 121 or HIST 122; and ENGL 250. Typically Offered On Demand
An introduction to the social, political, and cultural contributions of African American women from the 1800s to the present. This course serves to complement, rather than duplicate information presented in such courses as American Women's History and African American History. Will focus on individual African American women who have played key leadership roles throughout the 19th and 20th century. This course meets General Education Requirements: Cultural Enrichment, Race/Ethnicity/Gender and new Fall 2017 Culture and US Diversity. Pre-Requisites: HIST 121 or HIST 122; ENGL 250. Typically Offered On Demand.

This course offers learners an in-depth examination of key cultural ideas, social events, and political issues that shaped the United States during the 1960s, considered the most turbulent decade of the 20th century. Issues and events addressed will include the Cold War and idealism of the Kennedy Administration; the Civil Rights Movement; questions concerning Vietnam and the Anti-War Movement; the militancy of the Women’s Liberation Movement and Black Power; and the creative outpourings of the counterculture and environmental movements. As a strategy to aid learners' understanding of the human dimension of these historical events and issues, they will examine music from diverse genres, recorded and performed during the era. This course meets General Education Requirements: Cultural Enrichment, Race/Ethnicity/Gender and new Fall 2017 Culture and US Diversity. Pre-Requisites: ENGL 250. Typically Offered Fall Semester.

This course explores popular expressions of American culture and leisure time pursuits during the 1800s. The course examines consumer tastes among working class Americans and recent immigrants to America, trends in urban recreation activities, and the emergence of a national identity. Key mediums explored include print culture (newspapers, tabloids, and dime novels) and public performance events (circus, theater, minstrel shows, and Wild West shows). This course will analyze popular reoccurring narrative themes and popularized myths found in various forms of print culture and public performance events. This course meets General Education requirements: Cultural Enrichment and new Fall 2017 Culture. Pre-Requisites: ENGL 250. Typically offered Spring semester.
**HIST332 History AS Undergraduate 3**

This course explores popular expressions of American culture and leisure time pursuits during the 1900s. The course examines dominant consumer tastes among middle class Americans. Key mediums explored include World Fairs, broadcast radio programs, Hollywood films, Broadway musicals, and television situation comedies. This course will analyze popular reoccurring narrative themes and popularized myths found in various forms of American popular culture during the 20th century. Special attention will be given to the ways leisure time activities both shaped and reflected a national identity embraced by middle-class Americans. This course meets General Education requirements: Cultural Enrichment and new Fall 2017 Culture. Pre-Requisite: ENGL 250. Typically offered Spring semester.

**HIST333 History AS Undergraduate 3**

A history of Antebellum America (the thirty-fourty years before the Civil War), including industrialization, reform movements, westward expansion, slavery and the Old South, and the events leading up to the Civil War, including consideration of politics, economics, and social and cultural elements. Prerequisites: HIST 121 and ENGL 250. Typically offered Fall only.

**HIST334 History AS Undergraduate 3**

A history of Colonial America, including the contact between cultures, the early settlements of the Spanish, French, Dutch, and English, and the social, political, economic, and cultural changes affected by colonization, including consideration of politics, economics, and social and cultural elements. Prerequisites: HIST 121 and ENGL 250. Typically offered Spring only.

**HIST341 History AS Undergraduate 3**

The U.S. as a world power in the twentieth century and our foreign policy experience within a global context. Our role in the two World Wars, Cold War, Korean War, China, Vietnam, Middle East, Latin America, Africa, and the Soviet Union. This course meets General Education requirements: Cultural Enrichment, Global Consciousness and new Fall 2017 Culture and Global Diversity. Pre-Requisites: ENGL 150. Typically offered On Demand

**HIST342 History AS Undergraduate 3**

Conflict between the North and South from the Age of Jackson to 1877. The intensification of the sectional struggle, secession, principal military campaigns, major wartime problems of the Union and Confederacy; the significance of the Civil War in American history; political and social reconstruction. This course meets General Education requirements: Cultural Enrichment and new Fall 2017 Culture. Pre-Requisites: ENGL 250 and HIST 121. Typically offered On Demand.
This course will examine the forces behind the making of modern Britain, including government and political parties, changes in society, cultural developments, religious transformation, and economic change. The course will begin with some necessary background information from the Early Modern period, but the majority of the course will focus upon the nineteenth, twentieth and twenty-first centuries. We will end the semester by examining the challenges facing Great Britain today. This course meets General Education requirements: Cultural Enrichment and Global Consciousness and new Fall 2017 Culture and Global Diversity. Prerequisites: Engl 250. Typically Offered Spring only.

This course will examine the history of medieval Europe from the fifth century through the fourteenth century, including its political, economical, religious, intellectual, and social aspects. Topics will include the fall of the western half of the Roman Empire, the spread of Christianity, the Germanic tribes, feudalism, the feudal monarchies, the Crusades, the renaissance of the twelfth century, the rise of the Christian monasticism and the papacy, the Black Death, and the Hundred Years' War. This course meets General Education requirements for Cultural Enrichment and new Fall 2017 Culture. Prerequisites: ENGL 250. Typically offered: Fall, Spring, Summer.

This course surveys European history from the fourteenth century through the seventeenth century. Topics of study will include: the Black Death and the Hundred Years’ War, the rise of banking, the Renaissance popes, humanism and Renaissance culture, the Northern Renaissance, the origins of the Protestant Reformation, and important historical figures of the period including the Medici family, Francesco Petrarch, Niccolo Machiavelli, Leonardo da Vinci, Martin Luther, John Calvin, Desiderius Erasmus, and Queen Elizabeth I. This course meets General Education requirements for Cultural Enrichment and new Fall 2017 Culture. Prerequisites: ENGL 250. Typically offered Fall, Spring, Summer.

The history and evolution of Europe in the Modern era from 1914 to the present. The impact of two world wars fought on the continent and the wake of social and political rebuilding that occurred after each war will be the primary focus and Europe during the Cold War. This course meets General Education requirement: Cultural Enrichment, Global Consciousness and new Fall 2017 Culture and Global Diversity. Pre-Requisites: ENGL 250. Typically Offered On Demand.
This course offers a history of racism in the modern world, from European colonial expansion to the present. Special emphasis will be placed upon the post-World War II era and racism's impact on the United States, Europe, Africa and the Middle East. Topics include: anti-Semitism and the rise of racism in the modern world; global migration and ethnic relations in the 19th and 20th centuries; race science and the eugenics movement, and contemporary racist ideologies including the theological, scientific and ideological bases for modern racist movements. Meets General Education Requirements for Culture and Global. Pre-Requisite: ENGL 250. Typically offered Fall semester.

This course explores the rise of the Russian empire between the reigns of Peter the Great (1682-1725) and Catherine the Great (1762-1796). During this period, Russia would gain significant territory at the expense of Sweden, the Ottoman Empire, Siberian tribes, and Poland. We will examine the social, political, economic, and cultural forces that led to Russia's rise and the development of a Russian national consciousness. This course meets General Education requirements: Cultural Enrichment and new Fall 2017 Culture. Prerequisites: ENGL 250. Typically Offered Fall only.

An introduction to the social, political and cultural history of Modern Africa and a selective examination of issues confronting Contemporary Africa. Issues to be explored include the impact of European contact and colonization, Pan-African Nationalism, and Post Colonialism. In addition the class will explore African cultural contributions to the world. This course meets General Education Requirements: Cultural Enrichment, Global Consciousness, Race/Ethnicity/Gender and new Fall 2017 Culture, Global Diversity, U.S. Diversity. Pre-Requisites: ENGL 250. Typically Offered On Demand.

This course focuses on China, Japan and Korea in the twentieth century and their relationship with the West. Students will examine the rivalry between China and Japan, and the competition these two nations had over the control of Korea. Attention will be given to Japanese militarism and Chinese Nationalism during the first half of the 20th century. During the second half of the class, students will investigate the post WW2 era: the creation of the People's Republic of China in 1949, the Korean War of 1950-1953, Mao Zedong's "Great Leap Forward," and emergence of Japan as a major U.S. ally. Finally, the course will explore present-day relations between China, Japan, and Korea and their influence on the global economy. This course meets General Education requirements: Cultural Enrichment, Global Consciousness and new Fall 2017 Culture and Global Diversity. Typically offered Spring semester.
HIST372 History AS Undergraduate 3
Modern nations of the Middle East, the influence of Islam, and the Arab-Israeli conflict. This course meets General Education requirement: Cultural Enrichment, Global Consciousness and new Fall 2017 Culture and Global Diversity. Pre-Requisites: ENGL 250. Typically Offered On Demand

HIST373 History AS Undergraduate 3
Economic, intellectual, political, and cultural movements which have characterized Russia since 1900. Emphasis placed on the Communist Revolution and the Soviet Period. This course meets General Education requirements: Cultural Enrichment, Global Consciousness and new Fall 2017 Culture and Global Diversity. Pre-Requisites: ENGL 250. Typically Offered On Demand

HIST375 History AS Undergraduate 3
Exploration, conquest, and colonization of South and Central America, and a history of the cultural, economic, political, social, and military history of colonial Latin America through the wars for independence. Development of the social and political structure of Latin American nations in the nineteenth and twentieth centuries. This course meets General Education requirement: Cultural Enrichment, Global Consciousness and new Fall 2017 Culture and Global Diversity. Pre-Requisites: ENGL 250. Typically Offered On Demand

HIST381 History AS Undergraduate 3
This class will offer background on major pre-20th century Chinese dynasties as well as important philosophies and belief systems, such as Daoism and Confucianism. Students will learn the coveted role China has played as a trading partner with the advent of the Silk Road. Explore the influence of western imperialism on China in the 1800’s, China’s efforts to resist the West and the resulting division of China into spheres of influence. The class will conclude with the Chinese Revolution of 1911. This course meets General Education Requirements: Cultural Enrichment and new Fall 2017 Culture. Pre-Requisite: ENGL 250. Typically offered Spring semester.

HIST385 History AS Undergraduate 3
Evolution of warfare, military theory, and the military profession, with a particular emphasis on the place of military institutions in society. The U.S. Military and its actions within a global context and how our experiences have differed from those of other nations. This course meets General Education requirements: Cultural Enrichment, Global Consciousness and new Fall 2017 Culture and Global Diversity. Pre-Requisites: ENGL 250. Typically Offered On Demand
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<th>Description</th>
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<tr>
<td>HIST400</td>
<td>History AS Undergraduate</td>
<td>3</td>
<td>Senior-level seminar course that serves as the capstone for BA History Majors. It is designed to introduce majors to the methods of historical research and various analytical approaches used to interpret historical data. Students will apply content knowledge they have acquired from their completed major course work. Students undertake a major research project, requiring them to execute primary and secondary research; as well as preparing a portfolio of the various drafts and final paper. This course meets General Education Requirements: Cultural Enrichment and new Fall 2017 Culture and Collaboration and Problem Solving. Pre-Requisites: ENGL 321. Typically Offered On Demand</td>
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<td>HIST405</td>
<td>History AS Undergraduate</td>
<td>3</td>
<td>Students will develop first hand skills in developing, presenting, and evaluating instructional activities in various fields of history. Throughout the semester, students will develop content modules focusing on a specific event or issue in United States or World history. These modules will be presented in practice teaching sessions and accompanying assessment tools will be developed to evaluate the instructor and materials used. Pre-Requisites: EDUC 430. Typically Offered Fall Only</td>
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<td>HNRS100</td>
<td>Honors UN Undergraduate</td>
<td>1</td>
<td>Orientation to Honors is a one credit class required of all first semester freshmen in the honors Program. The course will serve as an intro to the honors community. Honors upperclassmen will serve as peer mentors to the freshmen cohort. Community service, cultural events, leadership and RSO requirements will be explained and investigated. Time management, study tips, stress reduction, study abroad, finding your niche at the university and the wisdom of having a faculty mentor will be addressed. Honors students only. Pre-Requisites: Honors Students only. Typically Offered Fall Only</td>
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<tr>
<td>HNRS110</td>
<td>Honors UN Undergraduate</td>
<td>3</td>
<td>Close reading and discussion of representative works from our shared intellectual history, focusing on a single topic or question investigated by a number of different academic disciplines. Prerequisites: Honors student. Typically offered Fall, Spring.</td>
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<td>HNRS201</td>
<td>Honors UN Undergraduate</td>
<td>1 TO 3</td>
<td>Small-group Reacting to the Past game-based seminar on an interdisciplinary topic lead by Honors Program Faculty. Topics and faculty vary from semester to semester, membership in the Honors Program is required. Credit hours vary from 1 to 3. Typically offered: Fall, Spring</td>
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<tr>
<td>HNRS202</td>
<td>Honors UN Undergraduate</td>
<td>1 TO 3</td>
<td>Small-group Reacting to the Past game-based seminar on an interdisciplinary topic lead by Honors Program Faculty. Advanced games, games in progress and experimental games will be included. Topics and faculty vary from semester to semester, membership in the Honors Program is required. Credit hours vary from 1 to 3. Typically offered: Fall, Spring</td>
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<tr>
<td>HNRS460</td>
<td>Honors UN Undergraduate</td>
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<td>Independent capstone project for students completing the Honors Program. Prerequisites: Honors student. Typically offered Fall, Spring.</td>
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Students learn the fundamentals of digital evidence collection and basic analysis. Emphasis is on the process and techniques for digital evidence collection, and the basic analysis techniques are presented. Students will utilize various digital forensics tools and techniques for collection and analysis of digital evidence. Prerequisites: HSCI 202. Typically Offered Spring.

A study of failure analysis methods, causes, and results. The application of practical situations will be stressed. Pre-Requisites: MATL 240. Typically Offered Fall, Spring.

Management techniques and related topics such as planning, organizing, scheduling and controlling as applies to heavy duty equipment fleets are introduced with emphasis on leadership qualities and people skills. Manual and computerized fleet maintenance systems are also covered with emphasis on the RTA computerized fleet maintenance systems. Other topics such as procurement, risk management, accident prevention and reporting will also be covered. Typically Offered Fall Only.

Work experience with manufacturers, distributors, or dealerships. Written weekly progress reports are required. Course offered during summer sessions between third and fourth year. Meets General Education requirements for Collaboration. Typically Offered Summer Only.

The study and application of the various types of testing methods used to qualify the durability of components used in industry are studied. Various types of control sensors and signal conditioning pertaining to cycling tests are emphasized. Hands-on experience in designing and setting up actual tests are the foundation of the course. Meets General Education requirements for Collaboration and Problem Solving. Typically Offered Spring Only.

Students are introduced to a leading cloud computing service architecture. Students will learn cloud architecture principles, services, value proposition, pricing models, and security fundamentals. Students will create, configure, secure, and deploy cloud computing services. Prerequisite: HSET 302. Typically offered Fall and Spring semester.

This course will present various data collection components that are utilized in interactive control systems. Components, electronic communication signal conditioning and interfaces will be studied. Hands-on experience and applied trouble-shooting procedures will be utilized through the use of instructor inserted problems in interactive and integrated systems/circuits. Pre-Requisites: HEQT 271 & HSET 460. Typically Offered Spring Only.
HSET460 Heavy Equip Service Eng Tech TE Undergraduate 4

A study of the various types of valving combinations used to control specific functions on heavy equipment machinery. The manual control of hydraulic systems, including motors and cylinders, is the primary emphasis of the course. The principles of closed loop hydrostatic pump motor controls are also studied. Pre-Requisites: MATH 126 or a minimum score of 26 on ACT or 590 on pre 2016 SAT or 610 post 2016 SAT, & HEQT 160. Typically Offered Fall Only

The course is designed specifically for students in the Hospitality Programs. Career opportunities, the relationship between Management and the Hospitality Management and the role of the hospitality professional in this industry are some of the areas explored. The student will become familiar with FSU, the Hospitality Programs and the hospitality industry through class lectures, guest speakers and assignments. Typically offered Fall, Spring, Summer.

HSMG101 Hospitality Management BU Undergraduate 1

The course is designed specifically for students in the Hospitality Programs. Career opportunities, the relationship between Management and the Hospitality Management and the role of the hospitality professional in this industry are some of the areas explored. The student will become familiar with FSU, the Hospitality Programs and the hospitality industry through class lectures, guest speakers and assignments. Typically offered Fall, Spring, Summer.

HSMG111 Hospitality Management BU Undergraduate 3

This course covers the principles of food science and food preparation in the context of current environmental world conditions. Students will explore the structure, properties and functions of different nutrients and conduct sensory evaluation of foods. Students will brew beer, make wine, and grow hydroponic vegetables and herbs. Meets General Education Requirements for Collaboration. Typically offered Fall, Spring, Summer.

The application of sanitation and safety principles in the hospitality industry. Laws and regulations of sanitation and safety and the responsibility of the hospitality manager in upholding health regulations within hospitality operations. Discussion of food borne diseases transmitted by food and food handlers and the relationship of sanitary conditions to the preparation, storage, and service of food. Students are required to pass the National ServSafe certification and receive training in First Aid and CPR. Typically offered Fall, Spring, Summer.

HSMG113 Hospitality Management BU Undergraduate 3

This course examines the fundamentals of menu planning along with factors that impact menu development and design. Topics covered include industry trends, target markets, operational influences, nutrition concepts, menu types, costing, pricing, design, and sales analysis. Emphasis is placed on developing the skills necessary to effectively create a professional menu. Meets General Education requirements for Problem Solving. Typically offered Fall, Spring, Summer.

This course covers the basic concepts involved in the production of the most common food items prepared in food service operations. Students will apply the principles learned in a lab setting by actually preparing and sampling varied types of foods and baked goods. Students will become familiar with ingredients, selection criteria, optimal storage, and techniques of preparation. Typically offered Fall, Spring, Summer.
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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Degree</th>
<th>Credits</th>
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<tbody>
<tr>
<td>HSMG133</td>
<td>Hospitality Management</td>
<td>Undergraduate</td>
<td>3</td>
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<tr>
<td>HSMG207</td>
<td>Hospitality Management</td>
<td>Undergraduate</td>
<td>3</td>
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<tr>
<td>HSMG211</td>
<td>Hospitality Management</td>
<td>Undergraduate</td>
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<tr>
<td>HSMG215</td>
<td>Hospitality Management</td>
<td>Undergraduate</td>
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<tr>
<td>HSMG226</td>
<td>Hospitality Management</td>
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<tr>
<td>HSMG228</td>
<td>Hospitality Management</td>
<td>Undergraduate</td>
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<tr>
<td>HSMG229</td>
<td>Hospitality Management</td>
<td>Undergraduate</td>
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</table>

In this course, students will learn about introductory level beer storage, sales and service, styles and culture, tasting and flavors, ingredients and processes, and pairings. Brew Management I will prepare students to pass the Cicerone Certification Program's Certified Beer Server exam. Typically offered: Fall

Detailed study of beer, wine, distilled spirits, and the facilities they are served in. Study of the social impacts, trends, and responsibilities associated with the consumption of alcohol. Specific techniques are taught on intervening in the consumption of alcohol(TIPS). Typically offered Fall, Spring, Summer.

This course examines purchasing activities with product and information from a management perspective. Students will explore market analysis policies, procedures, specifications, standards of quality, methods of purchase, as well as care for: food, cleaning, supplies, paper goods, linens, and other supplies used in the hospitality industry. Typically offered Fall, Spring, Summer.

This course examines systematic relationships between food, beverage, and labor costs as well as financial statement analysis, forecasting, budgeting, menu pricing, and strategy. Students will learn methods of effective control, and be able to employ manager developed spreadsheets. Prerequisites: ISYS 105 or ISYS 104 with grade C- or higher and Math 109 or 110 w/C- or better or 19 on ACT or 460 on pre 2016 SAT or 500 post 2016 SAT. Meets General Education Requirements for Problem Solving. Typically offered Fall, Spring, Summer.

This course will focus on international cookery covering cuisines from around the world. International Cuisine will give an understanding of flavor concepts and how the cuisine developed and evolved. Discussion will include: history and affects from invaders and bordering countries, topography, geography, climate, indigenous foods, culture and influences from religion, foods and flavorings, cooking methods and regional variations. Meets General Education Requirements of Global Diversity and Collaboration. Typically offered Fall, Spring, Summer.

Concepts, principles and application of banquet basics. Students will learn about clients and contracts, staffing and training, room and buffet setup, as well as table presentation and planning for beverage sale and presentation. Prerequisite: Sophomore Status or Higher.

Concepts, principles and application of table service basics. Dining room operation stressing practical service experience and principles of supervision. Application of the principles of suggestive selling, customer service, and dining room organization. Prerequisite: Sophomore Status or Higher.
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<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>HSMG233</td>
<td>Hospitality Management BU</td>
<td>Undergraduate</td>
<td>3</td>
<td>This course students will learn about intermediate level beer storage, sales and service, styles and culture, tasting and flavors, ingredients and processes, and pairings. Students will also learn about working with distributors and laws which affect breweries and beer sellers. Brew Management II will prepare students to pass the Cicerone Certification Program's Certified Cicerone Exam. Pre-requisites: HSMG 113 and HSMG 133. Typically offered: Spring</td>
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<tr>
<td>HSMG280</td>
<td>Hospitality Management BU</td>
<td>Undergraduate</td>
<td>3</td>
<td>In this course students will learn hands on craft brewing in an actual brewery. Instructed by an industry brewer, students will practice brew processes and explore equipment functions and upkeep with specific attention to sanitation, safety, and quality production. Pre-requisites: HSMG 113 and HSMG 133. Must be age 18 or older. Typically offered: Spring</td>
</tr>
<tr>
<td>HSMG292</td>
<td>Hospitality Management BU</td>
<td>Undergraduate</td>
<td>1 TO 3</td>
<td>The Hospitality Management academic internship promotes self-awareness and career development by integrating academic learning with workplace experience. Comprehensive written management report, weekly analytical update submissions, supervisor evaluations and documented field experience hours are required for successful completion. Prerequisite: Departmental Approval.</td>
</tr>
<tr>
<td>HSMG300</td>
<td>Hospitality Management BU</td>
<td>Undergraduate</td>
<td>3</td>
<td>This course focuses on the strategies, staffing, and systems behind excellent guest service. Students will discuss hospitality service concepts and principles, explore problem solving techniques and best practices, analyze ethical issues, and utilize case studies to understand what it means to exceed guest expectations and create the “Wow” experience.</td>
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<tr>
<td>HSMG301</td>
<td>Hospitality Management BU</td>
<td>Undergraduate</td>
<td>3</td>
<td>Management of the property in the physical aspect, its problems, its staff and methodology to maintain facilities at peak efficiency. To study the housekeeping function in hotels and resorts including the staffing, work schedules, training and responsibilities of the housekeeping department. Special consideration is given to in-house laundry, use of cleaning supplies, and techniques of room maintenance. Meets General Education requirements for Problem Solving. Typically offered Fall, Spring, Summer.</td>
</tr>
<tr>
<td>HSMG302</td>
<td>Hospitality Management BU</td>
<td>Undergraduate</td>
<td>3</td>
<td>This mixed delivery course is presented through online, classroom, and field study components. Students will learn aspects of ski area management including lift ticket pricing and sales, ski rental and repair facilities, retailing, staffing, risk management, ski patrol responsibilities, lift operations and maintenance, snow making and grooming. Students will visit various Michigan ski resorts for training. Ability to ski or snowboard is not necessary, but recommended. Prerequisites: Recommended ability to ski or snowboard. Meets General Education requirements for Collaboration and Problem Solving. Typically offered Fall, Spring, Summer.</td>
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</table>
HSMG305 Hospitality Management BU Undergraduate 3
Practical insight into the meetings and conventions industry. Markets that stage such events, site selection criteria, market mix optimization, and the selling methods used to reach industry professionals. Also study of the highly specialized areas of service that align with meetings and conventions; function rooms with meeting setups, food and beverage service, audiovisual requirements, admission systems, exhibits and trade shows, convention billing and post-convention review. Meets General Education requirements for Collaboration. Prerequisite: Sophomore Status or Higher. Typically offered Fall, Spring, Summer.

HSMG312 Hospitality Management BU Undergraduate 3
This course introduces students to the world of private club management and explores the role of the club’s general manager as the lead employee and chief operating officer at a private facility. Types of clubs included for discussion include golf (including country), city, university, military, tennis, swimming and yacht clubs. Topics covered are designed to give a broad overview of private club operations and include club board of directors, by-laws, rules, ethics, leadership, service, human resources, marketing, food and beverage, financial management, facility management and recreational activities. Meets General Education requirements for Collaboration. Prerequisite: Sophomore Status or Higher. Typically offered Fall, Spring, Summer.

HSMG350 Hospitality Management BU Undergraduate 3
Gain an understanding of operations, staffing, and administrative procedures unique to the spa industry. Topics will include legal aspects, safety and sanitation, client file management, retail operations, employment selection, contracts, licensure, and financial management. Meets General Education requirements for Collaboration and Problem Solving. Prerequisite: Sophomore Status or Higher.

HSMG355 Hospitality Management BU Undergraduate 3
This course will provide experiential learning in non-profit fundraising events. Students will be responsible for planning and execution of the Hospitality Management Gala. Coursework will address event protocol, design, production and post-event wrap up. Involvement in vendor relations, committee communications, volunteer management and evaluations will be required. Prerequisite: Program Permit. Typically offered Fall, Spring.

HSMG392 Hospitality Management BU Undergraduate 1 TO 3
The Hospitality Management academic internship promotes self-awareness and career development by integrating academic learning with workplace experience. Comprehensive written management report, weekly analytical update submissions, supervisor evaluations and documented field experience hours are required for successful completion. Prerequisite: Departmental Approval.
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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Level</th>
<th>Term Offered</th>
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<tbody>
<tr>
<td>HSMG399</td>
<td>Hospitality Management BU</td>
<td>3</td>
<td>Undergraduate</td>
<td>Fall, Spring, Summer</td>
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<tr>
<td>HSMG401</td>
<td>Hospitality Management BU</td>
<td>3</td>
<td>Undergraduate</td>
<td>Fall, Spring, Summer</td>
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<tr>
<td>HSMG402</td>
<td>Hospitality Management BU</td>
<td>3</td>
<td>Undergraduate</td>
<td>Fall, Spring, Summer</td>
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<tr>
<td>HSMG403</td>
<td>Hospitality Management BU</td>
<td>3</td>
<td>Undergraduate</td>
<td>Fall, Spring, Summer</td>
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<tr>
<td>HSMG404</td>
<td>Hospitality Management BU</td>
<td>3</td>
<td>Undergraduate</td>
<td>Fall, Spring, Summer</td>
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<tr>
<td>HSMG405</td>
<td>Hospitality Management BU</td>
<td>3</td>
<td>Undergraduate</td>
<td>Fall, Spring, Summer</td>
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<tr>
<td>HSMG406</td>
<td>Hospitality Management BU</td>
<td>3</td>
<td>Undergraduate</td>
<td>Fall, Spring, Summer</td>
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</table>

This course will give students a holistic understanding of food and beverage operation management, as a capstone experience for all food and beverage courses. Topics covered include trends, structure and organization, marketing, finances and cost control systems, safety, production, menus and services. Typically offered Fall, Spring, Summer.

Practical insight into the career of Special Event Planning. Study of characteristics of events, the development of event objectives, needs assessment practices. The financial structure of events and time management tools for the industry will be reviewed. The course provides an understanding of pertinent laws and regulations, insurance and security issues, and the application of risk management and contingency planning for the industry. Prerequisite: HSMG 305. Typically offered Fall, Spring, Summer.

Senior level capstone course focusing on the fundamentals of event design and production. Fundamentals of planned event services will be explored including marketing and promotional strategies. Students will develop knowledge and experience with on-site management operations and post-event review. Prerequisite: HSMG 401. Typically offered Fall, Spring, Summer.

Laws applying to the hospitality industry ranging from civil liability for contracts, employees, guests, and torts to others. Includes case histories. Prerequisite: Junior Status or Higher. Typically offered Fall, Spring, Summer.

This course provides students with an understanding of core activities involved in hotel front desk operations during each stage of the guest cycle. Topics include different types of lodging properties, target markets, distribution channels, industry terminology, front office formulas, accounting procedures, and revenue management. Typically offered Fall, Spring, Summer.

Focuses on international travel and tourism and the resort segment of the hotel industry, its history, planning, operations, and special considerations. Special attention of the interaction between the area of tourism and its relationship to the resort hotel industry will be studied in its broader context. Emphasis is placed on the study of recreational activities as they relate to the operations of a resort hotel. Meets General Education requirements for Problem Solving. Typically offered Fall, Spring, Summer.

This course focuses on the fundamental building blocks of an effective revenue management program along with property level benchmarking tools. Topics include key performance indicators, distribution channels, capacity management, forecasting supply and demand, strategic pricing, automated systems, displacement analysis, resource allocation, benchmarking, and competitive sets. Prerequisites: HSMG 305 and HSMG 404. Typically offered Fall, Spring, Summer.
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<th>Course Code</th>
<th>Course Name</th>
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<th>Credits</th>
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<tbody>
<tr>
<td>HSMG499</td>
<td>Hospitality Management</td>
<td>BU</td>
<td>Undergraduate</td>
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</table>

This advanced-level capstone course will cover the more complex issues facing Hospitality leaders today. This course will require students to perform research, apply professional presentation skills, engage an audience in a learning activity, and give professional peer evaluation within a business setting. Objective of this course is to prepare students to become entry-level managers in the Hospitality industry by exposing them to contemporary operational issues and situations and equipping them with the ability to analyze problems and develop, propose and implement strategic solutions. Previous working knowledge of the hospitality industry gained through academic studies and practical experiences will be the foundation for course success. Prerequisite: Senior status. Typically offered Fall, Spring, Summer.

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<th>Type</th>
<th>Credits</th>
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<tbody>
<tr>
<td>HUMN100</td>
<td>Humanities AS</td>
<td>Undergraduate</td>
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An analytical study of the self-reflective nature of the fine and performing arts, the creative process and major thought trends of Western civilization. This course meets General Education requirement: Cultural Enrichment and new Fall 2017 Culture. Typically Offered Fall, Spring, Summer.

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<tbody>
<tr>
<td>HUMN101</td>
<td>Humanities AS</td>
<td>Undergraduate</td>
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</table>

The major monuments of literature, music, drama, painting, architecture and sculpture as a reflection of the creative energies of Western man in the classical through medieval periods. Shows the unity of the Western intellectual tradition. This course meets General Education requirements: Cultural Enrichment and new Fall 2017 Culture. Typically Offered Fall Only.

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<tbody>
<tr>
<td>HUMN102</td>
<td>Humanities AS</td>
<td>Undergraduate</td>
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Continuation of HUMN 101, covering the Renaissance period to the twentieth century. This course meets General Education requirement: Cultural Enrichment and new Fall 2017 Culture. Typically Offered Spring Only.

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<tr>
<td>HUMN202</td>
<td>Humanities AS</td>
<td>Undergraduate</td>
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</table>

An introduction to the cultural heritage and intellectual contribution of African Americans from the colonial era to the present. Contributions in the performing arts (music, dance, theater), visual arts (painting, sculpture, crafts, folk art, photography, film, fashion design), literature, religion, and culture will be explored as a means to understand changing social conditions affecting African Americans within the United States. This course meets General Education Requirements: Cultural Enrichment, Race/Ethnicity/Gender and new 2017 Culture and U.S. Diversity. Typically Offered On Demand.

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<th>Course Code</th>
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<tbody>
<tr>
<td>HUMN230</td>
<td>Humanities AS</td>
<td>Undergraduate</td>
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</table>

Women’s contributions to music, literature, theatre, art, religion, dance, and political and scientific thought throughout Western Civilization. The images and realities of the female experience from Old Europe to the present in order to understand what it meant to be female in each era. This course meets General Education Requirements: Cultural Enrichment, Race-Ethnicity-Gender, and new Fall 2017 Culture, US Diversity. Typically Offered On Demand.
The cultural aspects of the twentieth century that have been or are the foundations for social changes. The impact of pop art, film, TV, radio, advertising, comics, literature, fashions and fads, and unique areas of the arts. This course meets General Education requirement: Cultural Enrichment, Global Consciousness, and new Fall 2017 Culture, Global Diversity. Typically Offered On Demand

Humanities 327 is text intensive. Students will do extensive readings in Mythology from different countries, using primary sources, and critically comparing common mythic themes. Students will be asked to consider myth in the light of history and religion, in order to understand where myth, history and religion intersect. A significant research project and semester journal are required. HUMN 327 meets general education, Cultural Enrichment, and Global Consciousness requirements and new Fall 2017 Culture and Global Diversity. Pre-Requisites: Engl 250. Typically Offered On Demand

An introductory course covering the physical and chemical laws governing the principles of refrigeration. The basic refrigeration cycle and components will be covered. Applications include alternate refrigerants, evacuation, charging, transferring refrigerant, and system reprocessing. Co-Requisites: MATH 116. Typically Offered Fall, Spring

A continuation of the basic refrigeration cycle and application of the Mollier diagram and thermodynamics, including theoretical and actual refrigeration capacities, along with a study of refrigerants, oils, systems, metering devices and compressors. Emphasis on instrumentation, testing, system troubleshooting and problem solving. Students will study for EPA Section 608 certification. Prerequisites: HVAC 101 & HVAC 111 both with a grade of C- or better. Typically Offered Fall, Spring

A study of basic electricity, circuits and components with emphasis in HVACR applications. Layout and fabrication of duct, duct fittings (sheet metal and fiberglass) and piping/tubing (copper, iron and plastic) used in air-conditioning and heating systems. Soldering, brazing, pipe cutting and fitting, component use and proper use of hand and shop tools will be emphasized. Basics of blueprint reading and sketching techniques. Co requisite: MATH 116. Typically Offered Fall and Spring.

AC electrical theory and application, concentrating on the operation, installation and analysis of HVACR components and control circuits. The components include single and polyphase transformer and motors, heating and air conditioning controls, commercial timers, motor starters, contactors, relays and other control devices. Lab exercises focus on developing wiring diagrams; wiring, troubleshooting and analyzing circuits based on lecture material. Typically Offered Fall, Spring
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<th>Code</th>
<th>Title</th>
<th>Credits</th>
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<th>Level</th>
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<tbody>
<tr>
<td>HVAC127</td>
<td>The study of advanced controls related to</td>
<td>3</td>
<td>TE</td>
<td>Undergraduate</td>
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<td>residential and commercial applications.</td>
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<td>The course focuses on control components,</td>
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<td>wiring, and control sequences used in</td>
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<td>direct digital control systems. Lab</td>
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<td></td>
<td>exercises concentrate on control system</td>
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<td>wiring, operation, and troubleshooting.</td>
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<td></td>
<td>Pre-requisite: HVAC 117 with C- or better.</td>
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<td>Typically offered: Fall, Spring</td>
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<tr>
<td>HVAC132</td>
<td>A study of combustion in conventional and</td>
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<td>TE</td>
<td>Undergraduate</td>
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<td>high-efficiency units. Mechanical and</td>
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<td>building blueprints, symbols, drawing &amp;</td>
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<td>sketching, and views will be covered.</td>
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<td>Laboratory work on heating, components,</td>
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<td>system identification, and the analysis</td>
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<td>of fuel consumption rates and cycles.</td>
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<td>Pre-Requisites: HVAC 111 with a grade of</td>
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<td>C- or better. Typically Offered Fall,</td>
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<tr>
<td>HVAC207</td>
<td>A study of commercial and industrial</td>
<td>5</td>
<td>TE</td>
<td>Undergraduate</td>
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<td>refrigeration systems associated with</td>
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<td>supermarkets, restaurants and storage</td>
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<td>facilities. Topics include electrical and</td>
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<td>mechanical refrigeration systems found in</td>
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<td>today’s applications. Laboratories will</td>
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<td>cover testing, adjusting and troubleshooting</td>
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<td>electrical and mechanical systems. Pre-</td>
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<td>Requisites: HVAC 102, HVAC 117, and MATH</td>
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<td>116, all with a grade of C- or better.</td>
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<td>Typically Offered Fall and Spring</td>
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<tr>
<td>HVAC208</td>
<td>A study of mechanical air conditioning</td>
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<td>TE</td>
<td>Undergraduate</td>
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<tr>
<td></td>
<td>equipment including heat pump, chiller,</td>
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<td></td>
<td>absorption refrigeration, cooling tower</td>
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<td></td>
<td>and evaporative cooling applications.</td>
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<td></td>
<td>Compressor types and capacity control</td>
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<td></td>
<td>systems are included. Hands on laboratories</td>
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<td>cover electrical systems, capacity testing</td>
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<td></td>
<td>and troubleshooting of residential and</td>
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<td></td>
<td>light commercial mechanical and electrical</td>
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<td></td>
<td>systems. Pre-Requisites: HVAC 102, HVAC 117,</td>
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<td>&amp; MATH 116, all with a grade of C- or</td>
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<td>better. Typically Offered Fall, Spring</td>
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<tr>
<td>HVAC235</td>
<td>A continuation of the study of gas and</td>
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<td>TE</td>
<td>Undergraduate</td>
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<td></td>
<td>oil fired heating appliances for</td>
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<td></td>
<td>residential and commercial applications.</td>
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<td>Includes the operating sequence of forced</td>
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<td>air and hydronic systems for safe,</td>
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<td></td>
<td>efficient combustion and flame safety.</td>
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<td>Application includes troubleshooting</td>
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<td></td>
<td>faulty electrical/electronic control</td>
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<td>systems, safety systems, mechanical</td>
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<td></td>
<td>systems and hydronic systems. Pre-</td>
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<td>Requisites: HVAC 132, HVAC 117, and MATH</td>
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<td>116, all with a grade of C- or better.</td>
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<td>Typically Offered Fall, Spring</td>
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<tr>
<td>HVAC245</td>
<td>The study of residential and light</td>
<td>4</td>
<td>TE</td>
<td>Undergraduate</td>
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<tr>
<td></td>
<td>commercial HVACR system design including</td>
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<td></td>
<td>load calculations and psychometrics.</td>
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<td></td>
<td>Includes heat recovery methods,</td>
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<td>restaurant ventilations requirements,</td>
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<td>humidification, insulation, sound and</td>
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<td>measurement techniques and applicable</td>
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<td>codes. Pre-Requisites: HVAC 101 and HVAC</td>
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<td>132, and MATH 116, all with a grade of C-</td>
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<td></td>
<td>or better. Typically Offered Fall,</td>
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<td></td>
<td>Spring</td>
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<tr>
<td>HVAC285</td>
<td>Design of mechanical systems for buildings</td>
<td>2</td>
<td>TE</td>
<td>Undergraduate</td>
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<td></td>
<td>using Building Information Modeling (BIM).</td>
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<td></td>
<td>For HVAC students only. Pre-requisite:</td>
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<td></td>
<td>Department approval. Typically offered:</td>
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<td></td>
<td>Fall, Spring, Summer</td>
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HVAC312 HVACR TE Undergraduate 4
The study of control loop theory related to commercial and industrial comfort, process and safety applications. The course focuses on analog electronic and pneumatic control components and their systems used in new and existing installations. Lab exercises concentrate on system operation and analysis. Pre-requisite: C- or better in HVAC 285, HVAC 321 and HVAC 342. Typically Offered Spring Only

HVAC313 HVACR TE Undergraduate 3
The study of control loop theory related to commercial and industrial comfort, process and safety applications. The course focuses on analog electronic and pneumatic control components and their systems used in new and existing installations. Pre-Requisites: HVAC 285 & 342 with a grade of C- or better. Typically Offered Fall, Spring, Summer

HVAC314 HVACR TE Undergraduate 1
A laboratory course for online students which contains hands on learning experiences that complement HVAC 312. Lab exercises concentrate on control system operation and analysis. HVAC 313 and 314 meet same degree requirements as HVAC 312 on campus. Pre-Requisites: HVAC 313 with a grade of C- or better. Typically Offered Fall, Spring, Summer

HVAC321 HVACR TE Undergraduate 4
A study of air systems used in commercial and industrial buildings. Course emphasizes system design, equipment and component selection and selected problems and solutions. Instrumentation, testing and balancing will be emphasized for optimum energy conservation and maximum comfort. Prerequisites: Admissions to Bachelor of Science in HVAC Engineering Technology and Energy Management. Co-requisite: HVAC 285. Typically offered Fall.

HVAC322 HVACR TE Undergraduate 3
A study of air systems used in commercial and industrial buildings. Course emphasizes system design, equipment and component selection and selected problems and solutions. Instrumentation, testing and balancing will be emphasized for optimum energy conservation and maximum comfort. Prerequisites: C- or better in HVAC 285, 313 & 342. Typically offered Fall, Spring, Summer.

HVAC323 HVACR TE Undergraduate 1
This is the “Hands-on” lab experience for the HVAC322 On-Line course which is a study of air systems used in commercial and industrial buildings. Course emphasizes system design, equipment and component selection and selected problems and solutions learned in HVAC322. Instrumentation, testing and balancing will be emphasized for optimum energy conservation and maximum comfort. Prerequisites: HVAC 322 with a C- (or better).

HVAC325 HVACR TE Undergraduate 4
A study of water systems used in commercial and industrial buildings. Course emphasizes system design, equipment and component selection and selected problems and solutions. Instrumentation, testing and balancing will be emphasized for optimum energy conservation and maximum comfort. Prerequisites: C- or better in HVAC 285, 321 & 342. Typically offered Spring.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
<th>Credits</th>
<th>Degree</th>
<th>Type</th>
<th>Description</th>
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<tbody>
<tr>
<td>HVAC326</td>
<td>HVACR TE Undergraduate 3</td>
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<td></td>
<td>A study of water systems used in commercial and industrial buildings. Course emphasizes system design, equipment and component selection and selected problems and solutions. Instrumentation, testing and balancing will be emphasized for optimum energy conservation and maximum comfort. Prerequisites: C- or better in HVAC 285, 322, 313 &amp; 342. Typically offered Fall, Summer.</td>
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<tr>
<td>HVAC327</td>
<td>HVACR TE Undergraduate 1</td>
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<td>This is the &quot;Hands-on&quot; lab experience for the HVAC326 On-Line course which is a study of water systems used in commercial and industrial buildings. Course emphasizes system design, equipment and component selection and selected problems and solutions learned in HVAC326. Instrumentation, testing and balancing will be emphasized for optimum energy conservation and maximum comfort. Prerequisites: C- (or better) in HVAC 326. Typically offered Summer.</td>
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<tr>
<td>HVAC333</td>
<td>HVACR TE Undergraduate 1</td>
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<td>A laboratory course containing hands on learning experiences that compliment HVAC 332. HVAC 332 and 333 meet same degree requirements as 331 on campus. Pre-Requisites: HVAC 332 with a C- grade or better. Typically Offered Fall, Spring, Summer</td>
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<tr>
<td>HVAC337</td>
<td>HVACR TE Undergraduate 3</td>
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<td>Awareness of heating, ventilating, and air conditioning systems, water supply, sanitary and storm sewers, fire protection, electrical distribution, lighting and acoustical systems for buildings. Emphasis is placed upon systems integration, energy considerations and their effects upon building planning, detailing and construction. Discusses equipment, code requirements and building applications. Typically Offered Fall, Spring, Summer</td>
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<tr>
<td>HVAC342</td>
<td>HVACR TE Undergraduate 4</td>
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<td>Complete heat loss and gain calculations for commercial and industrial buildings will be performed manually and through currently available computer software. Student will layout and design systems for maximum energy efficiency. Energy estimating methods will be studied and an analysis of an actual building using the Performance Rating Method as described in ASHRAE Standard 90.1 appendix G. Current federal, state and local codes and standards will be examined as they apply to HVAC systems. Prerequisites: Admission to Bachelor of Science in HVAC Engineering Technology and Energy Management. Co-requisite: HVAC 285. Typically Offered: Fall, Spring, Summer.</td>
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<td>HVAC350</td>
<td>HVACR TE Undergraduate 4</td>
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<td>The study of contracting issues as related to the HVACR industry. The course focuses on plans and specifications, estimating, budget issues, project management, economic cost analysis and codes and standards, all from the perspective of an HVACR professional. Lab exercises focus on application of contracting issues to a sample project. Prerequisites: C- or better in HVAC 285, 321, and 342, or HVAC 285, 322, and 342. Typically Offered Fall and Spring.</td>
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<td>Course Code</td>
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<td>HVAC362</td>
<td>HVACR</td>
<td>TE</td>
<td>Undergraduate</td>
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<td>HVAC393</td>
<td>HVACR</td>
<td>TE</td>
<td>Undergraduate</td>
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<td>HVAC415</td>
<td>HVACR</td>
<td>TE</td>
<td>Undergraduate</td>
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<td>HVAC451</td>
<td>HVACR</td>
<td>TE</td>
<td>Undergraduate</td>
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<td>HVAC462</td>
<td>HVACR</td>
<td>TE</td>
<td>Undergraduate</td>
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<td>HVAC483</td>
<td>HVACR</td>
<td>TE</td>
<td>Undergraduate</td>
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The selection, application and layout of state-of-the-art equipment and systems for commercial and industrial buildings. Emphasis will be placed upon the appropriate alternate energy sources with cost analysis and paybacks being performed. Prerequisites: HVAC 331 and HVAC 342 both with a grade of C- or better, and MATH 116 or MATH 120. Typically Offered Fall and Spring.

Ten week minimum work experience. Students will gain a variety of commercial and industrial system and energy related experiences to include in part or in whole; new and retrofit system selection and design (including CAD); load calculation and system analysis or problem solving; system balance (testing, adjusting and balancing); system commissioning; control balancing and control work; energy related experience (e.g. energy auditing and payback calculation); estimating, bidding and proposal development; project management. Pre-Requisites: HVAC 313, 326 & 350, or HVAC 312, 325 & 350, all with a grade of C- or better. Typically Offered Summer Only

Digital electronic control of HVAC mechanical systems to maximize their operating efficiency in commercial and industrial applications. The layout, programming, and operation of the building management system is emphasized. Pre-Requisites: MATH 126 and HVAC 393 with a grade of C- or better. Typically Offered Fall Only

The survey of utility rate structures, billing energy consumption, and energy profiling of commercial and industrial buildings. On-site audit projects will report on recommendations to building envelopes, HVAC systems, and control systems, with regard to paybacks. Oral and written presentations are a requirement of this senior project course. This course meets General Education Requirements: Writing Intensive and new Fall 2017 Comm Across the Curriculum, Collaboration, and Problem Solving. Pre-Requisites: HVAC 393 and MATH 126 all with a grade of C- or better. Typically Offered: Fall, Spring, Summer.

The selection, application and layout of state-of-the-art equipment and systems for commercial and industrial buildings. Emphasis will be placed upon the energy efficiency, integration of equipment into a complete system, and sequence of operation. Prerequisites: HVAC 393 and MATH 126 with C- or better in both. Typically offered Fall, Spring, Summer.

The study of the HVAC systems and controls found in commercial and industrial buildings for facility managers. Emphasis is placed on the energy utilization, utility rates, and building management systems that optimize comfort and reduce energy costs for building. The course will include site visitations and reports. Typically Offered: Spring Only
### HVAC499 HVACR TE Undergraduate 4

Given building architectural plans, appropriate software, codes and standards, and owner’s requirements, students will select appropriate HVAC system, conduct economic analysis, design system and produce working drawings, specifications, and control sequences for evaluation. This course meets General Education Requirements: Writing Intensive and Collaboration and Problem Solving and new Fall 2017 Comm Across the Curriculum. Pre-Requisites: HVAC 415 and HVAC 451 and HVAC 462 all with a grade of C- or better. Typically Offered: Spring, Summer.

### IDSL805 InterDiscipl Studies in Leader, CP Doctorate 3

This course provides a broad overview of the historical context of community colleges in the United States as well as their current and future roles, governance structures, and leadership challenges to hypothesize future directions and leadership challenges. Prerequisites: Admission to the doctoral program in Community College Leadership. Typically Offered Summer only.

### IDSL810 InterDiscipl Studies in Leader, CP Doctorate 3

This course examines the external forces and current issues impacting community colleges, including social, political, and environmental change. Students examine the origins and facets of the issues and the perspectives of varied stakeholders, and evaluate potential impact(s). Prerequisites: Admission to the doctoral program in Community College Leadership. Typically offered Summer only.

### IDSL825 InterDiscipl Studies in Leader, CP Doctorate 3

This course examines various leadership theories and the relationship between leadership styles and organizations, examining the optimal “fit” of an individual leader, leadership role, and organizational environment. Prerequisites: Admission to the doctoral program in Community College Leadership. Typically offered Fall only.

### IDSL830 InterDiscipl Studies in Leader, CP Doctorate 3

This course focuses on theories and best practices for leading organizational change. Students learn to apply change theories and strategies to organizational needs, develop change plans with articulated visions and strategic frameworks, and define processes for implementing and monitoring change for improvement and sustainability. Prerequisite: Admission to the doctoral program in Community College Leadership. Typically offered Fall only.

### IDSL835 InterDiscipl Studies in Leader, CP Doctorate 3

This course explores strategic planning for community colleges as driven by institutional mission, vision, and values. Applying a systems approach, students identify essential elements, integrate these into a strategic plan, and analyze their interrelationships. Students also analyze a strategic planning cycle, from creation and implementation to measuring effectiveness and continuous improvement. Prerequisites: Admission to the doctoral program in Community College Leadership. Typically Offered Spring only.
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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Degree</th>
<th>Description</th>
<th>Prerequisites</th>
<th>Typically Offered</th>
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<tr>
<td>IDSL840</td>
<td>InterDiscipl Studies in Leader CP Doctorate 3</td>
<td>3</td>
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<td>This course addresses foundational principles of methods of qualitative inquiry, with emphasis on ensuring ethical standards, establishing assumptions and limitations for a study, developing appropriate research questions and approach, and designing effective data collection methods. Students also practice analyzing and interpreting data, identifying limitations and applications of the data and design a research project. Prerequisites: Admission to the doctoral program in Community College Leadership. Typically offered Spring only.</td>
<td>Admission to the doctoral program in Community College Leadership.</td>
<td>Spring only</td>
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<tr>
<td>IDSL845</td>
<td>InterDiscipl Studies in Leader CP Doctorate 4</td>
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<td>This course addresses foundational principles and elements of methods of quantitative inquiry, with emphasis on ensuring ethical standards, establishing assumptions and limitations for a study, designing effective data collection methods and interpreting quantitative results utilizing standard statistical techniques. Students also practice analyzing and interpreting data, identifying limitations and applications of the data. Prerequisites: Admission to the doctoral program in Community College Leadership. Typically offered Summer only.</td>
<td>Admission to the doctoral program in Community College Leadership.</td>
<td>Summer only</td>
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<td>IDSL855</td>
<td>InterDiscipl Studies in Leader CP Doctorate 3</td>
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<td>This course provides an overview of the budgetary concepts and processes that are foundational to the financial health of community colleges, including decision-making frameworks, analytical tools, capital planning, technology planning, and state and federal regulations and practices. Prerequisites: Admission to the doctoral program in Community College Leadership. Typically offered Fall only.</td>
<td>Admission to the doctoral program in Community College Leadership.</td>
<td>Fall only</td>
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<tr>
<td>IDSL860</td>
<td>InterDiscipl Studies in Leader CP Doctorate 3</td>
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<td>This course covers the role, rationale, and basic principles of public and private resource development in community colleges, from millage and bond campaigns to grants and philanthropic fundraising. This course also explores the connections between strategic planning, community relations, entrepreneurship and resource development, as well as the leader's role in guiding resource enhancement. Prerequisites: Admission to the doctoral program in Community College Leadership.</td>
<td>Admission to the doctoral program in Community College Leadership.</td>
<td>Fall only</td>
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<td>IDSL865</td>
<td>InterDiscipl Studies in Leader CP Doctorate 3</td>
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<td>This course examines methods for maximizing the college's human resources. Students gain the expertise needed to provide leadership in designing effective models of employee involvement and development within the context of labor laws, agreements, and governance structures. Collaborative strategies in motivational theory, succession planning, and collective bargaining will be analyzed. Prerequisites: Admission to the doctoral program in Community College Leadership. Typically offered Fall only.</td>
<td>Admission to the doctoral program in Community College Leadership.</td>
<td>Fall only</td>
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IDSL870 InterDiscipl Studies in Leader CP Doctorate 3 This course examines the concepts of community relations, engagement, and marketing as they apply to the community college. Topics include effective engagement and communication strategies, building the college brand or image, and methods for measuring stakeholder perceptions. Prerequisites: Admission to the doctoral program in Community College Leadership. Typically offered in Fall.

IDSL880 InterDiscipl Studies in Leader CP Doctorate 3 This course focuses on current research, theories, and best practices and future possibilities for effective teaching and learning, with emphasis on methods for reaching diverse student populations, assessing learning, creating effective learning environments, developing essential skills, and exploring alternative curricular and instructional opportunities. Prerequisites: Admission to the doctoral program in Community College Leadership. Typically offered Spring only.

IDSL885 InterDiscipl Studies in Leader CP Doctorate 3 This course evaluates past and current theories of and strategies for improving student success including best practices in persistence, completion, and student development. Focus is on continuous improvement strategies deriving from data analysis. Prerequisites: Admission to the doctoral program in Community College Leadership. Typically offered in Spring.

IDSL894 InterDiscipl Studies in Leader CP Doctorate 3 This course provides an independent, individual learning experience designed specifically to meet the learner’s professional goals. Each student works with the faculty to develop a practicum plan with specific learning outcomes. Prerequisites: Admission to the doctoral program in Community College Leadership. Typically offered Spring only.

IDSL895 InterDiscipl Studies in Leader CP Doctorate 3 This course addresses external and internal models of governance, their constituents, and their unique perspectives. It also focuses on leadership attributes that provide the agility needed to bring these groups together and develop a shared vision. Policy development at the federal, state, and local levels and their impact on operations are key elements of this course. Prerequisites: Admission to the doctoral program in Community College Leadership. Typically offered Summer only.

IDSL898 InterDiscipl Studies in Leader CP Doctorate 1 TO 6 Each semester, learners demonstrate significant dissertation progress related to specific program goals with direction and assessment guided by the Dissertation Director and the dissertation committee. Learners demonstrate progress by submitting required deliverables and meeting key milestones defined in the DCL Dissertation Guide. A written defense-ready dissertation is the primary deliverable expected at the completion of 15 dissertation credits. Prerequisite: Admission to the doctoral program in Community College Leadership. Typically offered Fall, Spring and Summer.
INBI303 Integrated Biology AS Undergraduate 4
Explores living organisms found in Michigan through an ecological framework reflecting the Michigan Curriculum Framework. Each concept uses a model organism to illustrate one of the elementary life science standards and how to use these organisms to teach science in the elementary school classroom. Primary concepts include human ecology, ecosystem, function, classification and life cycles, evolution and adaptation to environments, human disease and nutrition, populations, naturalized species, and plant and animal pathogens. Prerequisites: BIOL 103, PHSC 110 and PHSC 115 with a grade of C- or better. Typically Offered Fall.

INCT317 Industrial Chemical Tech AS Undergraduate 2
The theory and instrumentation of modern analytical techniques will be explored, including potentiometry, infrared (IR) spectroscopy, nuclear magnetic resonance (NMR) spectroscopy, atomic absorption (AA) spectroscopy and gas chromatography. Pre-Requisites: Department approval. Typically Offered On Demand

INFO400 Informatics AS Undergraduate 3
This course will introduce the student to foundational Informatics concepts such as information, data storage, and statistical concepts that deal with uncertainty, modeling and computing algorithms. The focus of the course is applying Informatics concepts to solve real-world problems from a wide variety of disciplines, such as the humanities, mathematics, science and the health professions. Pre-requisites: [(MATH 130 & CPSC 130) or MATH 220] and (MATH 251 or STQM 322) with a B or better in all classes. Typically offered: Every other Fall, Spring, Summer

INFO401 Informatics AS Undergraduate 3
This hands-on course introduces the student to programming languages used in the Informatics field. The course employs modern-day programming languages to solve Informatics data intensive problems from a wide variety of disciplines. The focus of the first course will be on data preparation techniques and reporting. Pre-requisites: [(MATH 130 & CPSC 130) or MATH 220] and (MATH 251 or STQM 322) with a B or better in all classes. Typically offered: Every other Fall, Spring, Summer

INFO402 Informatics AS Undergraduate 3
This course is a continuation of INFO 401. The course will dive deeper into programming techniques commonly used in Informatics fields. Some advanced topics in the course include arrays, handling XML files through Application Programming Interfaces (API), parsing text files, structured query language (SQL) and macro coding. Pre-requisite: INFO 401 with a B or better. Typically offered: Every other Fall, Spring, Summer
INFO403 Informatics AS Undergraduate 3
Data mining and predictive modeling offer a means of analysis of large and complex data. Data mining and predictive modeling are capable of automatic extraction of knowledge deeply hidden in data, enabling discovery of knowledge not otherwise attainable. This course will provide the student an in-depth study of predictive modeling concepts such as data partitioning, performing variable selection and choosing the optimal model. Specific models, such as decision trees and neural networks, will be studied and applied in a variety of different applications. Pre-requisites: INFO 400 and INFO 401 with a B or better in both classes. Typically offered: Every other Fall, Spring, Summer

INFO404 Informatics AS Undergraduate 3
Big data is a reality in many disciplines. Big data is defined as data sources that are so large that traditional software and hardware cannot manage and store the data. This course will introduce the student to the 4 V's of big data and review case studies of organizations that have been successful using big data.

The student will be introduced to visualization techniques that can be applied to big data such as dashboards and data stories and the student will create data visualizations based on a big data source of their choosing. Pre-requisites: INFO 400 and INFO 401 with a B or better in both classes. Typically offered: Every other Fall and Summer

INFO500 Informatics AS Graduate 3
This course will introduce the student to foundational Informatics concepts such as information, data storage, and statistical concepts that deal with uncertainty, modeling and computing algorithms. The focus of the course is applying Informatics concepts to solve real-world problems from a wide variety of disciplines such as the humanities, mathematics, science and the health professions. Pre-requisites: [(MATH 130 & CPSC 130) or MATH 220] and (MATH 251 or STQM 322) with a B or better in all classes. Typically offered: Every other Fall, Spring, Summer

INFO501 Informatics AS Graduate 3
This hands-on course introduces the student to programming languages used in the Informatics field. The course employs modern-day programming languages to solve Informatics data intensive problems from a wide variety of disciplines. The focus of the first course will be on data preparation techniques and reporting. Pre-requisites: [(MATH 130 & CPSC 130) or MATH 220] and (MATH 251 or STQM 322) with a B or better in all classes. Typically offered: Every other Fall, Spring, Summer

INFO502 Informatics AS Graduate 3
This course is a continuation of INFO 501. The course will dive deeper into programming techniques commonly used in Informatics fields. Some advanced topics in the course include arrays, handling XML files through Application Programming Interfaces (API), parsing text files, structured query language (SQL) and macro coding. Pre-requisite: INFO 501 with a B or better. Typically offered: Every other Fall, Spring, Summer
INFO503  Informatics  AS  Graduate  3
Data mining and predictive modeling offer a means of analysis of large and complex data. Data mining and predictive modeling are capable of automatic extraction of knowledge deeply hidden in data, enabling discovery of knowledge not otherwise attainable. This course will provide the student an in-depth study of predictive modeling concepts such as data partitioning, performing variable selection and choosing the optimal model. Specific models, such as decision trees and neural networks, will be studied and applied in a variety of different applications. Pre-requisites: INFO 500 and INFO 501 with a B or better in both classes. Typically offered: Every other Fall, Spring, Summer

INFO504  Informatics  AS  Graduate  3
Big data is a reality in many disciplines. Big data is defined as data sources that are so large that traditional software and hardware cannot manage and store the data. This course will introduce the student to the 4 V’s of big data and review case studies of organizations that have been successful using big data. The student will be introduced to visualization techniques that can be applied to big data such as dashboards and data stories and the student will create data visualizations based on a big data source of their choosing. Pre-requisites: INFO 500 and INFO 501 with a B or better in both classes. Typically offered: Every other Fall and Summer

INPS320  Integrated Physical Sciences  AS  Undergraduate  3
INPS 320 presents students with an opportunity to learn how scientists use knowledge of the physical sciences (earth-space sciences, chemistry, and physics) to develop hypotheses and theories that explain a variety of phenomena observable in the natural world. Multidisciplinary topics serve as organizing themes for this class to promote a unified and integrated approach to learning science. Prerequisites: BIOL 103, PHSC 110 and PHSC 115. Typically Offered Spring.

INTB310  International Business  BU  Undergraduate  3
Foreign cultures, foreign business practices, physical characteristics of nations, legal differences, international organizations, international monetary system, international marketing, international labor relations, foreign investment, international management, economic theory, and international production systems. The student learns how the world is a fast and complex environment that is built around the interrelationships among nations. This course meets General Education Requirements: Global Consciousness, and new Fall 2017 Global Diversity. Typically Offered Fall, Spring, Summer

INTB320  International Business  BU  Undergraduate  3
Covers the basic subjects needed by a manager to understand methods and entry into foreign markets, international contracts, terms of trade, terms of payments, managing transaction risk, international commercial documents, international insurance, international ocean freight, international air freight, international land and multi-modal transportation, packaging for export, custom clearance, and international logistic infrastructure. Prerequisites: Junior Standing. Typically Offered Fall, Spring, Summer
INTB335  International Business  BU  Undergraduate  3  An intellectual forum for developing an understanding, through case study and application, the impact that cross-cultural communications and negotiations have on international business.  Typically Offered Fall Only

INTB380  International Business  BU  Undergraduate  3  Designed to give student indepth information on specific market regions of the world. One region will be featured each semester: Latin America, Europe and Russia, Asia, Middle East and Africa. Each regional study includes the following elements: current issues and opportunities, foreign investment, foreign trade, import/export policy and procedures, industry review, business culture, labor, business law and financial institutions. May be repeated for different regions.  Pre-Requisites: INTB 310.  Typically Offered Fall Only

INTB410  International Business  BU  Undergraduate  3  The institutions, forces and problems that are involved when business managers try to operate in many economies at once, and sorting out threats and promises when they try to link their operations across national boundaries.  Pre-Requisites: INTB 310.  Typically Offered Spring Only

INTB420  International Business  BU  Undergraduate  3  Identifies and expounds upon the two major doctrines of law (common, code) and their application within the major nations with reference to foreign countries doing business within their boundaries. Identifies law governing relations between and among the nations and examines its sources, present concepts, institutions and methods of enforcement.  Pre-Requisites: INTB 310 and BLAW 301.  Typically Offered Spring Only

INTB440  International Business  BU  Undergraduate  3  Topics essential to the understanding of international finance, including basic foreign exchange and stabilization procedures and institutions; methods for short and intermediate export financing and for long-term overseas corporate investment financing; export insurance; relationship between the national balance of payments and development; and founding and growth of regional development banks.  Prerequisites: Junior Standing or Instructor Permission.  Typically Offered Fall, Spring

INTB455  International Business  BU  Undergraduate  4  The management of foreign operations. Several approaches to entry into the world of international trade: import/export, licensing, joint ventures, and wholly-owned subsidiaries. The problems of technological innovations and transfers of technology. The design, strategy and management of global operations including questions of the political risks involved.  Pre-Requisites: INTB 310.  Typically Offered Spring Only

INTB656  International Business  BU  Graduate  3  This course examines historical and contemporary issues as well as new and emerging developments influencing the decision making process and leadership styles and choices of international managers. Considerable discussion will focus on the attributes of strategy, culture and behavior and the impact they have in the global management process.  Prerequisite: BUS graduate student.  Typically offered Fall, Spring, Summer.
ISIN121 Information Security and Intel BU Undergraduate 3
Students are introduced to digital security exposures and safeguards from a personal to global perspective. Implications of various types of online activities and practices will be investigated. Student learn why safe and secure practices are essential in daily interaction with digital information and devices. Global and cultural issues, as well as ethical and privacy issues will be examined. Typically offered Fall, Spring, Summer.

ISIN200 Information Security and Intel BU Undergraduate 3
Students are introduced to digital security, terminology, and concepts. Computer hardware, digital devices, software, and operating systems are introduced from a security perspective. Communication methods and networking are also explored. Prerequisites: ISIN 121 with C- or higher. Typically Offered Fall only.

ISIN209 Information Security and Intel BU Undergraduate 3
This course introduces network management and security concepts including establishing and maintaining network standards and governance procedures. Students will gain exposure to configuring and managing network and device configurations that support organizational objectives in a secure environment. Prerequisites ISIN 200 with C- or higher. Typically offered Spring semester

ISIN300 Information Security and Intel BU Undergraduate 3
Transformation of information into a visual format for analysis, interpretation, reporting and presentation. Students apply link and visual analysis techniques to investigative processes involved in gathering information, as well as develop techniques and strategies to work through digital implications for dealing with data from multiple sources. Analysis of digital data such as phone and financial records, surveillance information and visual media. Meets General Education requirements for Collaboration and Problem Solving. Typically Offered Fall and Spring.

ISIN301 Information Security and Intel BU Undergraduate 3
Students examine the scientific process as it applies to hypothesis development. Investigation includes the analysis of various approaches to explaining events and developing competing hypothesis. The role of data and information in the development and support of intelligence in organizational, national and international realms is also studied. Prerequisites: ISIN 300.Typically Offered Fall only.

ISIN302 Information Security and Intel BU Undergraduate 3
The course will provide best practices on the use of Business Intelligence methodology, processes and technologies in the health care domain. We will examine the history of business intelligence and its technology and process components. We will discuss and utilize Business Intelligence analysis tools such as data mining and performance management. This course will focus on how Business Intelligence can assist health care organizations in achieving improved quality of care and demonstrate evidence based medicine. Typically Offered Fall, Spring.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credit Hours</th>
<th>Program Level</th>
<th>Prerequisites</th>
<th>Offered</th>
</tr>
</thead>
<tbody>
<tr>
<td>ISIN305</td>
<td>Information Security and Intel BU</td>
<td>Undergraduate 3</td>
<td></td>
<td>Sophomore standing or instructor permission</td>
<td>Typically offered Fall and Spring</td>
</tr>
<tr>
<td>ISIN306</td>
<td>Information Security and Intel BU</td>
<td>Undergraduate 3</td>
<td></td>
<td>Sophomore standing or instructor approval</td>
<td>Typically offered Fall semester</td>
</tr>
<tr>
<td>ISIN308</td>
<td>Information Security and Intel BU</td>
<td>Undergraduate 3</td>
<td></td>
<td>ISIN 200 or instructor approval</td>
<td>Typically offered Fall</td>
</tr>
<tr>
<td>ISIN312</td>
<td>Information Security and Intel BU</td>
<td>Undergraduate 3</td>
<td></td>
<td>ISIN 308 and ISIN 305 or ISIN 306</td>
<td>Typically offered Fall</td>
</tr>
<tr>
<td>ISIN317</td>
<td>Information Security and Intel BU</td>
<td>Undergraduate 3</td>
<td></td>
<td>Sophomore standing or instructor approval</td>
<td>Fall, Spring, Summer</td>
</tr>
<tr>
<td>ISIN325</td>
<td>Information Security and Intel BU</td>
<td>Undergraduate 3</td>
<td></td>
<td>Sophomore standing or instructor approval</td>
<td>Typically offered Fall</td>
</tr>
</tbody>
</table>
ISIN335 Information Security and Intel BU Undergraduate 3

Students will examine secure software applications and cloud computing architecture utilizing a leading cloud computing service. Students will be introduced to cloud architecture and security best practices within a cloud-computing environment. Students will apply security services that are required to prevent common cyber security attacks as well as promote confidentiality, integrity, and availability within cloud computing. This course will introduce both offensive and defensive security mechanisms to promote information assurance. Prerequisites: ISN 312. Typically offered Spring.

ISIN350 Information Security and Intel BU Undergraduate 3

Students examine organizational structure, environment and planning strategies to determine associated risks. Study includes the implications of various approaches to security on the overall safety of the organization, as well as development of risk plans, security measures and countermeasures to address organizational needs. Prerequisites: HSCJ 202. Typically Offered Spring only.

ISIN351 Information Security and Intel BU Undergraduate 3

The class explores the global aspects of national and international security policies, laws, investigations as well as other relevant issues and topics. This class will also explore the societal impact of information security policies from an international perspective. Prerequisites: HSCJ 202. Typically Offered Fall.

ISIN352 Information Security and Intel BU Undergraduate 3

The class examines the role of intelligence and intelligence analysis techniques in supporting national security efforts. The course will examine the structure and roles of the various intelligence agencies and will review in detail intelligence analysis techniques through case studies. Prerequisites: HSCJ 202. Typically Offered Spring.

ISIN380 Information Security and Intel BU Undergraduate 3

Information security and intelligence threats and issues are constantly involving and it is essential that a security and intelligence professional remains current in their skills and awareness. This course is focused on analyzing current security and intelligence threats and issues facing individuals, companies, governments, and the world. Current issues will include malicious attack vectors and methods, social engineering, technology based risks such as cloud computing and data loss prevention, and intelligence challenges in information security. Prerequisites: ISIN 308. Typically Offered Spring.

ISIN409 Information Security and Intel BU Undergraduate 3

This course examines the underlying theory of networking protocols and the most prevalent application protocols. Students will apply forensic packet and protocol analysis to understand common protocols, their usage, network intrusions, covert tunneling, protocol and traffic anomalies, and other current and common network attack vectors/security events. Network analysis, log correlation and other forensics strategies will be applied to identify, investigate, protect, detect, respond and recover from network intrusions and attacks. Prerequisites ISIN 209 with C- or better. Typically offered: Fall, Spring.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Level</th>
<th>Prerequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>ISIN429</td>
<td>Information Security</td>
<td>3</td>
<td>Undergraduate</td>
<td>This course is intended to investigate the legal and ethical issues in Information Security. Ethical practices, privacy, copyright and licensing issues are researched. This issues dealing with proprietary and personal information, as well as electronic technologies will be studied. An understanding of current and future impact on information systems and management strategies will be explored. Prerequisites: Sophomore Standing. Typically Offered Spring only.</td>
</tr>
<tr>
<td>ISIN430</td>
<td>Information Security</td>
<td>3</td>
<td>Undergraduate</td>
<td>Students will apply a penetration testing methodology using a mobile application assurance framework. Students will complete course projects that incorporate penetration testing techniques against applications that integrate data and utilize cloud services in a mobile environment. This course will utilize both offensive and defensive security mechanisms to promote quality software assurance. Prerequisites: ISIN 312 and ISIN 325. Typically offered Fall.</td>
</tr>
<tr>
<td>ISIN491</td>
<td>Information Security</td>
<td>1 TO 6</td>
<td>Undergraduate</td>
<td>Work experience with cooperating employer organizations in business, industry, government, and education. The work experience is designed to be relevant to the student’s academic pursuits, personal development, and professional preparation. The work experience must last a minimum of 15 weeks with the total hours worked approved by the department head. Prerequisites: Junior standing and advisor approval. Typically Offered Fall, Spring and Summer</td>
</tr>
<tr>
<td>ISIN499</td>
<td>Information Security</td>
<td>3</td>
<td>Undergraduate</td>
<td>This course provides students with an opportunity to demonstrate the skills and knowledge they have obtained in their program through project and/or portfolio methodologies and how they would be utilized in the workplace. Students will also investigate how information security and intelligence is incorporated in their chosen career path. Prerequisites: Senior standing and instructor approval. Typically Offered Spring only.</td>
</tr>
<tr>
<td>ISYS103</td>
<td>Information Systems</td>
<td>1</td>
<td>Undergraduate</td>
<td>Learn to use a word processor and a presentation application in real-world college and business situations to create reports and presentations that are suitable for business and college audiences. Typically offered Spring, Summer and Fall.</td>
</tr>
<tr>
<td>ISYS104</td>
<td>Information Systems</td>
<td>2</td>
<td>Undergraduate</td>
<td>Learn how to use a common office spreadsheet application to solve real-world personal and business problems and combine it with word processing and presentation applications to make an integrated presentation of the solution. Prerequisite: ISYS 103. Typically offered Spring, Summer and Fall.</td>
</tr>
<tr>
<td>ISYS105</td>
<td>Information Systems</td>
<td>3</td>
<td>Undergraduate</td>
<td>Use of common office application software, including: word processing, spreadsheets, presentation software, and integration of the three products. Typically Offered Fall, Spring, Summer</td>
</tr>
<tr>
<td>Course Code</td>
<td>Course Name</td>
<td>Degree Level</td>
<td>Credits</td>
<td>Description</td>
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<tr>
<td>ISYS110</td>
<td>Information Systems</td>
<td>Undergraduate</td>
<td>3</td>
<td>This course is designed to provide an understanding of the fundamentals of computer systems, computer programming and software development. Students will gain experience in software programming and development by writing software using a high level programming language using an integrated development environment (IDE). Typically Offered Fall, Spring</td>
</tr>
<tr>
<td>ISYS200</td>
<td>Information Systems</td>
<td>Undergraduate</td>
<td>3</td>
<td>Introduces database concepts, design methodologies, and implementation procedures. Stresses the importance of sound database design to ensure data integrity and flexibility. Common data structures, normalization techniques, integrity constraints, security features, query and report facilities are discussed. One or more popular commercial database management systems will be used to implement the designs. Pre-Requisites: ISYS 105 or Demonstrated Competency in ISYS 105. Typically Offered Fall, Spring, Summer</td>
</tr>
<tr>
<td>ISYS204</td>
<td>Information Systems</td>
<td>Undergraduate</td>
<td>3</td>
<td>Visual BASIC, an Object-Oriented Event Driven (OOED) Programming language, interwoven with logical problem solving will be used to create programs for Windows-based applications that are used in industry today. The programs will include multiple forms, buttons, input boxes, IF then ELSE and loop processing, frames, and option buttons. Pre-Requisites: ISYS 105 or Demonstrated Competency in ISYS 105. Typically Offered Fall, Spring, Summer</td>
</tr>
<tr>
<td>ISYS216</td>
<td>Information Systems</td>
<td>Undergraduate</td>
<td>3</td>
<td>Introduces the Java platform and the essentials of non-graphical, object-oriented Java programming. Topics include primitive data types and operations, flow control, language syntax and debugging, packaged classes and methods, custom methods, strings, arrays, custom classes and subclasses, and fundamentals of object-oriented programming. Pre-Requisites: C or higher in MATH 114, 115, 116, 120, 126, 130, 132, or 135, or MATH ACT 24 or SAT 580; and ISYS 110 or CPSC 130 either w/C or higher. Typically Offered Fall, Spring</td>
</tr>
<tr>
<td>ISYS220</td>
<td>Information Systems</td>
<td>Undergraduate</td>
<td>3</td>
<td>Introduction to a common, business-oriented programming language. Coverage of COBOL divisions and basic sequential access programs including input data edits, file updates, control breaks, and tables. Emphasis on structured programming methodology. A popular commercial COBOL programming environment will be used to develop projects. Pre-Requisites: MATH 115 grade C or better; or ACT 24 or pre 2016 SAT 560 or post 2016 SAT 580; and ISYS 110. Typically Offered Fall Only</td>
</tr>
<tr>
<td>ISYS221</td>
<td>Information Systems</td>
<td>Undergraduate</td>
<td>3</td>
<td>The purpose of this course is to provide students with an exposure to the major platforms used by various mobile computing devices. Students will then develop, install and test applications for various mobile devices. Prerequisites: ISYS 216 or CPSC 130 w/C or higher. Typically offered Fall and Spring.</td>
</tr>
</tbody>
</table>
Developing and managing efficient and effective database applications requires understanding of database management systems, techniques for the design of databases, and principles of database administration. This course covers database design and use of database in applications. It includes extensive coverage of relational models, relational algebra, and SQL. The course also features database design and relational design principles based on dependencies and normal forms. Many other key database topics from the design and application-building perspectives are also covered, including indexes, views, transactions, and integrity constraints. Pre-requisites: ISYS 110 or CPSC 130 w/C grade or higher. Typically offered: Fall, Spring

A study of software topics not currently covered in other information systems courses. A course description will provided for each offering. Pre-Requisites: Sophomore status or instructor approval. Typically Offered Fall, Spring

This course is designed to provide the student with the necessary skills to effectively develop Web applications. Specifically, the course will explore the Web application development techniques using current programming languages. Topics include Web servers, client side and server side scripting, and data base interfaces. Other topics discussed in this class may include Computer Human Interaction, security, and session management. Advanced topics such as graphics and frameworks may also be introduced. Prerequisites: ISYS 200 or ISYS 272 w/C or higher. Typically Offered Fall only.

Work experience with cooperating employer organizations in business, industry, government, and education. The work experience is designed to be relevant to the student's academic pursuits, personal development, and professional preparation. Summer internship experience must last a minimum of 12 weeks. Credits awarded base on total hours worked during the internship. 1 credit minimum 80 hours, 2 credits minimum 160 hours, 3 credits minimum 240 hours. Detailed summary report of work experience required at end of internship. Pre-Requisites: Sophomore standing and 30+ earned credits in program. Typically Offered Fall, Spring, Summer

Visual BASIC will be used to solve advanced business problems. These programs will include (OLE) interface to other programs, databases, business reports and error handling. The final program will include a program using setup, that can be used on any windows machine. Pre-Requisites: ISYS 204. Typically Offered Spring Only
Exames the use of commercial software products to meet an organization’s information systems needs. Presents a methodology for analyzing information system requirements, evaluating competing software products, selecting and installing the product, training users, and supporting the product. Pre-Requisites: ISYS 105 or Demonstrated Competency in ISYS 105. Typically Offered Fall, Spring, Summer

Introduces graphical and advanced Java features to develop event-driven Windows programs and applets. Topics include the Abstract Windows Toolkit, containers and layout managers, components, listeners and event handler, menu bars, exception handling, file and database access, client/server applications, and server-side (Web-based) applications. Pre-Requisites: ISYS 216 or ECNS 311 either w/C or higher. Typically Offered Spring Only

Introduction to strategic information systems functions. Provides an integrating experience that enables a student to demonstrate the capacity to synthesize and apply knowledge from an organizational perspective. Included are the uses of information technology to grow, expand, and efficiently and profitably manage an organization. Of particular focus are the interrelationships between information systems. The course’s main goal is to equip students with the latest developments in businesses with regards to information technology. In that sense, the following concepts Try using will be introduced or emphasized: Business Solution Decision, Enterprise systems (ERP), Analytics and Business Process design. Students will participate in many interdisciplinary team projects and be exposed to leading business solutions software. Meets General Education requirements for Problem Solving and Collaboration. Pre-Requisites: ACCT 202 with a C- and MKTG 321 with a C- and MGMT 301 with a C- and ECON 202 with a C- and ISYS 104 or ISYS 105 with a C- or COMPETENCY Typically Offered Fall, Spring, Summer

Learners who will gain employment programming for the Web, cloud and mobile markets must be able to maximize the capabilities of the operating environments within which programs will operate. This course will build an understanding of networking and operating systems by combining hands-on experience, lecture, and projects. The successful learner in the course will be able to analyze project requirements, and then create or customize an operating environment suitable for achieving project goals. Pre-requisites: ISYS 216 or CPSC 130 w/C grade or higher. Typically offered: Fall
ISYS330 Information Systems BU Undergraduate 3
This course is designed to provide the student with the necessary skills to effectively analyze the information system requirements for business applications and successfully design an information system to meet those requirements. This course focuses on constructing problem frames, identifying and describing the problems and providing an alternative design solution. Leading edge tools, techniques, and concepts will be presented through the course. This course meets General Education Requirements: Writing Intensive Requirement and new Fall 2017 Comm Across the Curriculum. Pre-Requisites: ISYS 216 with a C or better and ISYS 272 with a C or better. Typically Offered Spring only.

ISYS372 Information Systems BU Undergraduate 3
The course starts with the more complex database programming notions such as triggers, stored procedures, and cursors. The learner will then be exposed to SQL server and Database installation, configuration and tuning, administering servers and server groups, managing and optimizing schemas, tables, indexes, and views, creating logins, configuring permissions, assigning roles and performing other essential security tasks, backup and recovery strategies, automation, and maintenance. Pre-requisites: ISYS 216 and ISYS 272 both w/C grade or higher. Typically offered: Fall

ISYS431 Information Systems BU Undergraduate 3
This course is designed to provide the student with the necessary skills to effectively analyze the information system requirements for business applications and successfully design an information system to meet those requirements. This course focuses on constructing problem frames identifying and describing the problems and providing an alternative design solution. Leading edge tools, techniques, and concepts will be presented through the course. Meets General Education requirements for Collaboration and Problem Solving. Prerequisites: ISYS 330 and ISYS 372 both with a C or better. Typically offered Fall only.

ISYS482 Information Systems BU Undergraduate 3
This course has two objectives, it aims to expose the learner to the importance of organizational data integration, and the course introduces the learner to Business Process Design techniques in order to improve the organization’s efficiency. A brief review of relational database is done at the beginning of the course. The rest of the course unfolds as follows: The course starts with the introduction of organizational structures, database organization and workflow design, then moves on to the internal controls and their effects on business processes. Lastly, more emphasis is put on learning some of the more common business processes such as accounting, material management, production, sales, and distribution. Pre-requisites: Junior Standing. Typically offered: Fall, Spring
ISYS489 Information Systems BU Undergraduate 3
This course covers the principles, methods and tools of system development and implementation. The course will explore major software development and implementation techniques by working on a case project. This is a team-oriented course designed to implement systems design specifications with using web-based programming tools and techniques. Students also learn about various software engineering techniques such as quality management, risk management, configuration and change management. Meets General Education requirements for Collaboration and Problem Solving. Prerequisites: ISYS 221, ISYS 288, ISYS 431 and PROJ 320, all with C or higher. Typically Offered Spring only.

ISYS491 Information Systems BU Undergraduate 1 TO 6
Work experience with cooperating employer organizations in business, industry, government, and education. The work experience is designed to be relevant to the student's academic pursuits, personal development, and professional preparation. Summer internship experience must last a minimum of 12 weeks with a minimum of 240 total hours worked. Detailed summary report of work experience required at end of internship. Pre-Requisites: Junior standing and 60+ earned credits in program. Typically Offered Fall, Spring and Summer

JRN121 Journalism AS Undergraduate 3
Introduction to journalism writing: news values, leads and story structure, writing a basic news story, interviewing, journalistic style and editing. Typically Offered Fall Only

JRN222 Journalism AS Undergraduate 3
An in depth view into specialized news writing that includes covering courts, police and investigative reporting, as well as introducing publicity writing and broadcast writing. Prerequisites: JRN 121 and ENGL 150 with a min grade of C in both. Typically offered Spring.

JRN234 Journalism AS Undergraduate 2
Upon completion of this course students will have written articles for the newspaper; gained experience in one or more of the following: writing articles, editing articles, designing newspaper pages, photographing events for the paper. Pre-Requisites: Instructor approval. Typically Offered Fall, Spring

JRN251 Journalism AS Undergraduate 3
An introductory media literacy course in which the history, theory, functions, processes, and psychological, social and cultural effects of print, broadcast, and digital media are examined. This course meets General Education Requirements: Social Awareness, new Fall 2017 Self and Society. Typically Offered Spring

JRN328 Journalism AS Undergraduate 3
Introduces feature and opinion styles, feature writing variety in newspapers and magazines, research techniques, and a variety of writing techniques such as description, narration and dialogue. Examines a wide variety of authors and their writing styles. Prerequisites: ENGL 250 with a min grade of C. Typically offered Spring.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Degree</th>
<th>Type</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>JRNL330</td>
<td>Journalism</td>
<td>AS</td>
<td>Undergraduate</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Publication editing in both copy editing and publication design, copy editing, headlines and cutlines, handling artwork, design principles and skills. Prerequisites: ENGL 250 with a min grade of C. Typically offered Spring.</td>
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<tr>
<td>LANG100</td>
<td>Language and Literature</td>
<td>AS</td>
<td>Undergraduate</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Language 100 stresses basic language survival skills for a potential business associate/tourist. A comparative study of cultural differences between the United States and Italy, focusing specifically on situations commonly encountered by U.S. travelers in Italy. Some attention will be paid to historical influences that have shaped the two cultures. This course does not count toward the foreign language requirement for the B.A. degree. This course meets General Education requirements: Cultural Enrichment and Global Consciousness and new Fall 2017 Culture and Global Diversity. Typically Offered Fall, Spring, Summer</td>
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<tr>
<td>LANG103</td>
<td>Language and Literature</td>
<td>AS</td>
<td>Undergraduate</td>
<td>3</td>
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<tr>
<td></td>
<td>Language 103 stresses basic language survival skills for a potential business associate/tourist. A comparative study of cultural differences between the United States and Russia, focusing specifically on situations commonly encountered by U.S. travelers in Russia. Some attention will be paid to historical influences that have shaped the two cultures. This course does not count toward the foreign language requirement for the B.A. degree. This course meets General Education requirements: Cultural Enrichment and Global Consciousness and new Fall 2017 Culture and Global Diversity. Typically Offered Spring Only</td>
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<tr>
<td>LANG105</td>
<td>Language and Literature</td>
<td>AS</td>
<td>Undergraduate</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Language 105 stresses basic language survival skills for a potential business associate/tourist. A comparative study of cultural differences between the United States and China, focusing specifically on situations commonly encountered by U.S. travelers in China. Some attention will be paid to historical influences that have shaped the two cultures. This course does not count toward the foreign language requirement for the B.A. degree. This course meets General Education requirements: Cultural Enrichment and Global Consciousness and new Fall 2017 Culture and Global Diversity. Typically Offered Fall, Spring, Summer</td>
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<tr>
<td>LANG107</td>
<td>Language and Literature</td>
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<td>Undergraduate</td>
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<td>Language 107 stresses basic language survival skills for a potential business associate/tourist. A comparative study of cultural differences between the United States and Japan, focusing specifically on situations commonly encountered by U.S. travelers in Japan. Some attention will be paid to historical influences that have shaped the two cultures. This course does not count toward the foreign language requirement for the B.A. degree. This course meets General Education requirements: Cultural Enrichment and Global Consciousness and new Fall 2017 Culture and Global Diversity. Typically Offered Spring Only</td>
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</table>
LANG110 Language and Literature AS Undergraduate 1 TO 6

The Summer Intensive Japanese Language Program is designed for students who want to concentrate on Japanese language study while experiencing life in Japan. No prior Japanese language study is required. The summer program runs from the end of May through the first full week in August. The JCMU program involves several hours of daily instruction, supplemented by time in the language lab and with Japanese conversation partners. The instruction emphasizes all four basic skills of speaking, listening, reading, and writing. Students are placed into one of four levels based on placement exams given at the beginning of the program. This course meets General Education requirements: Cultural Enrichment and Global Consciousness and new Fall 2017 Culture and Global Diversity. Typically Offered Fall, Spring, Summer

LITR150 Literature AS Undergraduate 3

The major genres of literature: short story, novella, poetry, drama, and analytical prose, to help students read, understand, enjoy, and reflect upon such works. This course meets General Education requirements: Cultural Enrichment and new Fall 2017 Culture. Typically Offered Fall, Spring

LITR170 Literature AS Undergraduate 3

Women’s literature as viewed from literary, historical, psychological, political, sociological, and multicultural perspectives. Includes study of writings by and about women. This course meets General Education requirements: Cultural Enrichment and Race/Ethnicity/Gender and new Fall 2017 Culture and U.S. Diversity. Typically Offered Fall, Spring

LITR180 Literature AS Undergraduate 3

Alternating between a variety of issues affecting the American experience, this course helps students understand the significance of American literature and culture in their own lives. Each issue is studied from the social, historical, economic, and political perspectives that define it. Recent topics have included: the American work experience; the moral and ethical issues in American business literature; the wilderness in American experience; and American literary responses to the Vietnam War. This course meets General Education requirements: Cultural Enrichment and new Fall 2017 Culture. Typically Offered Fall, Spring

LITR202 Literature AS Undergraduate 3

Recurring themes, images, symbols, and ideas that one sees in the works of some of the twentieth century’s most important African-American writers. The substance will vary: poetry, fiction (i.e., the novel and the short story) and some drama will be read. Nella Larsen, Wright, McPherson, Brooks, and Baraka will be studied. This course meets General Education requirements: Cultural Enrichment and Race/Ethnicity/Gender Issues, and new Fall 2017 Culture and US Diversity. Pre-Requisites: ENGL 150. Typically Offered Fall Only
LITR203 Literature AS Undergraduate 3
The most important voices and talents in post-colonial Africa, both novelists and poets. Includes the works of Armah, Ngugi, Soyinka, Achebe, Bessie Head, Diop, Coetzee, Brutus, Bernard, and Lessing. This course meets General Education requirements: Global Consciousness, Cultural Enrichment and Race/Ethnicity/Gender Issues, and new Fall 2017 Global Diversity, Culture, and US Diversity. Pre-Requisites: ENGL 150. Typically Offered Spring Only
Oral and written works by and about North American Indians. The social, historical, cultural and political issues which have influenced the lives of Native American people of the past and present. This course meets General Education requirements: Cultural Enrichment and Race/Ethnicity/Gender, and new Fall 2017 Culture and US Diversity. Pre-Requisites: ENGL 150. Typically Offered Fall Only
Selected poems and poetic forms are studied for themes and elements of poetry and for appreciation of poetic technique. Emphasis on reading methods useful for improving comprehension and appreciation. This course meets General Education requirements: Cultural Enrichment, and new Fall 2017 Culture. Pre-Requisites: ENGL 150. Typically Offered Fall Only, Even Year
This course explores how works of science fiction and/or fantasy imaginatively construct important global cultural and historical themes such as gender, the body, power, desire, science and technology, difference, the monstrous within diverse cultures. The course will provide students with an understanding of the historical and cultural development of these global genres as well as the critical tools to effectively analyze works in a variety of media such as graphic novels, short stories, novels, movies, television, digital games and fan fiction. The course satisfies the cultural enrichment general education criteria. Pre-Requisites: ENGL 150. Typically offered Spring Only
Genre structure, narrative techniques, and thematic traditions. Extensive reading and discussion of works by European, British, American, and Third World authors. This course meets General Education requirements: Cultural Enrichment and Global Consciousness, and new Fall 2017 Culture and Global Diversity. Pre-Requisites: ENGL 150. Typically Offered Fall, Spring
Survey of popular reading in America: science fiction, detective, spy and mystery stories, love stories, western, historical and adventure fiction, and success stories. Influence of popular literature on American culture and implications of certain kinds of popular writings for the historical period in which they flourished. This course meets General Education requirements: Cultural Enrichment, and new Fall 2017 Culture. Pre-Requisites: ENGL 150. Typically Offered Spring Only
This course will cover a variety of works of literature and film interpretations of them. Students will read and critically analyze literature, dealing with such matters as theme, plot, characterization, the writer's art, cultural and social influences, and other subjects common to literature courses. They will also view films based on the works they have read, examine changes between the written and film version, and analyze possible influences behind those changes. This course meets General Education requirements: Cultural Enrichment, and new Fall 2017 Culture. Pre-Requisites: ENGL 150. Typically Offered Spring Only.

LITR 250 introduces major genres and critical approaches to literature, focuses on close reading and textual interpretation, and provides practice in oral and written responses to literature. LITR 250 prepares students to analyze, discuss, and write critically about literature at a level appropriate for English majors and minor. Enrollment limited to majors and minors in English BA and English Education programs, or with instructor's permission. Prerequisites: ENGL 150 Co-requisite: ENGL 250. Meets General Education requirements for Collaboration and Problem Solving. Typically offered Fall, Spring.

World Drama is a basic course in the development of drama, designed to acquaint the student with what constitutes the dramatic form in its various manifestations. Emphasis will be placed upon a diversity of dramatic works representing both the western canon and a global perspective. This course meets General Education requirements: Cultural Enrichment, new Fall 2017 Culture. Pre-Requisites: ENGL 150. Typically Offered Fall Only.

World Novels is a basic course in the development of the novel, designed to acquaint the student with what constitutes the novel form in its various manifestations. Emphasis will be placed upon a diversity of works representing both the western canon and a global perspective. This course meets General Education requirements: Cultural Enrichment, and new Fall 2017 Culture. Pre-Requisites: ENGL 150. Typically Offered Spring Only.

Surveys genres of American Folklore emphasizing folk narratives and genres found in literature. These forms will be examined from multiple perspectives, including anthropology, sociology, folklore, and literature. In addition to surveying the folk traditions of the United States, the course surveys the theories that folklorists have developed to explain the continuation of such traditions in a society that is highly literate. Materials are drawn from student experience, literature, and collections of folklore and material culture. This course meets General Education requirements: Cultural Enrichment, and new Fall 2017 Culture. Pre-Requisites: ENGL 150. Typically Offered Fall Only.
In this course students will study several aspects of the theme of justice. The short fiction, essays, novels, articles, plays, and films selected will enable students to study the moral and legal definitions of justice, the images and characters that illustrate themes of justice, and how our perceptions of justice have shaped our values and language. This course meets General Education requirements: Cultural Enrichment and Writing Intensive Requirement, and new Fall 2017 Comm Across the Curriculum, Culture. Pre-Requisites: ENGL 250. Typically Offered Fall, Spring.

The literature of the indigenous, colonial, and post-colonial cultures, excluding that of western Europe, the classical world, and the United States. Repeatable with permission of adviser up to two times. This course meets General Education Requirements for Cultural Enrichment, Race-Ethnicity-Gender, Global Consciousness, and Writing Intensive and new Fall 2017 Culture, Diversity (US and Global) and Communication Across the Curriculum. Prerequisites: ENGL 250 with C or better. Typically Offered: Fall, Spring, Summer.

Surveys major authors, cultural background and literary developments from the 17th century to the advent of Realism in the 1870s. Includes writers active during the Trans-Atlantic, Enlightenment, and Romantic periods. This course meets General Education requirements: Cultural Enrichment Writing Intensive, and new Fall 2017 Comm Across the Curriculum and Culture; Prerequisites: LITR 250 or ENGL 260. Typically Offered Fall, Spring.

Surveys major authors, cultural background and literary developments from the 19th century advent of Realism to the present day. Includes writers active during the periods of Realism, Naturalism, Modernism, and Contemporary literature. This course meets General Education requirements: Writing Intensive and Cultural Enrichment. Pre-Requisites: LITR 250 or ENGL 260. Typically Offered Fall, Spring, Summer.

A study of Shakespeare’s poetry and dramas, including the comedies, histories, and tragedies. The format will emphasize characterization, literary craftsmanship, and major themes. His works will be placed in the historical, cultural, and literary perspective of his times. This course meets General Education requirements: Cultural Enrichment and Writing Intensive Requirement and new Fall 2017 Culture and Comm Across the Curriculum. Pre-Requisites: LITR 250. Typically Offered Fall, Summer.
LITR326 Literature AS Undergraduate 3

A survey of literature for children from infancy through elementary school age: picture books, nursery rhymes, folk literature, poetry, fantasy, realism, biography and informational books. Assess the literary quality of children's literature, methods of acquainting children with the literature, as well as the social, psychological, and philosophical issues raised by literature. This course meets General Education requirements: Cultural Enrichment and Writing Intensive Requirement and new Fall 2017 Culture and Comm Across the Curriculum. Pre-Requisites: ENGL 250 or 211. Typically Offered Fall, Spring

LITR327 Literature AS Undergraduate 3

A survey of literature written primarily for teenagers, topics to include fantasy, problem novels, social and psychological realism, historical realism, poetry, biography, and informational books. Literature addressing issues of particular concern to adolescents (achieving personal identity, puberty and sexual awareness, interpersonal relationships, cross-generational conflicts, inter racial relations, increasing social and political awareness), and assessing literary quality. This course meets General Education requirements: Cultural Enrichment and Writing Intensive Requirement and new Fall 2017 Culture and Comm Across the Curriculum. Pre-Requisites: ENGL 250 or 211. Typically Offered Fall, Spring

LITR328 Literature AS Undergraduate 3

Historical survey of British and American literature for children. Focus on masterworks published between 1850 - 1950. Authors include Lewis Carroll, Mark Twain, R.L. Stevenson, C.S. Lewis, Laura Ingalls Wilder, and others. Pre-Requisites: ENGL 250 or 211. Typically Offered Spring Only

LITR330 Literature AS Undergraduate 3

Survey of major literary trends of post-modern era (WWII to present). Major schools include the Beats, The Angry Young Men, Metafictionists, Confessional Poets, Surrealists and other contemporary schools of Fiction, Poetry and Drama. This course meets General Education requirements: Cultural Enrichment, Writing Intensive and new Fall 2017 Culture and Comm Across the Curriculum. Pre-Requisites: ENGL 250 or 211. Typically Offered Fall Only

LITR343 Literature AS Undergraduate 3

A philosophical study and discussion emphasizing the themes of crime and violence in various literary works from the nineteenth century to the present. Pre-Requisites: ENGL 250. Typically Offered Fall, Spring

LITR351 Literature AS Undergraduate 3

Surveys major authors, cultural background and literary developments from the beginnings of British literature up to the late 18th century. Includes writers active during the Middle Ages, the Renaissance, and Restoration, and the 18th Century. This course meets General Education requirements: Writing Intensive and Cultural Enrichment and new Fall 2017 Culture and Comm Across the Curriculum. Pre-Requisites: LITR 250 or ENGL 260. Typically Offered Fall Only.
LITR352 Literature AS Undergraduate 3
Surveys major authors, cultural background and literary developments from the Romantic era to the 20th century. Includes writers active during the Romantic, Victorian, Modernist and Contemporary periods. This course meets General Education requirements: Writing Intensive and Cultural Enrichment and new Fall 2017 Culture and Comm Across the Curriculum. Pre-Requisites: LITR 250 or ENGL 260. Typically Offered Fall, Spring.

LITR371 Literature AS Undergraduate 3
Readings in literature by women organized by theme, genre, or period. Topic changes each time offered. Prerequisites: ENGL 250 with C or better. This course meets General Education requirements: Cultural Enrichment and Race/Ethnicity/Gender and new Fall 2017 Culture and U.S. Diversity. Typically offered Fall and Spring.

LITR380 Literature AS Undergraduate 3
A study of traditional oral literature and folklore from around the world, including ancient mythologies, legends, tall tales and fairy tales from Europe, Native America, Africa, India, the Middle and Far East. The origins of folk literature and folklore, their dissemination, their social and psychological implications, and their place in the modern world will all be explored. Students with credit for LITR 380 cannot take LITR 580. This course meets General Education requirements: Cultural Enrichment, Global Consciousness and Writing Intensive Requirement and new Fall 2017 Culture, Global Diversity, and Comm Across the Curriculum. Pre-Requisites: ENGL 250. Typically Offered On Demand.

LITR401 Literature AS Undergraduate 3
A study of the works of a major literary movement of English literature, British or American. A major literary movement is defined as recognizable trend in literary history when a number of writers shared similar influences, tastes, and literary goals. The course may focus on a broad period, such as Medieval English Literature, or on a narrower field, such as American Naturalism. The topic will change with each offering and will be announced when the course is listed. This course meets General Education requirements: Cultural Enrichment and new Fall 2017 Culture. Pre-Requisites: ENGL 250 and LITR 250. Typically Offered: Spring Even Years.

LITR402 Literature AS Undergraduate 3
A study of the works of one or more major writers of English literature, British or American. A major writer is one whose work has been acknowledged over the course of time as having a significant impact on the literary world and/or whose works are universally acknowledged as being of the highest artistic achievement. The course may focus on the work of a single writer, such as Chaucer or Twain, or on the works of two or more writers who share some common ground, such as British Romantic poets or American Southern writers. The topic will change with each offering and will be announced when the course is listed. This course meets General Education requirements: Cultural Enrichment and new Fall 2017 Culture. Pre-Requisites: ENGL 250 and LITR 250. Typically Offered Spring Only, Odd Years.
LITR415 Literature AS Undergraduate 3
Planning, implementation, and evaluation of teaching literature. Examines the role and function of literature in the schools, critical approaches to literature, current issues (e.g., cultural literacy, censorship, values education, inclusion, discipline, etc.), book selection, planning objectives, interdisciplinary relationships, classroom activities, and methods of assessing student performance. Incorporates a 4-6 week practicum in conjunction with local public schools that will require the student to plan, design, implement, and assess sample teaching units. Typically Offered: Spring

LITR526 Literature AS Graduate 3
A study of the most recent award-winning children's books, including Newbery, Caldecott, Coretta Scott King, Scott O'Dell and Phoenix Award winners as well as Canadian and British books when available. The books and their authors will be discussed, with particular attention to literary trends, cultural milieu, and the general status of children's literature. Pre-Requisites: Graduate status or Instructor approval. Typically Offered Fall, Summer

LITR580 Literature AS Graduate 3
A study of traditional oral literature and folklore from around the world, including ancient mythologies, legends, tall tales and fairy tales from Europe, Native America, Africa, India, the Middle and Far East. The origins of folk literature and folklore, their dissemination, their social and psychological implications, and their place in the modern world will all be explored.

LLAW160 Legal Studies Law BU Undergraduate 3
Examines the purpose of law and the roles of legal professionals within the legal system. Includes a survey of substantive and procedural law including state and federal courts, constitutional law, administrative law, torts, contracts and an overview of civil litigation. Typically Offered Fall Only

LLAW161 Legal Studies Law BU Undergraduate 4
A continuation of LLAW 160 with an emphasis on legal research and writing. Laboratory sections are held in the law library. Survey of business organization, labor and employment, family law and motor vehicle law. Pre-Requisites: LLAW 160. Typically Offered Spring Only

LLAW251 Legal Studies Law BU Undergraduate 3
Concentrates on research of criminal law and procedure; provides the steps for prosecuting and defending a criminal case; discusses constitutional rights and criminal appeals. Pre-Requisites: LLAW 160. Typically Offered Spring Only
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<tr>
<th>Course Code</th>
<th>Department</th>
<th>Level</th>
<th>Credits</th>
<th>Description</th>
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<td>Legal Studies Law</td>
<td>BU</td>
<td>Undergraduate</td>
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<td>LLA260</td>
<td>Legal Studies Law</td>
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<td>LLA261</td>
<td>Legal Studies Law</td>
<td>BU</td>
<td>Undergraduate</td>
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<td>LLA280</td>
<td>Legal Studies Law</td>
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<td>Undergraduate</td>
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<td>LLA291</td>
<td>Legal Studies Law</td>
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<td>Undergraduate</td>
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<td>MATH010</td>
<td>Mathematics</td>
<td>AS</td>
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<tr>
<td>MATH109</td>
<td>Mathematics</td>
<td>AS</td>
<td>Undergraduate</td>
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MATH110 Mathematics AS Undergraduate 4

An introductory course in algebra covering linear equations, exponents, polynomials, factoring, solving quadratic equations by factoring, rational expressions, solving linear systems of equations, and applications. Integrated into the course at appropriate points are the following topics of arithmetic: prime factoring, GCF, LCD, numerical fractions, and signed number. Pre-Requisites: MATH 010 with grade of C- or better, or 15 on ACT or 350 on pre 2016 SAT or 400 post 2016 SAT. Typically Offered Fall, Spring, Summer.

MATH114 Mathematics AS Undergraduate 4

A study of modeling and analyzing quantitative relationships in professional contexts. Focus on linear and exponential models, linear systems of equations and inequalities, linear programming, linear regression, solving equations with logarithms, and using logarithms to transform non-linear models into linear models. Additional topics may include quadratic functions, logistic functions, and periodic functions. Meets General Education Requirements for Quantitative Studies and new Fall 2017 Quantitative Literacy. Pre-Requisites: MATH 109 with a grade of C- or better, or MATH 110 with a grade of C- or better, or 19 on ACT (Math), or 460 on pre 2016 SAT (Math) or SAT 500 (MATH) ; and ENGL 074 or 14 or better on ACT (ENGLISH) or 370 or better on pre 2016 SAT (Verbal) or 450 or higher SAT (Evidence Based Reading and Writing). Typically offered Fall, Spring.

MATH115 Mathematics AS Undergraduate 3

A study of complex fractions, first and second degree equations and inequalities, exponents, radicals, and introduction to complex numbers, logarithms, and systems of equations. Meets General Education requirements for Quantitative Literacy. Pre-Requisites: MATH 109 with a grade of C- or better, or MATH 110 with a grade of C- or better, or 19 on ACT or 460 on pre 2016 SAT or 500 post 2016 SAT. Typically Offered Fall, Spring, Summer.

MATH116 Mathematics AS Undergraduate 4

Special factoring forms, exponents, roots and radicals, scientific notation, fractions, first and second degree equations and inequalities, functions and graphs, logarithms, and solutions of logarithmic and exponential equations, systems of equations up to 3x3 and Cramer’s Rule, numerical trigonometry including vectors, Law of Sines and Cosines, and graphs of trigonometric functions. Meets General Education requirements for Quantitative Literacy. Pre-Requisites: MATH 109 with a grade of C- or better, or MATH 110 with a grade of C- or better, or 19 on ACT or 460 on pre 2016 SAT or 500 post 2016 SAT. Typically Offered Fall, Spring, Summer.
MATH117 Mathematics AS Undergraduate 4
A terminal course in mathematics satisfying the General Education quantitative skills requirement. Exposes students to a wide variety of mathematical concepts and their applications. Topics include algebraic applications, geometry, statistics, probability and mathematics of finance.
Note: Math 117 cannot be used as a prerequisite for courses requiring Math 115 as a prerequisite. Should a student change his or her academic program to one that requires Math 115 as a prerequisite for subsequent courses the student will be required to complete Math 115. Pre-Requisites: MATH 109 with a grade of C- or better, or MATH 110 with a grade of C- or better, or 19 on ACT or 460 on pre 2016 SAT or 500 post 2016 SAT. Meets General Education requirements for Quantitative Literacy. Typically Offered Fall, Spring, Summer

MATH120 Mathematics AS Undergraduate 3
An elementary course in plane trigonometry. Includes the trigonometric functions, their properties, solution of right and oblique triangles, radian measure, graphs, identities, trigonometry equations, vectors, and applications. Related topics in Geometry included. Calculators with trigonometric functions required. Pre-Requisites: MATH 114 with a grade of C- or better, or MATH 115 with a grade of C- or better, or 24 on ACT or 560 on pre 2016 SAT or 580 post 2016 SAT. Typically Offered Fall, Spring, Summer

MATH122 Mathematics AS Undergraduate 3
A study of mathematical models of linear equations and linear inequalities. Topics to be covered include: matrices, business applications, linear programming including both the geometrical approach and the simplex approach, maximizing and minimizing of standard and non-standard problems, duality, linear regression and correlation. Pre-Requisites: MATH 115 with a grade of C- or better, or 24 on ACT or 560 on pre 2016 SAT 580 post 2016 SAT. Typically Offered Fall, Spring.

MATH125 Mathematics AS Undergraduate 4
This college-level course continues the study of algebra from the material learned in Elementary and Intermediate Algebra. Topics include a more extensive look at solving linear and nonlinear equations and inequalities in one variable, graphs of circles, symmetry, functions (linear, polynomial, rational, exponential, and logarithmic), graphs of functions and their transformations, inverse functions, operations with functions, solving linear and nonlinear systems of equations and inequalities in two variables, sequences and summation notation. Applications will include the use of technology to determine regression models from bivariate data. Pre-requisites: C- or better in MATH 114, MATH 115, or MATH 116 OR 24+ on the ACT-Math, OR 580+ on the SAT-Math. Typically offered: Fall, Spring, Summer
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<tr>
<th>Course Code</th>
<th>Department</th>
<th>Level</th>
<th>Credits</th>
<th>Description</th>
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<tr>
<td>MATH126</td>
<td>Mathematics</td>
<td>AS Undergraduate</td>
<td>4</td>
<td>Analytic trigonometry and trigonometric equations, the j-operator, DeMoivre's Theorem, non-linear inequalities, applications of logarithmic and exponential equations and plane analytic geometry with polar sketching. Equations of higher degree including the remainder theorem, factor theorem, synthetic division, rational and irrational roots of polynomials. Pre-Requisites: MATH 116 with a grade of C- or better, or 24 on ACT or 560 on pre 2016 SAT or 580 post 2016 SAT. Typically Offered Fall, Spring, Summer</td>
</tr>
<tr>
<td>MATH130</td>
<td>Mathematics</td>
<td>AS Undergraduate</td>
<td>4</td>
<td>Quadratic equations, inequalities, straight lines, graphing equations, functions and inverse functions, exponential and logarithmic functions, trigonometry from an analytical point of view, sequences, mathematical induction, and the binomial theorem. Pre-Requisites: MATH 120 with a grade of C- or better, or 24 on ACT or 560 on pre 2016 SAT or 580 post 2016 SAT. Typically Offered Fall, Spring, Summer</td>
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<tr>
<td>MATH132</td>
<td>Mathematics</td>
<td>AS Undergraduate</td>
<td>3</td>
<td>A survey of differential and integral calculus, introducing students to calculus concepts through realistic applications. Students will model and solve problems involving differentiation and integration of algebraic, exponential, logarithmic, and trigonometric functions, using technology regularly to assist with experimentation, computation, and interpreting results. A multi-representational approach will be emphasized with concepts, problems, and results being expressed graphically, numerically, analytically, and verbally. Appropriate for students who do not plan to continue the study of calculus, but want a fundamental understanding of calculus and hands-on applications that they can relate to. Pre-Requisites: MATH 116 or MATH 120 or equivalent with a grade of C- or better, or 24 on ACT Math or 580 on SAT Math. Typically Offered Fall, Spring</td>
</tr>
<tr>
<td>MATH216</td>
<td>Mathematics</td>
<td>AS Undergraduate</td>
<td>4</td>
<td>The derivative and applications of the derivative and integration applications of the integral. Derivatives of the trigonometric and inverse trigonometric functions with applications and derivatives of the transcendental functions with applications. Techniques of integration and integrations using tables and approximate integration. Pre-Requisites: MATH 126 or MATH 130 with grade of C- or better, or 26 on ACT or 590 on pre 2016 SAT or 620 post 2016 SAT. Typically Offered Fall, Spring</td>
</tr>
<tr>
<td>MATH218</td>
<td>Mathematics</td>
<td>AS Undergraduate</td>
<td>3</td>
<td>The first in a two course sequence designed to develop pre-service elementary teachers' conceptual understanding of mathematics. Topics include problem solving, set theory, number theory, rational and real numbers, and algebraic concepts. Emphasis is placed on learning through problem solving. Open only to prospective elementary teachers. Prerequisites: MATH 114 with a grade of C- or better, or MATH 115 with a grade of C- or better, or 24 on ACT or 560 on pre 2016 SAT or 580 post 2016 SAT. Typically Offered Fall, Spring.</td>
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<td>Course Code</td>
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<td>MATH219</td>
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<td>MATH226</td>
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<tr>
<td>MATH251</td>
<td>Mathematics</td>
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<tr>
<td>MATH317</td>
<td>Mathematics</td>
<td>Undergraduate</td>
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**MATH219 Mathematics AS Undergraduate 3**
The second in a two course sequence designed to develop pre-service elementary teachers' conceptual understanding of mathematics. Topics include elementary probability and statistics, geometric concepts, and measurement concepts. Emphasis is placed on learning through problem solving. Open only to prospective elementary teachers. Prerequisites: MATH 218 with a grade of C or better or placement or 580 on post 2016 SAT. Typically Offered Fall, Spring.

**MATH220 Mathematics AS Undergraduate 4**
The first of a three-semester sequence in analytical geometry and calculus. Topics include: the limit, the derivative, differentiation of algebraic and transcendental functions, and definite and indefinite integration. Pre-Requisites: MATH 126 or MATH 130 with grade of C- or better, or 26 on ACT or 590 on pre 2016 SAT or 620 post 2016 SAT. Typically Offered Fall, Spring, Summer.

**MATH226 Mathematics AS Undergraduate 4**

**MATH230 Mathematics AS Undergraduate 4**
The second of a three-semester sequence in analytical geometry & calculus. Topics include: applications of integration, integration techniques, infinite series, conic sections, parametric equations, & polar coordinates. Pre-Requisites: MATH 220 with a C- or better. Typically Offered Fall, Spring, Summer.

**MATH251 Mathematics AS Undergraduate 3**
A first course in statistics, including a broad range of applications from science. Topics include: Data display, descriptive statistics, probability, estimation, inference, and regression. Pre-Requisites: MATH 130 with a grade of C- or better, or 26 on ACT or 590 on pre 2016 SAT or 620 post 2016 SAT. Typically Offered Fall, Spring.

**MATH317 Mathematics AS Undergraduate 3**
Concepts of geometry and measurement appropriate for elementary and middle school teachers. This course will focus on using activities to develop geometric concepts as well as the use of Geometer's Sketchpad. Includes Euclidean, coordinate and transformational geometry, the history of geometry and applications to problem-solving. Prerequisites: MATH 219 and MATH 130 with a grade of C or better. Typically Offered Fall Only, Odd Years.
This course covers basic concepts of statistics and probability appropriate for K-12 school teachers. Topics include methods of organizing, displaying, analyzing, and interpreting data; methods of collecting data and making predictions and inferences based on data; and the theory of probability and probability distributions. Graphing calculators and computers will be used throughout the course to reinforce major course ideas. Prerequisites: MATH 219 or higher with a grade of C or better. Typically Offered Spring

This course introduces students to a wide variety of mathematical problem solving strategies and should also greatly enhance students writing, oral communication, and collaboration skills. Topics include the following strategies: drawing a diagram, making a systematic list, use of matrix logic, looking for a pattern, identifying sub problems, analyzing units, creating an easier related problem or physical representation, working backwards, converting to algebra, changing the focus of how we look at a problem, and visualizing spatial relationships. Group projects will be assigned with the results presented both orally and in writing. Prerequisites: MATH 219 or higher with a grade of C or better. Typically Offered Fall Only.

The third of a three-semester sequence in analytic geometry and calculus. Topics include: vector valued functions, functions of several variables, and multiple integrals. Pre-Requisites: MATH 230 with a C or better. Typically Offered Fall Only.

An introduction to the theory of vector spaces with emphasis on matrix algebra. Topics included are linear transformation, independence, rank, and inverses. Pre-Requisites: MATH 230 with a C or better. Meets General Education requirements for Collaboration and Problem Solving. Typically Offered Fall, Spring.

An introduction to mathematical structure and deductive logic through the study of fundamental systems. Topics include logic, arguments, set theory, relations, induction, and algebraic structures. Standard methods of mathematical proof are emphasized. Pre-Requisites: MATH 220 with a C or better. Meets General Education requirements for Collaboration and Problem Solving. Typically Offered Fall Only.

A primarily axiomatic development of Euclidean geometry with an emphasis on writing of geometric proofs. The course includes measurement and area, the use of geometry software, geometric constructions, coordinate geometry, and transformational geometry. Prerequisites: MATH 324. Typically offered Spring Only.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Department</th>
<th>Level</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH326</td>
<td>Mathematics</td>
<td>Undergraduate</td>
<td>3</td>
<td>This course focuses on logic and reasoning, as well as the role of axiomatic systems and proofs. It includes a study of patterns, relations and functions to model and solve problems, how counting is used to enumerate and order, finite graphs and trees and how they are used to model problems, and a study of probability concepts and the use of probability in real-world situations. The course aims to give students a deep experience of the mathematics in a larger context by studying both theoretical foundations and applications of the topics of the course. Prerequisites: MATH 219 or higher with a grade of C or better. Typically Offered Spring.</td>
</tr>
<tr>
<td>MATH328</td>
<td>Mathematics</td>
<td>Undergraduate</td>
<td>3</td>
<td>Discrete Mathematics topics for Applied Mathematics and Computer Science, Including: Sets, Algorithms, Recursion, Combinatorics, and Graph Theory. Prerequisites: MATH 216 or 220 and CPSC 130. All with a C- or better. Typically Offered Spring Only, Even Year</td>
</tr>
<tr>
<td>MATH330</td>
<td>Mathematics</td>
<td>Undergraduate</td>
<td>3</td>
<td>Ordinary linear differential equations and classical solutions to special types of non-linear equations. Also, numerous applications, series solutions, and solutions of systems of linear differential equations. Prerequisites: MATH 230 with a C- or better. Typically Offered Fall Only.</td>
</tr>
<tr>
<td>MATH340</td>
<td>Mathematics</td>
<td>Undergraduate</td>
<td>3</td>
<td>Numerical Algorithms for Root Finding, Interpolation, Integration, Linear Algebra, and Differential Equations. Prerequisites: MATH 230 and CPSC 130 with a grade of C- or better. Typically Offered Spring Only, Even Years.</td>
</tr>
<tr>
<td>MATH360</td>
<td>Mathematics</td>
<td>Undergraduate</td>
<td>3</td>
<td>This course covers the main topics of operations research, including model formulation, linear programming, integer programming, nonlinear programming, network analysis, deterministic and stochastic dynamic programming, game theory and decision theory. Prerequisites: MATH 322 with a C- or better. Typically Offered Fall Only, Even Years.</td>
</tr>
<tr>
<td>MATH385</td>
<td>Mathematics</td>
<td>Undergraduate</td>
<td>1</td>
<td>This course will help prepare students to take the Society of Actuaries' Professional Exam #100. Emphasis will be given to analysis of previous exams, study of sample questions, and general test-taking techniques. Grading will be credit/no credit only. Prerequisites: MATH 414. Co-Requisites: MATH 320 with a C- or better. Typically Offered Fall, Spring, Summer.</td>
</tr>
<tr>
<td>MATH414</td>
<td>Mathematics</td>
<td>Undergraduate</td>
<td>4</td>
<td>A theoretical course in probability and statistics including distributions and densities, expectation, moment generating functions and functions of random variables. Prerequisites: MATH 320 and MATH 251 with a C- or better. Typically Offered Fall Only.</td>
</tr>
<tr>
<td>MATH416</td>
<td>Mathematics</td>
<td>Undergraduate</td>
<td>4</td>
<td>A continuation of MATH 414, including sampling distributions, estimation, hypothesis testing, regression and ANOVA. Prerequisites: MATH 414 with a C- or better. Meets General Education requirements for Collaboration and Problem Solving. Typically Offered Spring Only.</td>
</tr>
</tbody>
</table>
MATH417 Mathematics AS Undergraduate 3 Review and practice of problem solving for the Society of Actuaries Exam P. Additional topics include the specific application of probationary to risk management and insurance settings. Prerequisites: MATH 414 with a grade of C- or better. Typically offered Spring.

MATH418 Mathematics AS Undergraduate 3 This course is designed to provide pre-service elementary/middle school teachers a fundamental core or strategies to help them become effective mathematics teachers. It will provide perspectives on trends in mathematics education and the process of doing mathematics and develop the core ideas of learning, teaching, assessment and planning. It will focus on how children learn mathematics, and how to promote that learning through problem-solving, and the use of technology. It will also provide perspectives on teaching special children and on the history of mathematics. Prerequisites: Completion of 18 hours in the math minor for elementary Education. Typically Offered Fall Only, Odd Years.

MATH420 Mathematics AS Undergraduate 3 A study of abstract algebra. Topics to be covered include: sets, equivalence relations, groups, rings, fields, integral domains, homomorphisms, isomorphisms, and their elementary properties. Pre-Requisites:MATH 324. Typically Offered Spring Only, Odd Years.

MATH430 Mathematics AS Undergraduate 3 A more rigorous approach to limits, continuity, sequences, and multivariable calculus, plus additional topics such as line and surface integrals. Fourier series, and gamma and beta functions. This is the capstone course for the Mathematics BA degree. Pre-Requisites:MATH 320 and MATH 324. Typically Offered Fall, Spring, Summer

MATH438 Mathematics AS Undergraduate 3 Provide pre-service secondary mathematics teachers with a fundamental core of strategies to help them become effective mathematics teachers. This will include study of and experience with cooperative and active learning strategies; formative and summative assessment techniques; and instructional approaches that involve the use of manipulatives, technology, multiple perspectives. Students will develop the core ideas of learning, teaching, assessment, and planning. Mathematical content will also be integrated with pedagogy; topics include logic and reasoning, geometry and measurement algebra, data analysis and probability, and precalculus. Prerequisite: MATH 2201 or higher and junior or senior status. Typically offered Fall Odd Years.

MATH440 Mathematics AS Undergraduate 3 Introduction to mathematical models. Includes topics dependent upon student interests and backgrounds. A broad mathematics background is required. Pre-Requisites:MATH 322 or MATH 328 with a C- or better. Typically offered Fall Only, Odd Years.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Level</th>
<th>Credits</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH450</td>
<td>Mathematics AS</td>
<td>Undergraduate</td>
<td>4</td>
<td>The fundamental concepts of financial mathematics, and how these concepts are applied in calculating present and accumulated values for various streams of cash flows as a basis for future use in: reserving, valuation, pricing, asset/liability management, investment income, capital budgeting, and valuing contingent cash flows. Emphasis on preparing students for the Society of Actuaries Exam FM. Prerequisites: MATH 230, with a grade of C- or better. Offered Fall semester, Odd-numbered years.</td>
</tr>
<tr>
<td>MATH451</td>
<td>Mathematics AS</td>
<td>Undergraduate</td>
<td>3</td>
<td>Review and practice of problem solving for the Society of Actuaries Exam FM. Additional topics include financial derivatives and the concept of no-arbitrage as relates to financial mathematics. Prerequisites: MATH 450 with a grade of C- or better. Typically Offered Spring, even years.</td>
</tr>
<tr>
<td>MATH485</td>
<td>Mathematics AS</td>
<td>Undergraduate</td>
<td>1 TO 6</td>
<td>The student will participate in a basic or applied research project in their major or a closely related discipline. The course will be designed to provide the student with hands-on experience in research design, informational gathering and management, analysis and interpretation. One credit hour equals 45 contact hours per semester. May be repeated for up to 12 credits. Prerequisites: Mathematics students only and Instructor approval. Typically Offered On Demand</td>
</tr>
<tr>
<td>MATH491</td>
<td>Mathematics AS</td>
<td>Undergraduate</td>
<td>1 TO 6</td>
<td>Work experience with cooperating employer organizations in business, industry, government, and education. The work experience is designed to be relevant to the student's academic pursuits, personal development, and professional preparation. The work experience must last a minimum of 8 weeks with a total hours worked approved by the program coordination. Typically Offered On Demand</td>
</tr>
</tbody>
</table>
At the conclusion of the course, participants will have acquired the following knowledge and be able to carry out the following tasks: (1) Construct a working definition of quantitative literacy to apply in teaching practice. (2) Demonstrate an enhanced understanding of what it means to learn math and where mathematical misconceptions and student confusion can occur. (3) Demonstrate ways to infuse quantitative literacy into regular mathematics instruction at the K-12 or undergraduate collegiate level. (4) Design a quantitative literacy unit for mathematics instruction at the K-12 or undergraduate collegiate level. Assessment Plan: A majority of this course will be conducted through online discussion boards in which students will discuss and address the course learning outcomes. Asynchronous peer interaction is required and students are expected to communicate mathematical and educational ideas with clarity and coherence in meeting each of the course learning outcomes. It is expected that formative assessment of the course learning outcomes will continuously be evaluated through discussion board interaction and each course learning outcome will also have at least one competency-based summative assessment. Lesson plans are required in meeting outcome 4 and must account for at least 30%, but no more than 60% (alternative assessments are recommended), of the overall course grade. It is recommended that summative assessments occur within the discussions, requiring peer feedback and/or collaboration, when appropriate.

R. Course Outline. Prerequisites: Graduate status. Typically offered Fall, Spring, Summer.

**MATH518** Mathematics AS Graduate 3

Participants will learn the meaning of algebraic thinking, as well as how to identify it and how to incorporate it in their teaching. Prerequisites: Graduate status. Typically offered Fall, Spring, Summer.

**MATH528** Mathematics AS Graduate 3

This course is centered around the concept of a function. The main goals will be to 1) Develop a deeper understanding of the concept of a function. 2) Analyze student understanding and student work (ranging from Middle School to College Level). 3) Explore research articles on the teaching and learning of functions (ranging from Middle School to College Level). 4) Using goals 1-3 develop course materials for students (ranging from Middle School to College Level). Prerequisites: Graduate Status. Typically offered Fall, Spring, Summer.

**MATH538** Mathematics AS Graduate 3

This course is centered around the concept of a function. The main goals will be to 1) Develop a deeper understanding of the concept of a function. 2) Analyze student understanding and student work (ranging from Middle School to College Level). 3) Explore research articles on the teaching and learning of functions (ranging from Middle School to College Level). 4) Using goals 1-3 develop course materials for students (ranging from Middle School to College Level). Prerequisites: Graduate Status. Typically offered Fall, Spring, Summer.
Inquiry-based learning (IBL) emphasizes discovery, analysis, and investigation to deepen students’ understanding of the material and its applications. IBL can help students develop the confidence and ability to do mathematics on their own and can be used at every level of mathematics. Participants in this course will learn how to design IBL activities for their mathematics classroom. Appropriate for teachers of mathematics at any K-12 or collegiate level. Prerequisites: Graduate Status. Typically offered Fall, Spring, Summer.

At the conclusion of the course, participants will have acquired the following knowledge and be able to carry out the following tasks: (1) Evaluate online educational resources for mathematics in terms of their potential educational value, appropriateness, and credibility. (2) Demonstrate an understanding of the difference between math education resources and math education research and how to use both responsibly in the teaching of mathematics. (3) Critically analyze research in mathematics education and its connection to practice. (4) Conduct a literature review on an issue related to the teaching of mathematics, analyzing its potential application to improve teaching, and communicating the findings in a professional manner. Assessment Plan: Students will be assessed using regular discussion boards and assignments directly related to learning outcomes and culminating in a final presentation of their literature review. The literature review presentation must be worth at least 30%, but no more than 50%, of the overall course grade. Note that the literature review does not have to be written and it is not the intention for students to be taught how to write a literature review in this course - students should be allowed to communicate their findings of their literature review in a professional manner of their choice (e.g., video presentation, poster presentation, written paper). Prerequisites: Graduate status. Typically offered fall, spring, summer.

This special topics course is designed to allow study of a mathematics education topic of current interest to K-12 or collegiate level teachers of mathematics. Topics must have practical application to the K-12 or collegiate level classroom and will be chosen based on input from faculty and students in the Math Education Graduate Certificate program. This course can be repeated up to three times by students for credit, provided that the topic being covered is significantly different. Prerequisites: Graduate Status. Typically offered Fall, Spring, Summer.
**MATL240 Materials Technology**   TE Undergraduate 4

Introduction to the study of the science of engineering materials: metals, polymers, and ceramics. Included in topics of study are atomic structure and bonding, properties selection, and testing of materials, failure modes, methods of production and fabrication, methods of changing properties including heat treatment of metals, alloying and surface treatments, mechanical working, composites and compound bonding. The common classification systems used to identify the various engineering materials are also covered.  Typically Offered On Demand

**MATL241 Materials Technology**   TE Undergraduate 3

A lecture course covering formability characteristics of ferrous, non-ferrous, and non-metallic materials used in stamping, as well as evaluative techniques. Pre-Requisites: MFGT 151 and MATL 240.  Typically Offered On Demand

**MATL341 Materials Technology**   TE Undergraduate 3

A lecture-demonstration course on analysis and comparison of metals in engineering service applications. Coursework will involve evaluation of existing metal in design components and analysis of metallic alternatives. A comparison of alloying and heat treatment to determine the optimum materials will be included. The effects of manufacturing and service environment on the metal selection process will be analyzed. Students will submit case studies of existing metal applications. Pre-Requisites: MATL 240.  Typically Offered On Demand

**MEBM101 Music and Entertainment Bus BU Undergraduate 1**

An overview of the expectations for completing the MEBM program, including the history of the music business, career pathways, and a survey of career opportunities in the music and entertainment industry. Pre-Requisites: MEBM majors only. Typically Offered Fall Only

**MEBM192 Music and Entertainment Bus BU Undergraduate 2**

A full time (160-hour minimum) supervised internship experience at an approved music or entertainment related business (retail store or commercial industry). Evaluation made by weekly reports from student, and evaluation from designated internship host. Pre-Requisites: MEBM 101 (w/ a C- or higher), MEBM majors only. Typically Offered Fall, Spring, Summer

**MEBM292 Music and Entertainment Bus BU Undergraduate 2**

A full time (160-hour minimum) supervised internship experience at an approved music or entertainment related business (retail store or commercial industry). Evaluation made by weekly reports from student, and evaluation from designated internship host. Pre-Requisites: MEBM 101 (w/ a C- or higher), MEBM majors only. Typically Offered Fall, Spring, Summer

**MEBM351 Music and Entertainment Bus BU Undergraduate 3**

An overview of music copyright, songwriting, music publishing, music licensing, performing rights organizations, agents and attorneys, artist management, concert promotion, event production, music merchandising, record label operations, music distribution, recording studios, and musical products, as related to the music and entertainment industry. Pre-requisite: MEBM 101 (w/ a C- or higher) Typically Offered Fall Only
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credit Hours</th>
<th>Prerequisites/Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>MEBM358</td>
<td>Music and Entertainment Business BU Undergraduate</td>
<td>3</td>
<td>Survey of Music Technology is a foundational course covering the essentials of music technology. The course will examine the physical nature of sound, live sound reinforcement tools, live sound production, analog/digital audio fundamentals and an overview of electronic musical instruments. Prerequisites MEBM Majors only. Typically offered Fall and Spring.</td>
</tr>
<tr>
<td>MECH111</td>
<td>Mechanical Engineering Technology TE Undergraduate</td>
<td>1</td>
<td>Careers, courses, program goals, and faculty in the MET program are introduced. Concepts of the technical team, problem solving, ethics, design projects, and an introduction to statistics and engineering economics are included. Typically Offered Fall Only</td>
</tr>
<tr>
<td>MECH122</td>
<td>Mechanical Engineering Technology TE Undergraduate</td>
<td>2</td>
<td>Introduction to a variety of computer applications used in technology. Students will demonstrate basic proficiency in word processing, spreadsheet creation and graphing, and use of presentation software. Students will also be introduced to basic text-based programming to solve engineering and technology problems. Typically offered: Fall and Spring</td>
</tr>
<tr>
<td>MECH211</td>
<td>Mechanical Engineering Tech TE Undergraduate</td>
<td>4</td>
<td>Presents principles of fluid flow, flow measurement, low-speed aerodynamics, and gas flow systems. The laboratory activity covers experimental confirmation of the theory as well as hands-on demonstration of the operation of pneumatic and hydraulic fluid power components, circuits and control systems. Pre-Requisites: PHYS 211 or PHYS 241 and MATH 126 or MATH 130 or MATH 216 or MATH 220 or a minimum score of 26 on ACT or 560 on pre 2016 SAT or 580 post 2016 SAT. Typically Offered Fall Only</td>
</tr>
<tr>
<td>MECH212</td>
<td>Mechanical Engineering Tech TE Undergraduate</td>
<td>2</td>
<td>Concerned with the study of mechanisms and devices. Position, velocity, and acceleration are determined graphically and analytically. Four-bar linkages, slider cranks, intermittent motion devices, cams, and other mechanisms are covered. Pre-Requisites: PHYS 211 or PHYS 241 and MATH 216 or MATH 220 and ETEC 140 or PDET 122 or PDET 322. 2-D CAD experience expected. Typically Offered Spring Only</td>
</tr>
<tr>
<td>MECH222</td>
<td>Mechanical Engineering Tech TE Undergraduate</td>
<td>4</td>
<td>Looks at the design considerations for machine elements used in mechanisms and machines. Topics covered include: advanced strength of materials, material selection, shaft design, selection of gear, chain, and belt drives, design and selection of bearings, design of brakes and clutches, and characteristics and selection of electric motors. Pre-Requisites: MECH 340 with a grade of C or better. Typically Offered Spring Only</td>
</tr>
<tr>
<td>MECH223</td>
<td>Mechanical Engineering Tech TE Undergraduate</td>
<td>3</td>
<td>Thermodynamics is that branch of physics that deals with the science of energy. This includes the study of the laws of thermodynamics, non-flow and steady-flow systems and conservation of mass. It also includes gas vapor processes, steam tables, psychrometric charts and air tables. It looks at power cycles, refrigeration cycles, and combustion. The course concludes with a study of basic heat transfer, energy efficiency, heat recovery and cogeneration. Pre-Requisites: MATH 216 or MATH 220 and PHYS 211 or PHYS 241. Typically Offered Spring Only</td>
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<tr>
<td>Course Code</td>
<td>Course Title</td>
<td>Program</td>
<td>Level</td>
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<tr>
<td>MECH250</td>
<td>Lecture-lab course which introduces the student to fluid power. Emphasis is placed on hydraulics. Included are fluid power components, elementary controls, systems, trouble-shooting, and fundamental fluid science principles. Pre-Requisites: MATH 115 or MATH 116 or MATH 120 or higher or a minimum score of 24 on ACT or 560 on pre 2016 SAT or 580 post 2016 SAT. Typically Offered Fall and Spring.</td>
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<tr>
<td>MECH311</td>
<td>An introduction to computer based solid modeling and finite element analysis. To include introduction to element types, boundary conditions, stiffness, heat transfer, significance of results. Prerequisites: ETEC 140 and MECH 340 with a grade of C or better. Typically Offered Fall only.</td>
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</tr>
<tr>
<td>MECH322</td>
<td>A foundation course in computer programming and application for MET students. Fundamental concepts including variables, arrays, loops, and Boolean logic. Introduction to programming with a text language, a G-code language, and mathematics software. Problem solving applications including statistics and numerical methods. Prerequisites: MECH 340 with a grade of C or higher and MECH 122 or ISYS 105 with a grade of C or higher and MATH 216 or MATH 220 and EEET 201. Typically Offered Spring only.</td>
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<tr>
<td>MECH330</td>
<td>This course introduces the student to the fundamentals of heat transfer that are commonly found in many processes and products. The physical concepts of conduction, convection, and radiation heat transfer are covered with emphasis on problem solving and practical application. Computer solutions are included. Pre-Requisites: MATH 216 OR MATH 220 AND PHYS 211 or PHYS 241. Typically Offered Fall Only.</td>
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<tr>
<td>MECH332</td>
<td>An introduction to methods of instrumentation, collection, and analysis of data. The emphasis will be on methods of measurements of stress, temperature, pressure, force and torque. Signal conditioning, data-acquisition, data reduction, calibration, and report writing are included. Prerequisites: MECH 340 with a grade of C or higher and EEET 201 and MATH 216 or MATH 220. Typically Offered Spring only.</td>
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<tr>
<td>MECH340</td>
<td>Statics and strength of materials is a part of physics known as mechanics: forces, components, resultants, equilibrium, friction, centroids, and stress/strain relationships. Dynamics will be introduced. Covers strength of materials; the concepts of stress and strain, axial stress and deformation, thermal stress and deformation, stress concentrations, factor of safety, torsional stress and deformation, beam stresses, combined stress, riveted joints, welded joints, and Mohr's circle. Pre-Requisites: MATH 120 or MATH 126 or MATH 216 or MATH 220 or ACT 26 or SAT (post 2016) 580 in MATH and PHYS 211 OR PHYS 241. Typically Offered Fall, Spring, Summer.</td>
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<tr>
<td>Course Code</td>
<td>Course Title</td>
<td>Credits</td>
<td>Degree</td>
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<tr>
<td>MECH341</td>
<td>Mechanical Engineering Tech</td>
<td>1</td>
<td>Undergraduate</td>
</tr>
<tr>
<td>MECH360</td>
<td>Mechanical Engineering Tech</td>
<td>3</td>
<td>Undergraduate</td>
</tr>
<tr>
<td>MECH393</td>
<td>Mechanical Engineering Tech</td>
<td>4</td>
<td>Undergraduate</td>
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<tr>
<td>MECH421</td>
<td>Mechanical Engineering Tech</td>
<td>4</td>
<td>Undergraduate</td>
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<tr>
<td>MECH440</td>
<td>Mechanical Engineering Tech</td>
<td>3</td>
<td>Undergraduate</td>
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<tr>
<td>Course Code</td>
<td>Course Title</td>
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<tr>
<td>MECH498</td>
<td>Mechanical Engineering Tech</td>
<td>TE</td>
<td>Undergraduate</td>
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<tr>
<td>MECH499</td>
<td>Mechanical Engineering Tech</td>
<td>TE</td>
<td>Undergraduate</td>
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<tr>
<td>MFGE311</td>
<td>Manufacturing Engineering Tech</td>
<td>TE</td>
<td>Undergraduate</td>
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<tr>
<td>MFGE312</td>
<td>Manufacturing Engineering Tech</td>
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<tr>
<td>MFGE313</td>
<td>Manufacturing Engineering Tech</td>
<td>TE</td>
<td>Undergraduate</td>
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<td>MFGE321</td>
<td>Manufacturing Engineering Tech</td>
<td>TE</td>
<td>Undergraduate</td>
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<td>Course Code</td>
<td>Course Title</td>
<td>Credits</td>
<td>Type</td>
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<tr>
<td>MFGE322</td>
<td>Manufacturing Engin Tech</td>
<td>3</td>
<td>TE</td>
</tr>
<tr>
<td>MFGE323</td>
<td>Manufacturing Engin Tech</td>
<td>5</td>
<td>TE</td>
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<tr>
<td>MFGE324</td>
<td>Manufacturing Engin Tech</td>
<td>3</td>
<td>TE</td>
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<td>MFGE325</td>
<td>Manufacturing Engin Tech</td>
<td>4</td>
<td>TE</td>
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<tr>
<td>MFGE341</td>
<td>Manufacturing Engin Tech</td>
<td>3</td>
<td>TE</td>
</tr>
<tr>
<td>MFGE351</td>
<td>Manufacturing Engin Tech</td>
<td>3</td>
<td>TE</td>
</tr>
</tbody>
</table>
MFGE352 Manufacturing Engin Tech TE Undergraduate 2
This is a lecture course of two hours exposing the student to the fundamentals of all major manufacturing processes. This information is given with an eye toward the optimum design of parts and assemblies to minimize the cost of manufacture. Pre-Requisites: Product Design Engineering Technology, Heavy Equipment Service Technology and Industrial Technology and Management students only. Typically Offered On Demand

MFGE353 Manufacturing Engin Tech TE Undergraduate 3
This is a basic course that covers the fundamentals and use of statistics as they apply to controlling manufacturing quality in industry. Also covered will be the construction and interpretation of attribute and variable control charts. Other statistical methods including simple linear regression, measurement systems analysis, simple 2 level factorial experimental designs, and cause and effect diagrams will be covered as well. Pre-Requisites: MATH 115 or MATH 116 or a minimum score of 24 on ACT or 560 on pre 2016 SAT or 580 post 2016 SAT. Typically Offered On Demand

MFGE354 Manufacturing Engin Tech TE Undergraduate 3
This course is designed to familiarize the manufacturing student with the concepts and practices of lean manufacturing as currently applied in industry, and develop in them rudimentary skill in applying those principles, with the overall goal of enabling them to reduce waste in the workplace. Topics include push vs. pull systems, kanban, continuous flow production, takt time, SMED, TPM, TQM, TOC, 5S, poka yoke, and kaizen. Plant tours (if available) will help illustrate applications of concepts. Pre-Requisites: Junior Status. Typically Offered Fall, Spring, Summer

MFGE355 Manufacturing Engin Tech TE Undergraduate 2
This course teaches basic simulation concepts to solve manufacturing facilities planning problems via Flexsim simulation software. Topics include the steps to a successful simulation project, understanding the different types of waiting times and how they can affect a manufacturing or logistics system, standard modeling methodology, and analysis and presentation of results. Prerequisites: ISYS 105 or MFGE 313 and Junior Status in a Manufacturing Related Program. Typically Offered Summer.

MFGE393 Manufacturing Engin Tech TE Undergraduate 4
Places the student in an industrial setting to face the realities of the working world, after completing their junior year. The unique experience that the student will receive is a combined effort of the training site, university, and student. Students will be involved in the industrial projects and daily activities of a manufacturing engineer for their employer. This course meets General Education requirements: Writing Intensive and new Fall 2017 Comm Across the Curriculum. Pre-Requisites: Department Approval. Typically Offered On Demand
<table>
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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Degree</th>
<th>Credits</th>
<th>Prerequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>MFGE411</td>
<td>Manufacturing Engineering Tech</td>
<td>Undergraduate</td>
<td>2</td>
<td>Prerequisites: MFGE 322, MFGE 324 and MFGE 342. Typically Offered Fall, Spring</td>
</tr>
<tr>
<td>MFGE412</td>
<td>Manufacturing Engineering Tech</td>
<td>Undergraduate</td>
<td>4</td>
<td>Prerequisites: Senior Status. Typically Offered On Demand</td>
</tr>
<tr>
<td>MFGE421</td>
<td>Manufacturing Engineering Tech</td>
<td>Undergraduate</td>
<td>4</td>
<td>Prerequisites: MFGE 411. Co-Requisites: MFGE 422. Typically Offered Fall, Spring</td>
</tr>
<tr>
<td>MFGE422</td>
<td>Manufacturing Engineering Tech</td>
<td>Undergraduate</td>
<td>3</td>
<td>Prerequisites: MFGE 411. Co-Requisites: MFGE 421. Typically Offered Spring Only</td>
</tr>
<tr>
<td>MFGE423</td>
<td>Manufacturing Engineering Tech</td>
<td>Undergraduate</td>
<td>2</td>
<td>Prerequisites: MATH 116 or MATH 120 or MATH 126 or MATH ACT of 24 or pre 2016 SAT of 500 or post 2016 SAT 550. Typically Offered Fall, Spring, Summer</td>
</tr>
<tr>
<td>Course Code</td>
<td>Course Title</td>
<td>Credits</td>
<td>Description</td>
<td>Prerequisites</td>
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<tr>
<td>MFGE424</td>
<td>Manufacturing Engin Tech</td>
<td>3</td>
<td>Concentrates on part orientation and part/material transfer techniques (dedicated, modular, and flexible systems are covered). Automatable operations are addressed. Pre-Requisites: MFGE 412 or Instructor approval. Typically Offered On Demand</td>
<td></td>
</tr>
<tr>
<td>MFGE425</td>
<td>Manufacturing Engin Tech</td>
<td>1</td>
<td>A survey course concentrating on emerging technology in the stamping industry. Guest speakers give presentations on latest processes and techniques. Students are required to research applications of new processes and techniques with respect to their particular applications. Pre-Requisites: MFGE 424. Typically Offered On Demand</td>
<td></td>
</tr>
<tr>
<td>MFGE442</td>
<td>Manufacturing Engin Tech</td>
<td>3</td>
<td>A detailed study of the design of experiments and the application of advanced quantitative data analysis techniques, as well as common experimental design methodologies used in the manufacturing industries to collect data for the purpose of improving or better understanding a design or process. Pre-Requisites: MFGE 341. Meets General Education requirements for Collaboration and Problem Solving. Typically Offered Fall Only</td>
<td></td>
</tr>
<tr>
<td>MFGE443</td>
<td>Manufacturing Engin Tech</td>
<td>3</td>
<td>A detailed study of the continuous improvement of quality. It covers the engineering and management approaches necessary to achieve a broad and persistent refinement of business and manufacturing processes in an industrial organization. Pre-Requisites: MFGE 321 and MFGE 342. Meets General Education requirements for Collaboration and Problem Solving. Typically Offered Spring Only</td>
<td></td>
</tr>
<tr>
<td>MFGE444</td>
<td>Manufacturing Engin Tech</td>
<td>3</td>
<td>A detailed study of the technology concerned with quality auditing with emphasis on the international ISO 9000 standards. Topics include: types of quality audits, planning for the audit, conducting the audit, follow-up activities to improve operations, and reporting results. Typically Offered Fall Only</td>
<td></td>
</tr>
<tr>
<td>MFGE446</td>
<td>Manufacturing Engin Tech</td>
<td>3</td>
<td>An advanced study of the technology concerned with the design of experiments. Topics include: comparing two treatments, comparing more than two treatments, measuring the effects of variables, and building and using models. Pre-Requisites: MFGE 442. Typically Offered Spring Only</td>
<td></td>
</tr>
<tr>
<td>MFGE447</td>
<td>Manufacturing Engin Tech</td>
<td>3</td>
<td>Students learn to manage the complete process for quality planning regarding a particular product. Steps include Design and Process FMEA, pre-production parts layout, preliminary capability analysis, and other steps required to prepare a part submission packet similar to those used in industry. Students should be prepared to spend significant amounts of time on a major project. Prerequisites: MFGE 341 or STQM 260 or equivalent. Typically Offered Spring only, Odd Years</td>
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</table>
An introductory-level course to familiarize the student with the basic principles, techniques, and types of automation, material handling systems, and equipment layouts found in manufacturing facilities. Subjects include: automatic parts loading and unloading devices, parts feeding systems, automatic assembly machines, modular automation components, material handling equipment, departmental arrangement paradigms for optimum material flow, and evaluative techniques. The student is required to submit two term projects: a design for a special purpose assembly machine, and then a layout of manufacturing facility to maximize output of that machine.

Pre-Requisites: Technology students only. Typically Offered On Demand

This course is designed to introduce the student to the concepts of environmentally-conscious, sustainable, and energy-efficient manufacturing practices as currently applied in industry, and develop in them skill in applying those principles. Topics include the ISO 14000 series of standards, recycling, eco-labeling, life cycle assessment, and sustainable manufacturing. Decision-making aspects are also covered. Guest speakers and plant tours (if available) will help illustrate applications of concepts. Prerequisites: By instructor permit. Typically Offered Summer only.

A basic machine process course. The fundamental operations on machine tool equipment including engine lathe, band saw, and horizontal and vertical milling machine. Measuring and inspection tools, drill press, and surface plate. Typically Offered On Demand

In this course focus is placed on machining fundamentals that are used in producing machined components. This course covers precision measurements, precision instruments, metrology applications, tooling applications, machining calculations, machining processes (i.e.: drilling, milling, turning, and grinding) process planning, and speeds and feeds. Classroom discussions and related activities support the projects in the corresponding lab courses. This course is for all Design and Build for Manufacturing Technology students, CNC certificate students, and students who minor in Manufacturing Technology. Co-Requisite: MFTE 113. Typically offered fall.

In this course focus is placed on direct machining lab experience to produce machined components. This course covers general shop safety, equipment startup and operation, machine setups, work holding setups, cutting tool setups, workplace locating, and application of the core machining processes (i.e.: sawing, drilling, milling, turning, and grinding). Lab projects provide students the opportunity to apply the corresponding lecture material directly with lab activities. This course is for all Design and Build for Manufacturing Technology students, CNC certificate students, and students who minor in Manufacturing Technology. Co-requisite: MFTE 110. Typically offered Fall.
MFTE130 Manufacturing Technology  TE  Undergraduate  3
In this course focus is placed on developing an in-depth understanding of tooling systems and standards used in producing manufactured components and manufactured assemblies. This course covers tool design specifications, manufacturing specifications, tooling assemblies, and tooling component applications. Emphasis is placed on (i.e.: processing, design, construction, and assembly), cutting tool selection, material usage, heat treat applications, threading systems, indexing systems, program documentation and cost estimating. Lecture activities including a major program quoting project. Classroom discussions and related activities support the projects in the corresponding lab course. This course is for all Design and Build for Manufacturing Technology students, and students who minor in Manufacturing Technology. Prerequisites: MFTE 110 and MFTE 113 and PDET 122. Co-requisites: MFTE 131. Typically offered Spring.

MFTE131 Manufacturing Technology  TE  Undergraduate  3
In this course focus is placed on developing skills directed toward producing manufactured assemblies. This course covers the application of advanced machining operations, in-depth application of manufactured tooling concepts (i.e.: design, construction, assembly, and tryout / troubleshooting), and application of specialized tooling systems. Lab activities including a major build project providing students the opportunity to utilize and apply the technical material covered in the corresponding lecture course. This course is for all Design and Build for Manufacturing Technology students, and students who minor in Manufacturing Technology. Prerequisites: MFTE 110 and MFTE 113 and PDET 122. Co-requisite: MFGT 131. Typically offered Spring.

MFTE140 Manufacturing Technology  TE  Undergraduate  2
In this course focus is placed on developing an in-depth understanding of the process used in programming CNC machining equipment. This course covers an overview of CNC technology, coordinate data input, NC program formatting and layout, G-code programming, and an introduction to CAM programming. Classroom discussions and related activities reference both milling and turning equipment and support the projects in the corresponding lab courses. This course is for all Design and Build for Manufacturing Technology students, CNC certificate students, and students who minor in Manufacturing Technology. Prerequisites: MFTE 110 and MFTE 113 and PDET 122. Co-requisites: MFTE 141. Typically offered Spring.
<table>
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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Delivery Type</th>
<th>Degree Type</th>
<th>Credits</th>
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<tr>
<td>MFTE141</td>
<td>Manufacturing Technology</td>
<td>TE</td>
<td>Undergraduate</td>
<td>2</td>
</tr>
<tr>
<td>MFTE220</td>
<td>Manufacturing Technology</td>
<td>TE</td>
<td>Undergraduate</td>
<td>2</td>
</tr>
<tr>
<td>MFTE222</td>
<td>Manufacturing Technology</td>
<td>TE</td>
<td>Undergraduate</td>
<td>2</td>
</tr>
<tr>
<td>MFTE230</td>
<td>Manufacturing Technology</td>
<td>TE</td>
<td>Undergraduate</td>
<td>2</td>
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</tbody>
</table>

In this course focus is placed on developing skill in programming and operating CNC machining equipment. This course covers the construction, maintenance, startup, and operation of CNC milling and turning equipment. Numerous lab projects provide students the opportunity to apply the science and methodology covered in the corresponding lecture course. This course is for all Design and Build for Manufacturing Technology students, CNC certificate students, and students who minor in Manufacturing Technology. Prerequisites: MFTE 110 and MFTE 113 and PDET 122. Co-requisite: MFTE 140. Typically offered Spring

In this course focus is placed on developing an in-depth understanding of the programming of CNC machining equipment using advanced programming technologies. This course covers developing tool paths from both surface geometry and solids, automating tool path development routines, programming wire EDM burns, and 4th and 5th axis machining. Classroom discussions and related activities support the projects in the corresponding lab courses. This course is for all Design and Build for Manufacturing Technology students, and students who minor in Manufacturing Technology. Prerequisites: MFTE 140 and MFTE 141. Co-requisite: MFTE 222. Typically offered Fall

In this course focus is placed on developing skill in applying advanced programming technologies and utilizing CNC machining systems. This course covers maintenance, startup, and operation of wire EDM equipment, as well as high-speed machining applications, and 4th and 5th axis machining applications. Numerous lab projects provide students the opportunity to apply the science and methodology covered in the corresponding lecture course. This course is for all Design and Build for Manufacturing Technology students, and students who minor in Manufacturing Technology. Prerequisites: MFTE 140 and MFTE 141. Co-requisite: MFTE 220.

This course provides students the opportunity to interact and utilize advanced manufacturing operations by identifying, programming and applying advanced methodologies. Exploration of Computer Controlled Laser operations, Electrical Discharge Machining operations, Five-Axis CNC Milling operations, Live Tooling CNC Lathe operations, and Sinker Style Electric Discharge Machining operations are included in this advanced course of study. Lab projects provide students the opportunity to develop, program, operate and apply these advanced manufacturing operations. This course is for all Design and Build for Manufacturing Technology students, and students who have fulfilled course prerequisites. Prerequisites: MFTE 110 and MFTE 113 and PDET 122 or equivalent. Typically offered Spring.
In this course focus is placed on a customized design and build. This course provides student the opportunity to select a specific project, design the project, manufacture the components, and build the system. The design and build phase of the project is assessed, documented and monitored for the extent of the course. An in-depth understanding of program management, program development and manufacturing operations (i.e.: design, construction, component assembly, tryout, and troubleshooting) is the basis of this course. Lab projects include one major project build that provides students the opportunity to apply conceptual ideas into workable assemblies. This course is designed to enhance and facilitate senior projects in related fields of study (i.e.: Mechanical, Product Design, Welding and Automotive Technology) This course is for all Design and Build for Manufacturing Technology students, and students who have fulfilled course prerequisites. Prerequisites: MFTE 110 and MFTE 113 and PDET 122 or equivalent. Typically offered Spring.

A description and analysis of business activities designed to manage an organization to efficiently serve employees, customers, and the community. Topics studied include planning, organizing, leading, and controlling; the business environment, business institutions, government regulations, organizational structure, human resources, human behavior, and current practices. Designed to meet the needs of graduates and employers in the global economy. Prerequisites: ENGL 150 with C- or higher and (MATH 109 or MATH 110 or MATH 114 or MATH 115 or MATH 116 or MATH 117 or MATH 118 or MATH 119 or MATH 120 or MATH 122 or MATH 126 all with a C- or higher, or Math ACT 19 or (Pre-2016) Math SAT 460 or (Post-2016) Math SAT 500 Typically Offered Fall, Spring, Summer

Explores the fundamental processes and skills essential for the success of individual and group/team behavior in contemporary organizational settings. MGMT 302 emphasizes the importance of team formation and decision making, effective conflict management, and the impact of diverse individual personality and cultural backgrounds on team and organizational success. Pre-Requisites: Sophomore Standing. Typically Offered Fall, Spring, Summer
This course will focus on applying leadership behaviors to management practices. Using theoretical and practical methodology students will critically analyze, identify, and creatively apply leadership & management techniques. A practical, experiential learning approach is emphasized and crucial to the success of the course. Students will gain first-hand experience in resolving workplace conflict, ethical dilemmas, cultural bias, and other professional tensions through participating and completing community service projects, team role playing, case analysis, and discussion related assignments. Self-assessment and constructive peer/superior feedback will allow students to identify their existing strengths and weaknesses. Students will be well-prepared to contribute to any professional organization using the numerous skills, knowledge, and abilities they obtained from taking the course. Pre-Requisites: Second Semester Sophomore Status. Typically Offered Fall, Spring, Summer

Fundamentals of starting and operating a successful small business. Traces the development of a business from the entrepreneurial concept to the profitable operating stage. Provides opportunities to discuss and solve small business problems in such areas as marketing, personnel, finance, and operations. Pre-Requisites: Second Semester Sophomore Status. Typically Offered Fall, Spring, Summer

Introduce the student to the hyper-growth, highly-specialized entrepreneurship industry. Prepare students to recognize business opportunities, screen venture prospects, model and assess commercial potential, cultivate innovations, build distinctive competencies, and develop investment-grade entrepreneurial strategy and business models. Prepare students to purposefully manage in a highly-creative, rapid-paced venture environment. Typically Offered Fall only.

The student will focus on those activities that identify, database, and promote a small business, with the objective of a planned growth in volume of revenue and profitability. Small businesses have the potential for substantial growth, but this needs to be done in the context of company strengths and resources. Also, a structured, repeatable and transferable approach is needed to professionally create as much value as possible. Typically Offered Spring only.

Course focuses on the formulation, features, funding methods, and administration of employer-sponsored benefits including: health, life, and disability insurance, retirement plans, unemployment compensation, workers' compensation, Social Security, paid time off, and flexible work schedules. Prerequisites: MGMT 373 or permission of instructor and Junior or Senior standing. Typically Offered Fall and Spring
<table>
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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Division</th>
<th>Degree Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>MGMT350</td>
<td>Management</td>
<td>3</td>
<td>BU</td>
<td>Undergraduate</td>
<td>Covers the basic subjects needed by a manager to understand financial statements, the budgeting process, cash flow management, working capital, forecasting, monitoring and controlling capital and expense budgets, pricing strategy, cost analysis, pro forma development, avenues of corporate finance, risk analysis/management, project and corporate level valuations and international finance. Meets General Education requirements for Collaboration and Problem Solving. Typically Offered Fall, Spring, Summer</td>
</tr>
<tr>
<td>MGMT355</td>
<td>Management</td>
<td>3</td>
<td>BU</td>
<td>Undergraduate</td>
<td>Studies the applications of microeconomics, finance, and accounting to business decision making; especially decision making about organization, pricing, levels of output, and resource allocation. Uses problems and cases to illustrate microeconomic principles relevant to specific current business situations as market structure, re-engineering, integration and outsourcing, leadership, etc. Pre-Requisites: ECON 202. Typically Offered Fall, Spring, Summer</td>
</tr>
<tr>
<td>MGMT370</td>
<td>Management</td>
<td>3</td>
<td>BU</td>
<td>Undergraduate</td>
<td>The philosophy of continuous quality improvement, basic process improvement tools, basic management and planning tools, teaming, and models for improvement. Maximizing customer service and satisfaction, optimizing inventory investment, and maximizing operations efficiency. Principles of operations management; dependent and independent demand, forecasting; work measurement; work standards. Practical application of these techniques (in team settings) on a variety of business-related problems will enhance the ability to carry out the operations aspect of a business. Pre-Requisites: STQM 260 with C- or better and Sophomore Standing or Instructor Permit. Typically Offered Fall, Spring, Summer</td>
</tr>
<tr>
<td>MGMT371</td>
<td>Management</td>
<td>3</td>
<td>BU</td>
<td>Undergraduate</td>
<td>Examines the concepts, principles and techniques of production and operations management, and focuses on capacity, location, process, product, materials purchasing and scheduling of resources with an integrated systems approach that includes CIM (Computer Integrated Manufacturing), JIT (Just in Time) and MRPII (Manufacturing Resource Planning). Pre-Requisites: Junior status. Typically Offered Fall, Spring, Summer</td>
</tr>
<tr>
<td>MGMT373</td>
<td>Management</td>
<td>3</td>
<td>BU</td>
<td>Undergraduate</td>
<td>Course focuses on the objectives, functions, and organization of Human Resource systems including: equal employment opportunity, job analysis, selection, training, compensation and benefits, performance management, employee rights and discipline, workplace safety and health, and labor relations. Pre-Requisites: Sophomore Standing. Typically Offered Fall, Spring, Summer</td>
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</table>
MGMT37 5  Management  BU  Undergraduate  3
This course focuses on the behavioral aspect of human resources, specifically negotiations. The course covers the broad spectrum of negotiations from common negotiations that occur in everyday life (e.g. buying/selling a car, negotiation a job offer, etc.) to specific labor-management negotiations. In addition to studying the subject from a theoretical and empirical standpoint, students will participate in a variety of in-class role-plays and simulations, and complete a personal negotiation project outside of class. Pre-Requisites: Junior standing. Typically Offered Spring Only.

MGMT37 7  Management  BU  Undergraduate  3
The management of people may be the most critical component of a firm’s ability to implement its strategy effectively and compete in an increasingly complex and dynamic global economy. Beginning with understanding the dimensions and consequences of globalization, this course will offer students the opportunity to enhance their understanding of global organizations, and through project and assignment based assessment, allow them to develop critical skills in applying concepts from HRM in a global business context.
Meets General Education requirements: Global Consciousness and new Fall 2017 Global Diversity. Pre-Requisites: MGMT 373 or Instructor approval. Typically Offered Spring Only.

MGMT38 0  Management  BU  Undergraduate  3
Long-term trends of the business environment and the factors that influence those trends; methods and results of business forecasting techniques. Pre-Requisites:ECON 202. Typically Offered Fall, Spring.

MGMT38 5  Management  BU  Undergraduate  3
This course introduces students to the Human Resource functions of Recruitment and Selection in organizations. This course focuses on the effective management of the flow of talent into and through organizations. I give particular attention to the impact of business strategy on recruiting, selection and organizational staffing practices. Another key issue is the efficacy of recruitment and selection practices. We will discuss internal and external labor markets, recruiting, selection, and person-job and person-organization match on staffing practices in this context. Staffing is now being integrated across global units in firms, and we will focus on international staffing when we discuss trends in staffing. Prerequisites: MGMT 373 or Instruction permit. Typically Offered Spring only.

MGMT40 2  Management  BU  Undergraduate  3
This course includes a multi-faceted approach to improve organizational processes that meets or exceeds customer needs/expectations. Students will learn how to apply of the Six Sigma, DMAIC (Define, Measure, Analyze, Improve and Control) methodology. Specifically, statistical analysis tools/metrics will be used as techniques to reduce process variability, increase process control and sustainability to increase the organization’s process quality. The course is designed to assist students with preparation for the Six Sigma Green Belt Certification. Prerequisites: MGMT 492 or MFGE 354. Typically offered Fall, Spring, Summer.
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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Type</th>
<th>Credit Hours</th>
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<tr>
<td>MGMT41 1</td>
<td>Management BU Undergraduate 3</td>
<td>3</td>
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<tr>
<td>MGMT41 2</td>
<td>Management BU Undergraduate 3</td>
<td>3</td>
<td></td>
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<tr>
<td>MGMT41 5</td>
<td>Management BU Undergraduate 3</td>
<td>3</td>
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<tr>
<td>MGMT42 0</td>
<td>Management BU Undergraduate 1 TO 4</td>
<td>1 TO 4</td>
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This course will be an opportunity to experience in depth, selected areas that are the key to a small business’ performance. These include Marketing, Selling, Accounting and Finance, People and Administration, Suppliers and Distribution, Legal and other selected objects. Typically Offered Fall only.

The course will concentrate on the leadership, management and employee behaviors as well as capabilities required to implement a lean culture and sustain optimal organizational performance. Areas of concentration include evaluating an organization’s current leadership and management techniques, applying the Training Within Industry method (identifying employee’s development needs, creating appropriate organization training plans, and developing an internal coaching/mentor program) and how the continuous learning/improvement culture enhances organizational growth, innovation, profitability and process excellence. MGMT 492 or MFGE 354 or instructor permission. Typically offered Fall, Spring, Summer.

Introduce students to the specialized world of entrepreneurial finance. Develop appreciation of venture stages and avenues of funding. Learn methods of protecting proprietary interests. Understand how strategic alliances can mitigate investment risk. Develop an understanding of the structure of venture capital markets. Learn entrepreneurial risk measures along with corresponding risk management and mitigation techniques. Understand how to model business ventures as investment grade pro forma. Develop an appreciation for venture harvesting and exit strategies. 

Prerequisites: ACCT 201, ACCT 202, FINC 322 and MGMT 350. Typically Offered Spring only.

Students participate in the Small Business Institute assisting entrepreneurs and small business owners in solving business problems. Assignments involve a wide array of business problems including marketing, cost analysis, organization, facilities planning, product line, profitability, and business start-up. Students are assigned to a business based on their academic pursuits and areas of interest. A comprehensive report and presentation of student recommendations are provided to the business owner. This course can be taken multiple times for credit. Practicum Hours: 1 credit hour granted for each 45 hours of consulting. Typically Offered Fall, Spring, Summer.
MGMT 42

Management BU Undergraduate 3

The course concentrates on utilizing a lean-focused set of simplified accounting, control, and measurement tools to develop accurate, timely, and understandable financially driven strategies to motivate and sustain a lean transformation throughout a service or manufacturing organization resulting in increased customer value, organizational growth, and profitability. Areas of concentration include developing value stream costing, performance management, target costing, operational planning and the financial impact of lean improvements. Prerequisites: MGMT 492 or MFGE 354 and Junior Standing. Typically offered Fall and Spring.

MGMT 43

Management BU Undergraduate 3

The theories and strategies associated with Inventory Management as it relates to the supply chain will be analyzed. Initiatives, like Lean Operations (Just-In-Time) and Quick Response, will be studied to examine their impact on inventory. Students will evaluate the inventory management practices and trade-offs associated with the strategic and tactical issues associated with capacity, labor, shelf life, quality, lead times, forecasting accuracy, and supply chain members as it relates to internal and external environmental conditions. Prerequisites: MGMT 370 with a grade of D- or better or Instructor approval. Typically offered Spring.

MGMT 43

Management BU Undergraduate 3

The course will focus on how to examine the wastes involved with the existing processes and the lean tools required for turning logistics and supplier issues into a competitive advantage. Areas of concentration including managing the flow of incoming and outbound goods, services, and related information, reducing logistics costs, improving logistics service, and removing impediments/bottlenecks to create an efficient, effective synergistic lean logistics and supplier operation network. Prerequisite: MGMT 492 or MFGE 354 and Junior standing. Typically offered Fall, Spring, Summer.

MGMT 44

Management BU Undergraduate 3

The course focuses on two emergent issues for businesses, business ethics and corporate social responsibility, and especially upon those situations that require moral reflection, judgment, and decision; examines contemporary concepts of business ethics and social responsibility; explores current problems that require moral and ethical reasoning. Pre-Requisites: Junior or Senior status. Typically Offered Fall, Spring, Summer.
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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Description</th>
<th>Prerequisites</th>
<th>Typically Offered</th>
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</thead>
<tbody>
<tr>
<td>MGMT47 2</td>
<td>Management 3, Undergraduate</td>
<td>Course provides an in-depth view of the total compensation system. Design, develop, and implement a complete compensation system and the aspects of which include: establishing the compensation objectives, analyzing and evaluating jobs, establishing the organization's pay policy relative to the external labor market, and utilizing the compensation system to adjust employee wages. Emphasis will be placed on balancing internal consistency and external competitiveness while equitably rewarding individuals' contributions. Pre-Requisites: MGMT 373 with a grade of D- or better or Instructor approval. Typically Offered Spring Only.</td>
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<tr>
<td>MGMT47 4</td>
<td>Management 3, Undergraduate</td>
<td>This course provides an opportunity to apply knowledge of Human Resource Management concepts in a variety of contexts to solve organizational challenges. The focus is on discussing solutions of core HRM concepts including strategy, and current trends in the workplace such as changing workforce demographics, talent management and succession planning. Pre-Requisites: MGMT 373 with a grade of D- or better. Typically Offered Fall Only.</td>
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<tr>
<td>MGMT48 8</td>
<td>Management 3, Undergraduate</td>
<td>Integrates all management disciplines and concerns through intensive case analysis. A generalist point of view is assumed, where managers, and particularly senior managers, make critical decisions for the future of their organizations. Through a combination of activities intended to reflect corporate decision-making conditions, students have an opportunity to utilize their skills and advance their understanding of complex management situations. Pre-Requisites: MKTG 321 &amp; MGMT 370 &amp; FINC 322 with a grade of D- or better. Typically Offered Fall, Spring, Summer.</td>
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<tr>
<td>MGMT49 1</td>
<td>Management 1 TO 9, Undergraduate</td>
<td>Work experience with organization in business, industry, government, not-for-profit, and education. The experience is designed to be relevant to the student's academic pursuits, personal development, and professional preparation. The internship experience requires a minimum of 80 hours per credit hour be completed. Detailed summary reports of experience required during and at end of internship. Pre-Requisites: Completion of 80 credits and department approval. Typically Offered Fall, Spring, Summer.</td>
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<tr>
<td>MGMT49 2</td>
<td>Management 3, Undergraduate</td>
<td>This course concentrates on how to design, continuously improve, and lead a lean service business process initiative. Specific areas of concentration include Systems Planning and Thinking (seeing the whole business as a value stream), Human relations skills (leadership, strategy development and deployment, change management, and team problem solving) and Lean Principles (kaizen, PDCA, 5S, pull, leveling process stability, standardized work, root-caused problem resolution and A3 Reporting). Prerequisites: MGMT 305 or junior status.Typically offered Fall, Spring, Summer.</td>
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This course emphasizes a practical approach to understanding the essentials of successful leadership as well as one of its top tasks, that of successfully implementing organization-wide change. After exposure to various leadership frameworks, students will apply these approaches to current national and/or international business situations. Students will also create a personal leadership development plan. An organizational change process will be highlighted that focuses on understanding the need for change, anticipating and overcoming resistance, and developing a process that enhances opportunities for successful implementation. Based on the suggested process, students will evaluate past organizational changes they have experienced as well as develop a comprehensive change program for a perceived needed change at a past or current employer. Prerequisite: BUS graduate student. Typically offered Fall, Spring, Summer.

This experiential learning focused course concentrates on how to evaluate, design, and improve business process initiatives using Systems Planning and Thinking (seeing the whole business as a value stream) and Lean Principles (kaizen, PDCA, SE, pull, leveling process stability, standardized work, root-cause problem resolution and A3 Reporting). This assists in the continuous learning/improvement culture that enhances organizational growth, innovation, profitability and process excellence. Prerequisites: Statistics Foundation Competencies and BUS Graduate Student. Typically offered: Fall, Spring, Summer

This course will present a disciplined process of establishing and maintaining a purposeful business direction, aimed at achieving sustainable competitive advantage. The process entails; efficiently identifying opportunities via industry and technology scanning, isolating critical opportunities from the noise, memorializing Mission & Strategies (exemplified via the boilerplate Balanced Score Card model), integrating enterprise-level and functional-level (i.e. marketing, operations, and finance) strategies, making resource commitments, effectively executing strategies, monitoring results and making course corrections, celebrating successes and dissecting failures for embodied learnings. The concept of fact-based strategic decision-making will be introduced. And finally, specialized approaches involving globalization and entrepreneurial strategies will be presented. Prerequisite: BUS graduate student. Typically Fall, Spring, Summer.
<table>
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<tr>
<th>Course Code</th>
<th>Department</th>
<th>Degree</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>MGMT751</td>
<td>Management</td>
<td>BU</td>
<td>Graduate 3</td>
</tr>
<tr>
<td>MGMT752</td>
<td>Management</td>
<td>BU</td>
<td>Graduate 3</td>
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<tr>
<td>MGMT753</td>
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<td>MGMT754</td>
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<tr>
<td>MGMT755</td>
<td>Management</td>
<td>BU</td>
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</table>

The course includes a multi-faceted approach to improve organizational processes that meets or exceeds customer needs/expectations. Students will learn how to apply the Six Sigma, DMAIC (Define, Measure, Analyze, Improve and Control) methodology. Specifically, statistical analysis tools/metrics will be used as techniques to reduce process variability, increase process control and sustainability to increase the organization's process quality. The course is designed to assist students with preparation for the Six Sigma Green Belt Certification. Prerequisite: MGMT 736. Typically offered Fall, Spring, Summer.

The course is designed to assist students with understanding how to appropriately apply lean tools in an organization as a leader. Additional emphasis associated with how to manage and identify employee's development needs, creating appropriate organization training plans, and developing an internal coaching/mentor program will be included. This assists an organization with the creation of a positive horizontal and vertical flow that effectively supports an organizational transformation that aligns purpose, processes and people. Prerequisite: MGMT 736. Typically offered Fall, Spring, Summer.

The course concentrates on utilizing a lean-focused set of simplified accounting, control, and measurement tools to develop accurate, timely, & understandable financially driven strategies to motivate and sustain a lean transformation throughout a service or manufacturing organization resulting in increased customer value, organizational growth, and profitability. Areas of concentration include developing value stream costing, performance management, target costing, operational planning and the financial impact of lean improvements. Prerequisite: MGMT 736. Typically offered Fall, Spring, Summer.

The course will focus on waste creation, identification & elimination at the industrial level. Students learn to identify the wastes involved with existing processes. Lean tools are applied to specific inefficiencies. Areas of concentration include managing incoming & outbound goods, services, and related information; reducing logistics costs; improving logistics service; and removing impediments. Measured waste elimination will create a more efficient, synergistic, lean logistics operation network. Prerequisite: MGMT 736. Typically offered Fall, Spring, Summer.

Strategic development of how to effectively manage domestic & global supply chains using lean performance, and institutional accountability. Students will design a lean supply stream process that improves customer satisfaction and relationships while increasing efficiencies. Results will be measured and presented to peer review. Prerequisite: MGMT 736. Typically offered Fall, Spring, Summer.
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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Department</th>
<th>Level</th>
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<td>MGMT757</td>
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<td>MISI605</td>
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<td>MISI610</td>
<td>Master Info Security and Intel</td>
<td>BU Graduate</td>
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</table>

This course will focus on the steps involved in the design and implementation of new products within an organization employing the practices of Lean techniques. The premise of the class will involve students understanding the concepts of waste in a system as it applies to new product development and the pitfalls to avoid in the design and launch of new products. The discussion portion of the class will also involve looking at supplier's involvement, the use of technology, and the effect on the Lean culture. Prerequisite: MGMT 736. Typically offered Fall, Spring, Summer.

This course will explore the role of information technology in logistics, supply planning and operations. Quantitative statistical methods and innovative methods will be implemented to develop a model facility layout. Using logistics simulation techniques students will defend their design by documenting increases in overall efficiencies. Applying value stream mapping and other lean tools, will assist students with customizing a floor design within spatial and financial constraints. Prerequisite: MGMT 754. Typically offered Fall, Spring, Summer.

The world is smaller and more volatile than ever. A company can only compete in a global economy by developing an international network of contacts & suppliers. This course will examine how to cultivate appropriate business strategies essential to global supply and logistics issues. The topics include alliances; logistics; sourcing integration; inventory planning & management; transportation; and warehousing. Emphasis is on developing an optimized global network which leverages global procurement to maximize customer service at the lowest cost. Prerequisites: MGMT 754 and MGMT 755. Typically offered Fall, Spring, Summer.

Students will research vulnerabilities to intelligence, including processes and technical threats such as malware, criminal activities, and technological exposures. Unusual environments such as power and transportation systems, artificial intelligence, and robotics, as well as various file and storage technologies will be evaluated. The potential security exposure of nano technology and incorporating environments will also be incorporated. Prerequisites: Graduate Status. Typically Offered Fall and Spring Even Years, Summer Odd Years.

Students investigate progressive database management and administration principles. Topics include design, implementation, management, and security techniques. Students utilize data definition and manipulation languages on leading database platforms. Emerging trends in database technology are also scrutinized. Prerequisites: Graduate Status. Typically Offered Fall, Spring Odd Years, Summer Even Years.
### MISI615 Master Info Security and Intel BU Graduate 3
Students explore Information Systems Strategy from multiple perspectives including effectiveness of the use of information systems and data, as well as digital security exposures and safeguards from a personal, organizational, and global perspective. Aligning information systems resources with organizational goals in an efficient and secure environment throughout an organization while potentially relying on third parties will be examined. Prerequisite: Graduate level. Typically offered: Spring.

### MISI629 Master Info Security and Intel BU Graduate 3
Students will analyze legal and ethical issues as they relate to the business environment. Ethical practices, privacy, privacy by design, copyright and licensing issues as they relate to proprietary and personal information are incorporated. Methods to detect and prevent fraudulent practices on a personal and organizational scale are explored. Domestic and international issues, including organized criminal activity, and the role of technology to carry out fraudulent schemes is incorporated into the course framework. Prerequisites: Graduate Status. Typically Offered Fall, Spring, Summer.

### MISI660 Master Info Security and Intel BU Graduate 3
Students investigate the concepts, methodologies and lifecycle of information security/assurance and management practices. Topics include risk analysis, legal regulations and compliance, security audits, security policies and governance and threat and vulnerability assessment. Students evaluate various standards and guidelines and security technologies to devise effective security controls. Prerequisites: Graduate Status. Typically Offered Fall.

### MISI662 Master Info Security and Intel BU Graduate 3
Students investigate the purposes and practice of network penetration testing as a component of an information security program. Students research the purposes of network penetration testing and various options for executing network penetration tests. Students design, conduct, and interpret network penetration tests on laboratory networks and systems, to include the application and validation of corrective measures. Prerequisites: MISI 660 and Graduate Status. Typically Offered Fall.

### MISI664 Master Info Security and Intel BU Graduate 3
Students will learn the digital evidence collection and analysis process utilizing a variety of methods and technologies. Nano technology forensics using Digital Laser Microscopy will be incorporated. Threat and response plans, as well as proactive security measures will be developed and applied to multiple scenarios including computer and mobile technology. Reporting, analysis, and security improvement feedback cycle will also be reviewed. Prerequisites: MISI 660 and MISI 605 or instructor permission. Typically Offered Spring.

### MISI689 Master Info Security and Intel BU Graduate 3
Current Topics in ISI covers various topics in Information Security and Intelligence and may not be offered every semester. Prerequisites: Graduate Standing or permission of instructor. Typically Offered Fall, Spring Summer.
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<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Description</th>
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<tr>
<td>MISI691</td>
<td>Master Info Security and Intel BU Graduate 1 TO 6</td>
<td>1 TO 6</td>
<td>An internship with work experience designed to be relevant to the student's academic pursuits, personal development, and professional preparation. The work experience must last a minimum of 10 weeks with credits based on total hours worked. 1 credit = 80 hours minimum, 2 credits = 160 hours minimum, 3 credits = 240 hours minimum. Detailed reports of work experience required. Internship may be repeated for additional credits not to exceed six total credits. Prerequisites: Successful completion of 15 MISI credits and Department approval. Typically Offered Fall, Spring, Summer.</td>
</tr>
<tr>
<td>MISI699</td>
<td>Master Info Security and Intel BU Graduate 1</td>
<td>1</td>
<td>Continuing Studies in ISI is for students who have completed all the required courses and are working on completion of their thesis. This continuing credit allows the student to remain active in the program. Prerequisites: MISM 799 or permission of instructor. Typically Offered Fall, Spring, Summer.</td>
</tr>
<tr>
<td>MISI740</td>
<td>Master Info Security and Intel BU Graduate 3</td>
<td>3</td>
<td>An investigation of business intelligence and evaluation of analytical data used in strategic decision making. Topics include tracking, managing and understanding organized data, as well as identifying and measuring performance metrics. Includes applied decision making using appropriate tools and techniques. Decision support systems, data warehousing and emerging topics are explored. Prerequisites: MISI 610. Typically Offered Fall, Spring Odd Years, Summer Even Years.</td>
</tr>
<tr>
<td>MISI742</td>
<td>Master Info Security and Intel BU Graduate 3</td>
<td>3</td>
<td>An investigation of the use of geographic information systems in an analytical and data intelligence context. Topics include tracking, visualization and mapping organized data for problem solving and/or communication. Includes application of one or more GIS tools into decision making in complex and often competing environments. Prerequisites: MISI 610 of instructor permission. Summer Off Years, Fall Spring Even Years.</td>
</tr>
<tr>
<td>MISI760</td>
<td>Master Info Security and Intel BU Graduate 3</td>
<td>3</td>
<td>Students evaluate and apply governance, risk, and compliance aspects of Information Assurance. Topics include the professional audit process, domestic and international compliance, control frameworks, and service delivery. Students will utilize a leading framework to audit an infrastructure and apply proper remediation procedures. Pre-requisite: BU Graduate Student. Typically offered: Spring</td>
</tr>
<tr>
<td>MISI788</td>
<td>Master Info Security and Intel BU Graduate 3</td>
<td>3</td>
<td>Students will evaluate current practices and research to develop a framework used in constructing a project related to their specialty area. Students will use established and emerging methodologies to evaluate their project and present results. Pre-requisite: Department approval. Typically offered: Fall, Spring, Summer.</td>
</tr>
<tr>
<td>Course Code</td>
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<td>MISM629</td>
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<td>MISM634</td>
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<td>MISM661</td>
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MISM662 Masters of Sci Infor Sys Mgmt  BU  Graduate 3

Students investigate the purposes and practice of network penetration testing as a component of an information security program. Students research the purposes of network penetration testing and various options for executing network penetration tests. Students design, conduct, and interpret network penetration tests on laboratory networks and systems, to include the application and validation of corrective measures. Pre-Requisites: MISM 661. Typically Offered Fall, Spring.

MISM665 Masters of Sci Infor Sys Mgmt  BU  Graduate 3

Students develop and understand the strategic framework in which contemporary organizations evaluate, develop and utilize management information systems. The student will be introduced to the information system life cycle, fundamental structures and tools used in system development, and an understanding of current and future trends in information system technology through hands-on and theoretical practice. An integrating course project is required. Prerequisites: Graduate standing or instructor permission. Typically Offered Fall, Spring and Summer.

MISM670 Masters of Sci Infor Sys Mgmt  BU  Graduate 3

Students will examine the basic components of Local Area Networks including topologies, protocols, and wiring schemes. Operating environments explored will be both peer to peer and at least one server based network. Once exposed to managing these environments, the student will employ their analytical skills in determining the strengths and weaknesses of each of the environments. Pre-Requisites: Graduate status or Instructor approval. Typically Offered Spring.

MISM680 Masters of Sci Infor Sys Mgmt  BU  Graduate 3

Examines and evaluates current issues related to information systems management that may not be covered in other courses in the MSISM program. Students will be exploring management trends as they relate to working with information systems. The structure of the course is designed to enhance the student's knowledge of current issues as well as the ability to work in teams. Pre-Requisites: Graduate status. Typically Offered On Demand.

MISM691 Masters of Sci Infor Sys Mgmt  BU  Graduate 1 TO 3

Internship with work experience relevant to the student's academic pursuits, personal development, and professional preparation. Work experience must last a minimum of 10 weeks, with credits based on total hours worked. 1 credit = 80 hours minimum, 2 credits = 160 hours minimum, 3 credits = 240 hours minimum. Detailed reports of work experience required. May be repeated for additional credits not to exceed six total credits. Prerequisites: Successful completion of 15 MISM credits and Department's approval. Typically offered: Fall, Spring, Summer.
<table>
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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Level</th>
<th>Type</th>
<th>Credits</th>
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<td>MISM740</td>
<td>An investigation of business intelligence and evaluation of analytical data used in strategic decision making. Topics include tracking, managing and understanding organized data, as well as identifying and measuring performance metrics. Includes applied decision making using appropriate tools and techniques. Decision support systems, data warehousing and emerging topics are explored. Pre-Requisites: MISM 610. Typically Offered Fall, Spring</td>
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<tr>
<td>MISM799</td>
<td>The Capstone Project is required for graduation in the MBA programs. One of the strategic goals of the College of Business Graduate Program (CBGP) is to ensure that the Capstone Projects integrate learning across the curriculum to provide value. Pre-Requisites: Final semester status or department approval. Typically Offered Fall, Spring, Summer</td>
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<tr>
<td>MKTG231</td>
<td>Basic course in selling, covering development of a sales personality, sales speech, opening and closing sales, buying motives and sales psychology, organization of sales talk, meeting objectives, suggestive selling, and building a customer following. Sales demonstrations in class are evaluated by both the class and the professor. Typically Offered Fall, Spring, Summer</td>
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<tr>
<td>MKTG291</td>
<td>Internship experience with cooperating employer organizations in business, industry, government, and education. The internship experience is designed to be relevant to the student's academic pursuits, personal development, and professional preparation. The internship must last a minimum of 10 weeks. Each credit hour requires a minimum of 80 internship hours. A 3 credit internship requires a minimum of 240 internship hours over at least 10 weeks. Pre-Requisites: Sophomore Status and Department Approval. Typically Offered Fall, Spring, Summer</td>
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<tr>
<td>MKTG321</td>
<td>An introduction to the basic functions of marketing. Included as topics of study are: consumer behavior, marketing research, marketing planning, physical distribution, selling, promotion, retailing, pricing, wholesaling, purchasing, international marketing, and e-commerce. Pre-Requisites: Sophomore status or higher; ENGL 150 w/C- or higher. Meets General Education requirements for Collaboration and Problem Solving. Typically Offered Fall, Spring, Summer</td>
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<tr>
<td>MKTG322</td>
<td>A study of the consumer decision process and the internal, external, self-concept, and lifestyle influences on that process. Emphasis will be placed on the application of consumer research to marketing decisions, such as the selection of the target market and marketing mix (4Ps) variables. Pre-Requisites: MKTG 321 w/C- or higher and PSYC 150. Typically Offered Fall, Spring, Summer</td>
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<td>MKTG331</td>
<td>This course is intended to allow students to practice and enhance selling skills. It covers topics such as negotiation skills, customer relationship management, sales proposals, and sales presentation techniques. Roleplay exercises are used along with video and audio recording. Prerequisites: MKTG 231 and MKTG 321 both with C- or higher. Typically offered Fall, Spring.</td>
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MKTG378 Marketing BU Undergraduate 3
Statistical applications of specific marketing problems using market research data. Extensive use of computers to analyze marketing data and coverage of sample and inference procedures (confidence intervals, chi-square, t-tests, and ANOVA). Concentration on both statistical applications and summary report writing. Emphasis to career paths in many areas of marketing management, marketing research, and sales. Pre-Requisites: STQM 260 and MKTG 321, both w/C- or higher. Typically Offered Fall, Spring

MKTG383 Marketing BU Undergraduate 3
An introduction to direct marketing with emphasis on database marketing, strategic business planning, importance of the offer, selecting and selling merchandise, business-to-business direct marketing, fundraising, mailing lists, magazines, newspapers, electronic media, co-ops, telemarketing, production, lead generation, direct marketing math, idea development, research, and integrating direct marketing into the overall marketing mix. Pre-Requisites: MKTG 321 w/C- or higher. Typically Offered Fall, Summer

MKTG391 Marketing BU Undergraduate 1 TO 9
Work experience with cooperating employer organizations in program specific/related industry. The work experience is designed to be relevant to the student’s academic program, personal development, and professional preparation. The work experience must last a minimum of 10 weeks with total number of weeks and hours approved by the department head. Prerequisites: Junior Status and Department Approval. Typically offered Fall, Spring, Summer.

MKTG410 Marketing BU Undergraduate 3
Concepts of industrial marketing systems, its products and services, channels, promotion and pricing strategies. Marketing plan development for industrial products and services. Characteristics of industrial customers, market potential, and buying process. Pre-Requisites: MKTG 321 w/C- or higher. Typically Offered Fall Only

MKTG420 Marketing BU Undergraduate 3
An introduction to the sports industry and the specific application of marketing principles and processes to sports products and to the marketing of non-sports products through association with sport. An emphasis is placed on the spectator as a consumer and the strategic application of the marketing mix to collegiate and professional sports. Prerequisites: MKTG 321 w/C- or higher. Typically Offered Fall only.

MKTG425 Marketing BU Undergraduate 3
Methods for designing market research studies, methods of collecting data, problem formulation, sampling methods and techniques, data analysis, and research reporting. Students design and execute a complete research project in the following possible areas: advertising/promotion, customer satisfaction, target markets, sales, product development, pricing, or distribution. Pre-Requisites: STQM 260 and MKTG 321, both w/C- or higher. Typically Offered Fall, Spring, Summer
MKTG434 Marketing BU Undergraduate 3
Methods and techniques for higher-level selling. Refine and polish sales skills with emphasis on application and practice of sales principles studied in prerequisite courses. Roleplay exercises are used along with video and audio recording. Pre-Requisites: MKTG 231 & MKTG 321, both w/C- or higher, and Senior status. Typically Offered Spring Only

MKTG436 Marketing BU Undergraduate 3
Principles and policies of sales organization; career opportunities; recruiting selection and training salespeople; motivation, supervision and evaluation of salespeople; compensation plans, territory and quota assignments; expense accounts and transportation. Pre-Requisites: MKTG 231 and 321, both w/C- or higher. Typically Offered Fall Only

MKTG441 Marketing BU Undergraduate 3
Focuses on the international marketer’s sphere of operation, dwelling particularly on the uncontrollable environmental variables in foreign markets and how they affect the task of international marketing management. In-depth emphasis is placed on how the execution of product strategy, promotion strategy, distribution strategy, and pricing strategy is different from one country to another. The coordination of the marketing mix to achieve a total and effective international marketing program is the underlying objective of this course. This course meets General Education requirements: Global Consciousness and new Fall 2017 Global Diversity, Collaboration, and Problem Solving. Pre-Requisites: MKTG 321 w/C- or higher and Senior status. Typically Offered Fall, Spring

MKTG450 Marketing BU Undergraduate 3
Course covers application of basic marketing concepts, principles, and tools for the development and execution of strategic marketing plans to marketing within the healthcare industry – including providers, suppliers, third-party payers, and governmental entities. Students will design, develop, and deliver a comprehensive healthcare marketing plan targeting national as well as international markets. Course will cover healthcare applications of marketing process, buyer behavior, market segmentation, customer relationships, branding, pricing, distribution, advertising, promotion, public relations and ethics. Prerequisites: MKTG 321 w/C- or higher. Typically Offered Spring, even years.

MKTG466 Marketing BU Undergraduate 3
Purchasing functions and procedures; organization and operation of the purchasing department, selecting and managing sources of supply, control of quality, inventory, delivery, legal aspects of purchasing, contracts, international procurement, understanding the role of the buyer within the firm. Pre-Requisites: MKTG 321 w/C- or higher. Typically Offered Fall, Spring
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<tr>
<td>Introduction to logistics management as a process of value added activities that synchronize supply and demand. Extensive review and analysis of transportation and physical distribution issues including channel management. Additional topics include warehousing operations, packaging and regulatory laws. Pre-Requisites: MKTG 321 w/C- or higher, and MGMT 370. Typically Offered Fall Only</td>
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<tr>
<td>Focuses on product strategy and the role of the product/brand manager. Subjects covered are opportunity analysis, industry and competitive analysis, pricing, promotion, distribution, strategic plan, and competitive advantage. Expansion, repositioning, new products, or line extension strategies are studied. Pre-requisites: MKTG 321 w/C- or higher. Typically Offered Fall Only</td>
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<tr>
<td>Developing and executing marketing strategies, programs, audits, and plans. Emphasis on strategic and tactical marketing decisions through highly interactive case studies and presentations that require the application of a variety of analytical frameworks for making strategic marketing decisions. Specific cases leading to comprehensive case analysis, covering areas such as consumer and industrial goods, products and services, and profit and nonprofit organizations, ranging from manufacturers to retailers. Pre-Requisites: ECON 202 and senior status. Meets General Education requirements for Collaboration and Problem Solving. Typically Offered Spring Only</td>
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<td>Internship experience with cooperating employer organizations in business, industry, government, and education. The internship experience is designed to be relevant to the student's academic pursuits, personal development, and professional preparation. The internship must last a minimum of 10 weeks. Each credit hour requires a minimum of 80 internship hours. A 3 credit internship requires a minimum of 240 internship hours over at least 10 weeks. Pre- Requisites: Completion of 60 semester hours and Department Approval. Typically Offered Fall, Spring, Summer.</td>
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<tr>
<td>Strategic Marketing Decisions introduces students to essential marketing terms, concepts and ethics. Concepts included are marketing mix (product, pricing, distribution, integrated marketing communications: advertisements, public relations, sales and electronic communication), segmentation, target marketing, and consumer behavior. The combination of real-world experience and theoretical concepts meet together as students conduct external and internal organization analyses and develop and justify a comprehensive marketing and implementation plan that addresses the problem(s) or opportunity(ies) identified in marketing cases. Prerequisites: ECON 726 w/ C or better, Marketing Foundation Competencies, and BUS graduate student. Typically offered Fall, Spring, Summer.</td>
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<td>Course Code</td>
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<td>Degree</td>
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<td>MOHA550</td>
<td>Master of Healthcare Admin</td>
<td>HP Graduate</td>
<td>3</td>
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<tr>
<td>MOHA570</td>
<td>Master of Healthcare Admin</td>
<td>HP Graduate</td>
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<td>MOHA580</td>
<td>Master of Healthcare Admin</td>
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<td>Course Code</td>
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<tr>
<td>MOHA610</td>
<td>Master of Healthcare Admin</td>
<td>3</td>
<td>Graduate student. Typically offered Fall, Spring, Summer.</td>
</tr>
<tr>
<td>MOHA630</td>
<td>Master of Healthcare Admin</td>
<td>3</td>
<td>Graduate student. Typically offered Fall, Spring, Summer.</td>
</tr>
<tr>
<td>MOHA650</td>
<td>Master of Healthcare Admin</td>
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<td>Graduate student. Typically offered Fall, Spring, Summer.</td>
</tr>
<tr>
<td>MOHA660</td>
<td>Master of Healthcare Admin</td>
<td>3</td>
<td>Successful completion of MOHA 550 with a C or better. Typically offered Fall, Spring, Summer.</td>
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<tr>
<td>MOHA670</td>
<td>Master of Healthcare Admin</td>
<td>3</td>
<td>Graduate student. Typically offered Fall, Spring, Summer.</td>
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<tr>
<td>MOHA680</td>
<td>Master of Healthcare Admin</td>
<td>3</td>
<td>Graduate student. Typically offered Fall, Spring, Summer.</td>
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</table>

This course provides a framework for strategic management in healthcare organizations. Students will learn the use of the analytic tools and concepts for strategic planning and the value of continuous strategic decision-making. This online course will include 10 hours of synchronous web-based instruction. 

This course provides a context for designing, evaluating and analyzing the performance of healthcare organizations. Students will explore the impact of various factors related to healthcare quality and safety, economics, legal aspects, and patient demand. This online course will include 10 hours of synchronous web-based instruction. 

This course offers a basis for evaluating the needs of a healthcare system in regard to information system strategic planning and use for quality improvement. Students will study current issues involving privacy, security and social media. This online course will include 10 hours of synchronous web-based instruction. 

This course provides the foundation for quality fiscal management in a healthcare setting. Students will study provider contracts, payer contracts, operational management including accounts receivable management, value-based purchasing, and the use of Lean processes to reduce waste and improve efficiency. This online course will include 10 hours of synchronous web-based instruction. 

This course emphasizes the value of using solid, strategic marketing principles in a healthcare setting. Students will gain the skills and knowledge to build a strong healthcare service marketing plan based on evidence-based research and analysis. This online course will include 10 hours of synchronous web-based instruction. 

This course provides a framework for systematic examination of the use of resources in healthcare organizations, including how policy decisions are made using this information. The tools of economics will be explored and applied to issues related to the organization, delivery, financing, and outcome of healthcare. Students will develop an understanding of economic principles and policy decisions that underlie how the system of health care is financed and delivered in the United States, which provides a basis for analyzing health management and policy options. This online course will include 8 hours of synchronous web-based instruction. 

MOHA695 Master of Healthcare Admin HP Graduate 4 This course provides students opportunity to implement skills and knowledge gained throughout the program. The student will develop, lead, and implement a project intended to enhance the quality of healthcare delivery in a real-world setting. This online course will include 4 hours of synchronous web-based instruction. Graduate student. Typically offered Fall, Spring, Summer.

MRIS101 Medical Record Inform Systems HP Undergraduate 4 Definition, content, format and purpose and the regulatory agencies which impact the health record. The interaction of health care professionals who contribute to the record will be studied. Laboratory component deals with analysis of the patient record, numbering systems, filing systems and maintenance of the master patient index. Health information students must earn "C" or better on first or second attempt. Two unsuccessful attempts (less than "C") will result in dismissal from the health information programs. Typically Offered Fall, Spring

MRIS103 Medical Record Inform Systems HP Undergraduate 3 Terminology of disease, condition, operative pathology, radiology, surgery, operative procedure and technique, surgical instruments, diagnostic tests, therapeutic treatments, anesthetic agents, pharmacologic agents, oncology, nuclear medicine, and other specialized areas of medicine. Lab time will be used for Case Studies - students will apply new knowledge to understanding medical terms in their proper contexts, such as medical reports and records. Typically Offered Fall, Spring, Summer

MRIS121 Medical Record Inform Systems HP Undergraduate 2 This course will include general principles of healthcare descriptive statistics related to the delivery of healthcare. Skills in calculating common hospital healthcare statistics using formulas/definitions. Pre-requisite: MRIS 101 with a grade of C or above. Typically offered: Fall, Spring.

MRIS122 Medical Record Inform Systems HP Undergraduate 4 A principles course of health information statistics, medical informatics, healthcare registries, database design, healthcare research, analysis of health data, design formats of presentation of health data and health information management department operations. Students will use computer applications (e.g. Excel) for data display. Prerequisites: MRIS 101 with grade of "C" or better. Meets General Education requirements for Problem Solving. Typically Offered: Fall, Spring.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Department</th>
<th>Credits</th>
<th>Description</th>
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<tbody>
<tr>
<td>MRIS123</td>
<td>Medical Record Information Systems</td>
<td>HP</td>
<td>2</td>
<td>A laboratory/practical course for health information statistics, medical informatics, healthcare registries, database design, healthcare research, analysis of health data, design formats for presentation of health data and health information management department operations. Students will use computer applications for data display. Laboratory experience will reinforce student’s understanding of lecture topics from MRIS 122. Health Information students must earn “C” (2.0) or better on first or second attempt. Two unsuccessful attempts (less than “C”) will result in dismissal from the Health Information programs. Co-Requisite: MRIS 122. Prerequisites: MRIS 101, ISYS 105 or Proficiency. Typically Offered Spring only.</td>
</tr>
<tr>
<td>MRIS150</td>
<td>Medical Record Information Systems</td>
<td>HP</td>
<td>3</td>
<td>This course is an introduction to the basic concepts of the structure &amp; management of hospital based and central cancer registries including the purpose of cancer registries, confidentiality, and the role/data standards in standard setting organizations in cancer data management. Typically offered: Fall This course will focus on management functions including budgeting, annual reports, staffing, Commission on Cancer standards including cancer conferences/committees. Basic operational tasks will be introduced; case ascertainment, abstracting, data management and cancer agency networking. Typically offered: Fall</td>
</tr>
<tr>
<td>MRIS160</td>
<td>Medical Record Information Systems</td>
<td>HP</td>
<td>3</td>
<td>This course is an introduction to the pathophysiology of cancer including symptomatology, diagnostic and treatment modalities specific to the type/site of cancer and staging. Prerequisites: MRIS 103, MRIS 150, MRIS 160, MRIS 210, BIOL 109. Typically offered: Spring General overview of various nomenclature and classification systems, ICD-0, AJCC, Collaborative Staging, &amp; SEER staging and other coding standards and principles used in the cancer registry. Practices used in coding and abstracting cancer data. Prerequisites: MRIS 103, MRIS 150, MRIS 160, MRIS 210, BIOL 109. Typically offered: Spring</td>
</tr>
<tr>
<td>MRIS170</td>
<td>Medical Record Information Systems</td>
<td>HP</td>
<td>3</td>
<td>Introduces the ICD-10 Coding classification system with emphasis on utilizing the alphabetic index and tabular for correct assignment/sequencing of diagnosis and procedure codes. Focus will be on rules, conventions, instructions, chapter specific guidelines, code structures and how to use PCS table based coding systems. Health Information program students must earn “C” (2.0) or better on first or second attempt. Two unsuccessful attempts (less than “C”) will result in dismissal from the Health Information program. Prerequisites: MRIS 101 and MRIS 210 with grades of “C” or better. Typically offered Fall and Spring.</td>
</tr>
<tr>
<td>MRIS180</td>
<td>Medical Record Information Systems</td>
<td>HP</td>
<td>3</td>
<td>General overview of various nomenclature and classification systems, ICD-0, AJCC, Collaborative Staging, &amp; SEER staging and other coding standards and principles used in the cancer registry. Practices used in coding and abstracting cancer data. Prerequisites: MRIS 103, MRIS 150, MRIS 160, MRIS 210, BIOL 109. Typically offered: Spring</td>
</tr>
<tr>
<td>MRIS204</td>
<td>Medical Record Information Systems</td>
<td>HP</td>
<td>4</td>
<td>Shows students MS Office Excel, Access, Power Point, and Word applications to organize and present the health data. Health Information students must earn “C” (2.0) or better on first or second attempt. Two unsuccessful attempts (less than “C”) will result in dismissal from the Health Information program. Prerequisites: MRIS 103, MRIS 150, MRIS 160, MRIS 210, BIOL 109. Typically offered Spring only.</td>
</tr>
</tbody>
</table>
MRIS205 Medical Record Information Systems HP Undergraduate 4
This course is a continuation of MRIS 204 ICD-10 Coding I. Introduces the ICD-10 Coding classification system with emphasis on utilizing the alphabetic index and tabular for correct assignment/sequencing of diagnosis and procedure codes. Focus will be on rules, conventions, instructions, chapter specific guidelines, code structures and how to use the PCS table based coding system. The impact of proper code assignment, MS_DRGs and reimbursement will also be discussed. Health Information program students must earn “C” (2.0) or better on the first or second attempt. Two unsuccessful attempts (less than “C”) will result in dismissal from the Health Information programs. Prerequisites: MRIS 101 and MRIS 103 and MRIS 204 and MRIS 210 and BIOL 109 or BIOL 205, all with grades of “C” or better. Typically offered Fall, Spring, Summer.

MRIS209 Medical Record Information Systems HP Undergraduate 3
Study of the concepts and procedures utilized in the performance of the quality assurance function in the health care setting. Emphasis on the role of the medical record practitioner in the management and control of the utilization review function of the facility. In the laboratory, the student will participate in utilization review and medical care evaluation activities. Pre-Requisites: MRIS 103 and ISYS 105 and MRIS 101 or HCSA 120, all with grades of C or better. Meets General Education requirements for Collaboration. Typically Offered Fall, Spring.

MRIS210 Medical Record Information Systems HP Undergraduate 4
The study of physiologic changes in the body that result from disease processes. Course topics include the etiology, physical signs and symptoms, prognosis, and complications of commonly occurring diseases and their management. 4.000 Credit Hours 4.000 Lecture Hours. Prerequisites: BIOL 109 or BIOL 205 and MRIS 103, all with grades of “C” or better. Typically offered Fall and Spring.

MRIS211 Medical Record Information Systems HP Undergraduate 3
Coding principles with the CPT classification system. Laboratory practice assigning codes using both computerized and manual methods. Health Information program students must earn “C” (2.0) or better. Two unsuccessful attempts (less and “C”) will result in dismissal from the Health Information programs. Prerequisites: MRIS 101 and MRIS 103 and BIOL 109 or BIOL 205, all with grades of “C” or better. Successful completion of BIOL 109 or BIOL 205 must be on first or second attempt. Typically Offered Fall, Spring, Summer.
<table>
<thead>
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<th>Course Code</th>
<th>Course Title</th>
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<th>Degree</th>
<th>Description</th>
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<tr>
<td>MRIS220</td>
<td>Medical Record Informatics Systems HP</td>
<td>3</td>
<td>Undergraduate</td>
<td>This course will provide an in-depth look at the legal and ethical issues facing health informatics and information professionals. The course covers the legal and ethical framework, issues and concepts, and the role of e-discovery in the emerging health data environment. Other contemporary concepts that will be addressed include; analysis of the laws, regulations, policies and practice such as HIPAA and HITECH as they relate to the confidentiality, privacy and security of health information in an electronic environment. An in-depth review of Federal and State laws and regulations that require specific performance in the acquisition, use, storage and maintenance of health information will also be conducted. Pre-requisite: MRIS 101 with a grade of C or better. Typically offered: Fall, Spring, Summer</td>
</tr>
<tr>
<td>MRIS221</td>
<td>Medical Record Informatics Systems HP</td>
<td>3</td>
<td>Undergraduate</td>
<td>The course will provide an overview of the evolving health care payment systems encompassing major U.S. public and private third party payers. The U.S. payment systems will be compared with international models of health care coverage and reimbursement. Students will evaluate the impact of current forces on the revenue cycle including regulations and emerging technologies. Students will have hands-on practice completing paper and electronic forms to obtain maximum reimbursement. HCSA/HIM/MIT students must earn a “C” (2.0) or better on first or second attempt. Two unsuccessful attempts (less than “C”) will result in dismissal from the degree program. HCSA Students Pre-Requisites: ISYS 105 and MRIS 103. Typically offered Fall, Spring Summer.</td>
</tr>
<tr>
<td>MRIS250</td>
<td>Medical Record Informatics Systems HP</td>
<td>3</td>
<td>Undergraduate</td>
<td>Identify and apply the fundamentals of cancer registry abstracting. Assessment of clinical information and determine how the information would be reported using the accepted standards for data collection. Prerequisites: MRIS 170, MRIS 180. Typically offered: Summer</td>
</tr>
<tr>
<td>MRIS260</td>
<td>Medical Record Informatics Systems HP</td>
<td>3</td>
<td>Undergraduate</td>
<td>In this course students will use the general and site-specific coding rules for determining the number of primary diagnoses when there are multiple tumors and/or histologic types. It will also review the standards that apply to abstracting and coding of hematopoietic and lymphoid neoplasms. Prerequisites: MRIS 170, MRIS 180. Typically offered: Summer</td>
</tr>
<tr>
<td>MRIS261</td>
<td>Medical Record Informatics Systems HP</td>
<td>1</td>
<td>Undergraduate</td>
<td>A comprehensive review of health information technology concepts related to medical terminology, pathophysiology, and health information statistics, filing and indexing concepts, content and documentation requirements, medicolegal concepts, quality assurance, utilization review, management issues, computer applications in health information and coding applications. Test taking techniques and preparation for the national registered health information technician exam will be addressed. Prerequisites: All required program courses completed prior to this course. Typically Offered Fall, Spring and Summer.</td>
</tr>
</tbody>
</table>
This course will provide best practices for obtaining life-long follow up for appropriate cases. Explanation will be provided on data quality methods, database management and statistics/epidemiology used in a cancer registry. Prerequisites: ISYS 105, MRIS 260. Typically offered: Fall

The student will be assigned to a health care facility or coding/billing department for a six week internship where they will gain real-world experience in applying procedures previously taught in the classroom. Students will gain experience coding medical record reports according to ICD-9-CM and CPT coding principles. They will also submit medical claim forms according to the various payor guidelines. Pre-Requisites: Department permission. Typically Offered Fall, Spring, Summer

Six weeks of professional practice experience in health care settings. Topics to be covered include quality assurance, release of information, coding, abstracting, utilization management, storage and retrieval, computer applications in health information practice, tumor registry and professional interaction with health care facility and medical staff. Health Information students must earn "C" (2.0) or better on first or second attempt. Two unsuccessful attempts (less than "C") will result in dismissal from the Health Information programs. Pre-Requisites: Department approval. Typically Offered Fall, Spring, Summer

160 hours of clinical practice experience in a cancer registry under the direct supervision of a CTR. Topics to be covered include all aspects of data collection, coding and abstracting cancer data, exposure to cancer conferences/committee functions, data quality management and follow up activities. Prerequisites: Department Approval. Typically Offered: Fall

This course will examine the concepts, methods and management tools used in the analysis of health information systems for the development of objectives, policies and procedures, benchmarking, workflow, productivity measurement and layout analysis. The student will be introduced to IT project management in the healthcare setting as well as formal project management techniques. Student must earn "C" (2.0) or better on first or second attempt. Two unsuccessful attempts (less than "C") will result in dismissal from the health information management program. Prerequisites: ISYS 200, MGMT 301, MRIS 293 and HCSA 335. Typically Offered Spring only.
<table>
<thead>
<tr>
<th>MRIS461 Medical Record Information Systems HP Undergraduate 1</th>
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<tbody>
<tr>
<td>A comprehensive review of health information management concepts related to information technology, data security, quality management, human resources, financial management, strategic planning, and project and operations management. Test taking techniques and preparation for the national registered health information administrator exam will be addressed. Prerequisites: All required program courses completed prior to this course. Typically Offered Fall, Spring and Summer.</td>
</tr>
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</table>

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<tr>
<th>MRIS493 Medical Record Information Systems HP Undergraduate 10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ten weeks of supervised professional practice experience in health care settings with emphasis on management and supervision of health information departments. Students will return to campus for one day at the conclusion of their professional practice to present a project activity from the internship experience. They will also take a mock exam similar to the national certification exam. Health Information students must earn &quot;C&quot; (2.0) or better on first or second attempt. Two unsuccessful attempts (less than &quot;C&quot;) will result in dismissal from the Health Information programs. Pre-Requisites: Department approval. Typically Offered Fall, Spring, Summer</td>
</tr>
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<thead>
<tr>
<th>MSCI111 Military Science BU Undergraduate 2</th>
</tr>
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<tbody>
<tr>
<td>Introduces students to the personal challenges and competencies that are critical for effective leadership. Students learn how the personal development of life skills such as critical thinking, goal setting, time and stress management and physical fitness relate to leadership in military and civilian professions. The focus is on developing basic knowledge and comprehension of leadership dimensions. These dimensions are applied in weekly Leadership Labs. Typically Offered Fall only.</td>
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<tr>
<th>MSCI112 Military Science BU Undergraduate 2</th>
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<tbody>
<tr>
<td>Overviews leadership fundamentals such as setting direction, problem solving, listening, presenting briefs, providing feedback, and using effective writing skills. Students explore dimensions of leadership values, attributes, skills, and actions in the context of practical, hands-on, and interactive exercises. Student role models are implemented in order to build stronger relationships among the students through common experience and practical interaction. Typically Offered Spring only.</td>
</tr>
</tbody>
</table>
MSCI211 Military Science BU Undergraduate 3
Explores the dimensions of creative and innovative tactical leadership strategies and styles by examining team dynamics and two historical leadership theories that form the basis of the Army leadership framework (trait and behavior theories). Students practice aspects of personal motivation and team building in the context of planning, executing, and assessing team exercises and participating in Leadership Labs. Focus is on continued development of the knowledge of leadership values and attributes through an understanding of Army rank, structure, and duties and basic aspects of map reading, orienteering and squad tactics. Case studies provide tangible context for learning the soldier's Creed, Army values, and ethics as they apply in the contemporary operating environment. Physical fitness participation required once a week. Typically Offered Fall only.

MSCI212 Military Science BU Undergraduate 3
Examines the challenges of leading tactical teams. The course highlights dimensions of terrain analysis, patrolling, and operation orders. Further study of the theoretical basis of the Army leadership framework explores the dynamics of adaptive leadership in the context of military operations. Students develop greater self awareness as they assess their own leadership styles and practice communication and team building skills. Case studies give insight into the importance and practice of teamwork and tactics in real-world scenarios. Physical fitness participation required once a week. Prerequisites: MSCI 211 or permission of department. Typically Offered Spring only.

MSCI293 Military Science BU Undergraduate 3
A six week course taught at a major Army installation under the auspices of Army ROTC. Course parallels subjects in the basic program and substitutes for the basic program as prerequisite for enrollment in the advanced program. Students are furnished transportation, room, board, and pay. Credit/no credit only. Pre-Requisites: Department approval. Typically Offered Summer Only

Challenges students to study, practice, and evaluate adaptive leadership skills as they are in challenging scenarios. These scenarios are related to small unit tactical operations and used to develop self awareness and critical thinking skills. Students receive systematic and specific feedback on their leadership abilities. Students at this level begin to analyze and evaluate their own leadership values, attributes, skills and actions. Primary attention is given to the development of leadership abilities. Physical fitness required 3-5 days a week. Prerequisites: MSCI 212 or Permission of Department. Typically Offered Fall only.
MSCI312  Military Science  BU  Undergraduate  4
Intense situational leadership challenges used to build student skills in leading tactical operations. Builds on squad-level tactics learned in MSCI 311 for leading at the platoon level. Reviews aspects of combat, stability, and support operations. Conduct military briefings and develop proficiency in garrison operation orders. The focus is on exploring, evaluating, and developing skills in decision making, persuading, and motivating team members. Students are evaluated on what they know and do as leaders. Physical fitness required 3 - 5 days a week. Prerequisites: MSCI 311 or permission of department. Typically Offered Spring only.

MSCI393  Military Science  BU  Undergraduate  1 TO 6
A six-week course taught at a major Army installation. Includes practical application of leadership principles and techniques. Applies all subjects covered in MSCI 301 and MSCI 302. Pre-Requisites: MSCI 301 and 302 or Department approval. Typically Offered Summer Only

MSCI411  Military Science  BU  Undergraduate  4
Course explores the dynamics of leading in the complex situations of current operations in the contemporary operating environment. Students examine differences in customs and courtesies, military law, principles of war, and rules of engagement in the face of international terrorism. They also explore aspects of interacting with nongovernmental organizations, civilians on the battlefield, and host nation support. Course places significant emphasis on preparing students for their first leadership positions. It uses case studies, scenarios, and exercises to prepare students to face the complex ethical and practical demands of leading as a commissioned officer. Physical fitness required 3 - 5 days a week. Prerequisites: MSCI 411 or permission of Department. Typically Offered Fall only.

MSCI412  Military Science  BU  Undergraduate  4
Notation of pitch, meter, rhythm, ear training and sight singing, structure of all major and minor scales; key signatures, simple triad construction, and basic part-writing related to western and non-western musical structure. This course meets General Education requirements: Cultural Enrichment and new Fall 2017 Culture. Typically Offered Fall, Spring, Summer
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<th>Department</th>
<th>Level</th>
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<td>MUSI201</td>
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<td>MUSI221</td>
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<td>MUSI228</td>
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<td>Music</td>
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<td>MUSI262</td>
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<td>MUSI301</td>
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<td>NASE401</td>
<td>National Student Exchange</td>
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<td>1 TO 20</td>
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<td>Undergraduate</td>
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<td>NUCM205</td>
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<td>NUCM216</td>
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<td>NUCM240</td>
<td>Nuclear Medicine HP Undergraduate 3</td>
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<td>NUCM310</td>
<td>Nuclear Medicine HP Undergraduate 4</td>
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<td>Undergraduate</td>
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<tr>
<td>NUCM320</td>
<td>Nuclear Medicine HP Undergraduate 4</td>
<td>4</td>
<td>Undergraduate</td>
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This course is designed to examine the mathematics that Nuclear Medicine Technologist encounter in the practice of Nuclear Medicine Technology. Emphasis is placed on the application of mathematics in clinical situations. Prerequisites: NMT Major. Typically Offered Summer.

This foundation course examines radiation as it pertains to Nuclear Medicine. Atomic structure, nuclear physics, biologic response to radiation, and radiation protection are emphasized. Prerequisites: NUCM 100 and NUCM 101. Typically Offered Summer.

A laboratory course that emphasizes the material covered in NUCM 110. Radiation safety procedures, characteristics of radiation experiments, and clinical procedures are performed. Prerequisites: Corequisite with NUCM 110. Prerequisites: NMT Major. Typically Offered Summer.

Nuclear medicine instrumentation and quality control/quality assurance are emphasized in this course. Prerequisites: NMT Major. Typically Offered Fall.

A laboratory course emphasizing the concepts covered in NUCM 205. Various types of Nuclear Medicine instruments are calibrated, utilized, and the results interpreted by the student. Quality assurance and radiation safety is stressed. Prerequisites: NMT Major. Corequisite with NUCM 205. Typically Offered Fall.

The first of two courses applying the principles and practices of Nuclear Medicine to procedures performed in the clinical setting. Prerequisite: NMT Major. Typically offered Fall only.

A laboratory course emphasizing the material covered in NUCM 215. Preparation of radiopharmaceuticals, quality control, and radiation therapy techniques are emphasized as well as venipuncture techniques. Prerequisites: NMT Major. Corequisite with NUCM 215. Typically Offered Spring only.

An introduction to the images obtained in nuclear medicine technology, and how they relate to the human body. SPECT and PET imaging will be emphasized. Correlation with other medical modalities such as MR, CT and sonography will be discussed. Prerequisites: NMT Major. Typically Offered.

An advanced imaging course for Nuclear Medicine Technology students introducing the technologies and techniques unique to Positron Emission Tomography (PET), Computed Tomography (CT), Magnetic Resonance (MR) as well as hybrid imaging. Basic principles, image processing and display, image quality, physics of scanning, and patient care will be emphasized. Students will have a strong didactic background of these imaging modalities upon successful completion of this course. Prerequisite NMT Major. Typically offered Summer only.

The second of two courses applying the principles and practices of Nuclear Medicine to procedures performed in the clinical setting. Prerequisite: NMT Major. Typically offered Spring only.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Degree Level</th>
<th>Offered Per Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>NUCM321</td>
<td>Nuclear Medicine HP Undergraduate 1</td>
<td>1</td>
<td>Undergraduate</td>
<td>Typically Offered Fall Only</td>
</tr>
<tr>
<td></td>
<td>A laboratory course emphasizing material covered in NUCM 320. Routine Nuclear Medicine procedures will be performed by students in a clinical environment. Prerequisites: NMT Major. Corequisite with NUCM 320.</td>
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<tr>
<td>NUCM340</td>
<td>Nuclear Medicine HP Undergraduate 2</td>
<td>2</td>
<td>Undergraduate</td>
<td>Typically Offered Spring only</td>
</tr>
<tr>
<td></td>
<td>A course emphasizing the computer processing and image enhancement techniques used in NMT. Special emphasis will be placed on techniques used in SPECT, SPECT/CT, and PET/CT. Prerequisite: NMT Major, Typically offered Spring only.</td>
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<tr>
<td>NUCM350</td>
<td>Nuclear Medicine HP Undergraduate 2</td>
<td>2</td>
<td>Undergraduate</td>
<td>Typically Offered Fall and Spring only</td>
</tr>
<tr>
<td></td>
<td>This course prepares students to perform advanced nuclear cardiology procedures as well as provides information regarding electrocardiogram interpretation. Pharmacology and pathology are also emphasized. Prerequisites: NMT Major.</td>
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<tr>
<td>NUCM351</td>
<td>Nuclear Medicine HP Undergraduate 1</td>
<td>1</td>
<td>Undergraduate</td>
<td>Typically Offered Spring and Fall only</td>
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<tr>
<td></td>
<td>A laboratory course emphasizing the material covered in NUCM 350. Students will learn to interpret ECGs, perform nuclear cardiology studies and respond to cardiac emergencies. Prerequisite: NMT Major. Corequisite with NUCM 350.</td>
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<tr>
<td>NUCM360</td>
<td>Nuclear Medicine HP Undergraduate 3</td>
<td>3</td>
<td>Undergraduate</td>
<td>Typically Offered Spring Only</td>
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<tr>
<td></td>
<td>Emphasis placed on the role of a supervisory nuclear medicine technologist. Topics include capital equipment purchases, reimbursement issues, regulations and guidelines, and budget. Pre-Requisites: NMT Major. Meets General Education Requirements for Collaboration.</td>
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<tr>
<td>NUCM370</td>
<td>Nuclear Medicine HP Undergraduate 1</td>
<td>1</td>
<td>Undergraduate</td>
<td>Typically Offered Spring only</td>
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<td></td>
<td>This course is designed to enhance pharmacology concepts and principles from previous clinical procedures courses. Specific emphasis will be placed on pharmacologic agents utilized in Nuclear Medicine Technology exams. Prerequisite NMT Major.</td>
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<tr>
<td>NUCM485</td>
<td>Nuclear Medicine HP Undergraduate 1</td>
<td>1</td>
<td>Undergraduate</td>
<td>Typically offered Fall only</td>
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<tr>
<td></td>
<td>The first of two courses that relate Nuclear Medicine theory to practice during clinical internship. An emphasis will be placed on content tested on the certification exams. Co-Requisite: NUCM 493.</td>
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<tr>
<td>NUCM486</td>
<td>Nuclear Medicine HP Undergraduate 1</td>
<td>1</td>
<td>Undergraduate</td>
<td>Typically offered Spring only</td>
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<td></td>
<td>The second of two courses that relate Nuclear Medicine theory to practice during clinical internship. An emphasis will be placed on content tested on the certification exams. Co-Requisite: NUCM 494.</td>
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<tr>
<td>NUCM493</td>
<td>Nuclear Medicine HP Undergraduate 10</td>
<td>10</td>
<td>Undergraduate</td>
<td>Typically Offered Fall only</td>
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<td></td>
<td>The first of two clinical application courses providing the student with the opportunity to learn basic skills for the production of diagnostic and therapeutic nuclear medicine procedures through a review of previous didactic materials, demonstrations, and supervised clinical laboratory practice. Prerequisites: Permission of program.</td>
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<tr>
<td>NUCM494</td>
<td>Nuclear Medicine HP Undergraduate 10</td>
<td>10</td>
<td>Undergraduate</td>
<td>Typically Offered Spring only</td>
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<td></td>
<td>The second of two clinical application courses, and a continuation of the first course. Prerequisites: NUCM 493.</td>
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<tr>
<td>Course Code</td>
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<td>NUCM499</td>
<td>Nuclear Medicine</td>
<td>HP</td>
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<td>NURS261</td>
<td>Nursing</td>
<td>HP</td>
<td>Undergraduate</td>
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<td>Undergraduate</td>
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<td>NURS264</td>
<td>Nursing</td>
<td>HP</td>
<td>Undergraduate</td>
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<td>NURS300</td>
<td>Nursing</td>
<td>HP</td>
<td>Undergraduate</td>
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</table>

As the capstone of the baccalaureate program, this course assesses the student’s comprehension of nuclear medicine technology and general education through written assignments. Pre-requisites: COHP 450 and NUCM 493. Corequisite: NUCM 494 Meets General Education Requirements for Problem Solving. Typically Offered Spring and Summer only.

This course examines the role of the professional nurse in contemporary nursing practice. The conceptual, theoretical, and scientific basis of nursing practice will be explored. Students will be introduced to concepts related to collaborative practice including roles and responsibilities, values and ethics, communication, and teamwork. Pre-requisite: Admission to the program. Co-requisites: NURS 261 & 262. Typically offered: Fall, Spring, Summer.

This course focuses on promoting quality of life across the health continuum. Quality of life is examined using theoretical and ethical models. Students identify health risk behaviors and interventions that affect quality of life during wellness, chronic illness, aging, and at the end-of-life. Pre-requisite: Admission to the program. Co-requisites: NURS 260 & 262. Typically offered: Fall, Spring, Summer.

This laboratory course is an extension of the first semester nursing courses. Students will develop clinical reasoning and skills for nursing practice. Pre-requisite: COHP 100 and COHP 101 and COHP 102 all with grade of C or higher and Admission to the program. Co-requisites: NURS 260 & 261. Typically offered: Fall, Spring, Summer.

This course examines the pathophysiological alterations that can present in patients across the lifespan including genetic, acute, and rehabilitative conditions. Students will be introduced to variables that impact the etiology and the human response to various disease states as well as optimal levels of wellness, recognizing that these variables will provide the basis for evidence-based nursing care. Pre-requisite: Admission to program. Typically offered: Fall, Spring, Summer.

This course examines the pathophysiological alterations that can present in patients across the lifespan including genetic, acute, and rehabilitative conditions. Students will be introduced to variables that impact the etiology and human response to various disease states as well as optimal levels of wellness recognizing that these variables will provide the basis for evidence based nursing care. Prerequisite: Admission to the BSN program. Typically Offered Fall, Spring and Summer.
<table>
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<th>Course Code</th>
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<td>NURS310</td>
<td>Nursing HP Undergraduate 3</td>
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<td>This course introduces the registered nurse baccalaureate (RN to BSN) completion student to health promotion concepts and behavioral change techniques as a basis for clinical prevention and population health in nursing practice. Students will examine health belief and health promotion models and evidence based practice to promote and protect the health of individuals, families, groups, communities and populations. Prerequisites: NURS 324. Typically Offered Fall and Spring.</td>
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<td>NURS314</td>
<td>Nursing HP Undergraduate 3</td>
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<td>This course provides a comprehensive introduction to the human experience of aging to include the psychological, social, biological, and physical aspects of aging. The student will examine the interaction of cultural, social, and individual aspects of life which shape the experience of aging and later life. Emphasis is placed on aging in the United States and other countries to provide a comparative perspective of culturally diverse groups of the elderly. Prerequisites: NURS 324. Typically Offered Summer.</td>
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<tr>
<td>NURS315</td>
<td>Nursing HP Undergraduate 3</td>
<td></td>
<td>3</td>
<td></td>
<td>In this course, the undergraduate nursing student will learn how to reduce the burden and distress of those facing life's end by obtaining the knowledge and skills necessary to address the many physical, psychological, social, and spiritual needs of patients and their families. Prerequisites: NURS 324. Typically Offered Spring and Summer.</td>
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<tr>
<td>NURS316</td>
<td>Nursing HP Undergraduate 3</td>
<td></td>
<td>3</td>
<td></td>
<td>Experiential immersion in Transcultural nursing provides the professional nursing student with the opportunity to study the influence of culture and health policy on the health of populations outside of North America. This course meets General Education requirements: Global Consciousness, and new Fall 2017 Global Diversity. Prerequisites: NURS 324. Typically Offered Spring only.</td>
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<tr>
<td>NURS317</td>
<td>Nursing HP Undergraduate 3</td>
<td></td>
<td>3</td>
<td></td>
<td>The focus of this course is on the person as a spiritual being. The relationship between spirituality and health is explored from historical, contemporary, theoretical, and philosophical perspectives. The student examines the impact of his/her spiritual self-awareness on client care. The nurse's role in providing spiritual care, nurturing the spirit, and integrating evidence based nursing care is emphasized. Prerequisite: NURS 324. Typically Offered Spring and Summer.</td>
</tr>
<tr>
<td>NURS318</td>
<td>Nursing HP Undergraduate 3</td>
<td></td>
<td>3</td>
<td></td>
<td>This course will build upon health assessment skills developed in the professional nurse's basic educational program. It provides an opportunity to develop the knowledge, skills, and processes required for advanced health assessment (e.g., identifying abnormal heart sounds). Laboratory practice with feedback is provided. Prerequisites: NURS 324. Typically Offered Summer only.</td>
</tr>
</tbody>
</table>
In this course, the undergraduate nursing student, as an emergency caregiver, will learn how to manage specific disaster-preparedness and response issues. This course is an in-depth study of the health consequences of some of the most common types of disasters and how nurses can respond effectively in these emergency situations. Prerequisites: NURS 324. Typically Offered Spring and Summer.

This course is designed to support the registered nurse baccalaureate (RN to BSN) completion student’s successful entry into and progression in a learner-centered educational program through the attainment of knowledge and skills in healthcare information literacy and technology which are critical to the delivery of quality nursing care. Students will demonstrate a commitment to the professional development of the baccalaureate prepared nurse through guided activities designed to support their learning. Prerequisites: Admission to the RN to BSN Completion Program. Typically offered Fall and Spring.

This course is designed to provide the registered nurse baccalaureate (RN to BSN) completion student with an introduction to the professional nursing role with a focus on nursing and related theories which impact the nursing discipline and practice setting environment. The role of the professional nurse is examined in terms of contemporary role expectations as a foundation for generalist nursing practice. Prerequisites: NURS 320 and ENGL 321. Typically Offered Fall and Spring.

This course is designed to prepare the baccalaureate nursing student to apply nursing and public health knowledge to population based health care. Students will integrate concepts from epidemiology, public health science, health policy, ethics and social justice in addressing the health status of populations. Prerequisite: NURS 310 and NURS 324 and COHP 450. Typically Offered Fall, Spring and Summer.

This course is an introduction to drug and herbal therapies used in the treatment and prevention of illness across diverse populations and the lifespan. Students will be introduced to the major drug classifications and specific medicinal agents in relation to pharmacodynamics, pharmacokinetics, therapeutic uses, adverse reactions, precautions, and related nursing considerations. Pre-requisite: Admission to program. Typically offered: Fall, Spring, Summer
NURS361 Nursing HP Undergraduate 3
This course focuses on care for patients and families experiencing alterations in mental and social well-being. Students examine concepts that contribute to the development of mental illness and nursing interventions that promote optimal functioning. A collaborative approach that incorporates psychosocial assessment, pharmacological considerations, and therapeutic communication techniques is emphasized. Students explore the impact of health care policies on the ethical care of vulnerable populations, and advocate for equitable care and dignity for patients. Pre-requisite: NURS 260, 261 & 262 with grade of C+ or higher and COHP 450 with grade of C or higher. Co-requisites: NURS 362 & 363. Typically offered: Fall, Spring, Summer

NURS362 Nursing HP Undergraduate 3
This laboratory course is an extension of the second semester nursing courses. Students will apply clinical reasoning and skills for nursing practice. Pre-requisite: NURS 260, 261 & 262. Co-requisites: NURS 361 & 363. Typically offered: Fall, Spring, Summer

NURS363 Nursing HP Undergraduate 4
This course correlates second semester didactic concepts to address the health care needs of clients. This course provides student the opportunity to comprehensively apply clinical concepts through faculty guided experiences. Pre-requisite: NURS 260, 261 & 262. Co-requisites: NURS 361 & 362. Typically offered: Fall, Spring, Summer

NURS370 Nursing HP Undergraduate 4
This course focuses on health alterations requiring medical or surgical intervention for the adult population. Students will examine evidence for practice, collaboration among healthcare professionals, promotion of therapeutic relationships, and ethical decision making for safe, quality patient care. Pre-requisite: NURS 264, 360, 361, 362, & 363. Co-requisites: NURS 372 & 373. Typically offered: Fall, Spring, Summer

NURS371 Nursing HP Undergraduate 2
This course explores the physical, psychological, social, cultural, behavioral, ethical, and spiritual domains as they relate to providing safe and holistic care to women and childbearing families. Emphasis is placed on the role of the client(s) as an integral member of the health care team, childbearing as a normal physiologic process, and the anticipation of potential complications requiring specialized intervention. Pre-requisite: NURS 264, 360, 361, 362, & 363. Typically offered: Fall, Spring, Summer

NURS372 Nursing HP Undergraduate 3
This laboratory course is an extension of the third semester nursing courses. Students will apply clinical reasoning and skills for nursing practice. Pre-requisite: NURS 264, 360, 361, 362, & 363. Co-requisites: NURS 370 & 373. Typically offered: Fall, Spring, Summer
NURS373 Nursing HP Undergraduate 4
This course correlates third semester didactic concepts to address the health care needs of clients. This course provides student the opportunity to comprehensively apply clinical concepts through faculty guided experiences. This laboratory course is an extension of the third semester nursing courses. Students will apply clinical reasoning and skills for nursing practice. Pre-requisite: NURS 264, 360, 361, 362, & 363. Co-requisites: NURS 370 & 372. Typically offered: Fall, Spring, Summer

NURS440 Nursing HP Undergraduate 3
This course is designed to prepare the future baccalaureate nurse leader to assume a leadership role in the design and delivery of interdisciplinary client care within the complexity of the health care system. Students will compare and contrast effective strategies to manage resources, develop healthcare policy, and adhere to regulatory environments in order to foster a culture of quality and safety. Prerequisite: NURS 340. Meets General Education Requirements for Collaboration. Typically Offered Fall, Spring and Summer.

NURS450 Nursing HP Undergraduate 3
This course focuses on current healthcare trends and issues related to professional nursing practice, nursing research, service learning, and professional development. Students will have the opportunity to synthesize their learning experiences throughout the nursing program to demonstrate personal professional growth and a commitment to professional development. Prerequisites: NURS 440. Meets General Education Requirements for Problem Solving. Typically Offered Fall and Spring.

NURS460 Nursing HP Undergraduate 4
This course focuses on health alterations requiring medical or surgical intervention for the adult population. The student explores variations of care and the increased use of healthcare resources inherent in caring for patients with complex healthcare needs. Students will examine evidence for practice, collaboration among healthcare professionals, promotion of therapeutic relationships, and ethical-decision making for quality patient care. Pre-requisite: NURS 370, 372 & 373. Co-requisites: NURS 462 & 463. Typically offered: Fall, Spring, Summer

NURS461 Nursing HP Undergraduate 2
This course investigates the knowledge base necessary to practice with families and children as patients in the healthcare environment. Students will examine evidence for practice, collaboration among healthcare professionals, promotion of therapeutic relationships, and ethical decision making for safe, quality pediatric care. Pre-requisite: NURS 264, 360, 361, 362, & 363. Typically offered: Fall, Spring, Summer

NURS462 Nursing HP Undergraduate 3
This laboratory course is an extension of the fourth semester nursing courses. Students will apply clinical reasoning and skills for nursing practice. Pre-requisite: NURS 370, 372 & 373. Co-requisites: NURS 460 & 463. Typically offered: Fall, Spring, Summer
<table>
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<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Discipline</th>
<th>Level</th>
<th>Credits</th>
<th>Description</th>
<th>Prerequisites</th>
<th>Corequisites</th>
<th>Typically Offered</th>
</tr>
</thead>
<tbody>
<tr>
<td>NURS463</td>
<td>Nursing HP</td>
<td>Undergraduate</td>
<td>4</td>
<td>This course correlates forth semester didactic concepts to address the health care needs of clients. This course provides student the opportunity to comprehensively apply clinical concepts through faculty guided experiences. Pre-requisites: NURS 370, 372 &amp; 373. Co-requisites: NURS 460 &amp; 462. Typically offered: Fall, Spring, Summer</td>
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<tr>
<td>NURS470</td>
<td>Nursing HP</td>
<td>Undergraduate</td>
<td>4</td>
<td>This course prepares the student to apply nursing and public health knowledge to population and community based health care under the overarching concepts of leadership, systems management, and healthcare environment. Students will integrate concepts from epidemiology, public health science, health policy, ethics, and social justice in addressing the health status of vulnerable populations. Pre-requisites: NURS 371, 460, 461, 462, &amp; 463. Co-requisites: NURS 471, 472, &amp; 473. Typically offered: Fall, Spring, Summer</td>
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<tr>
<td>NURS471</td>
<td>Nursing HP</td>
<td>Undergraduate</td>
<td>3</td>
<td>This course focuses on current healthcare trends and issues related to professional nursing practice, nursing research, and professional development. Students will have the opportunity to synthesize their learning experiences throughout the nursing program to demonstrate personal professional growth and a commitment to professional development. Meets General Education requirements for Problem Solving. Pre-requisites: NURS 371, 460, 461, 462, &amp; 463. Co-requisites: NURS 470, 472, &amp; 473. Typically offered: Fall, Spring, Summer</td>
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<tr>
<td>NURS472</td>
<td>Nursing HP</td>
<td>Undergraduate</td>
<td>2</td>
<td>This course is a synthesis of the knowledge skills and attitudes acquired in previous nursing coursework. Pre-requisite: NURS 371, 460, 461, 462, &amp; 463. Co-requisites: NURS 470, 471, &amp; 473. Typically offered: Fall, Spring, Summer</td>
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<tr>
<td>NURS473</td>
<td>Nursing HP</td>
<td>Undergraduate</td>
<td>4</td>
<td>This course is a synthesis of the knowledge skills and attitudes acquired in previous coursework. Pre-requisite: NURS 371, 460, 461, 462, &amp; 463. Co-requisites: NURS 470, 471, &amp; 472. Typically offered: Fall, Spring, Summer</td>
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<tr>
<td>NURS474</td>
<td>Nursing HP</td>
<td>Undergraduate</td>
<td>2</td>
<td>This elective course provides nursing students with a concentrated clinical experience to enhance their ability to plan, implement, and evaluate nursing care of a specific patient population. This course provides students the opportunity to comprehensively apply clinical concepts through faculty or preceptor guided experiences. Co-requisites: NURS 470, 471, 472, 473. Typically offered: Spring, Summer</td>
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</tbody>
</table>
This blended (online and face-to-face) experiential course is an introduction to complementary and integrative health (CIH) for nursing students. Complementary health modalities such as bodywork, breathe work, meditation, holistic nursing, nutritional supplements, and aromatherapy along with whole systems of health such as energy therapies, Ayurveda, homeopathy, Native American and Western herbal medicine will be introduced. Appropriate practice contexts and applications supported by traditional knowledge and research-based evidence will be explored. Students will investigate both the effects of healing environments and self-care with integrative health and will acquire knowledge in the use and application of basic integrative health measures to optimize wellbeing through the life span with a variety of symptoms. Pre-requisite: Nursing student or permission of the faculty. Typically offered: Fall

This course provides the student with a leadership practicum experience designed in collaboration with a faculty member, clinical representative, and student to be carried out in an appropriate health care or community based care setting. Students will integrate knowledge of evidence based practice, quality and safety initiatives and leadership to design, implement, and lead an interdisciplinary team project that will improve client outcomes. Prerequisites: NURS 440. Typically Offered Fall and Spring.

This first semester course is designed for the entry level MSN graduate with a focus on the introduction to the advanced nursing roles of nurse educator, nurse administrator, and informatics nursing specialist. Students will explore their selected focus through readings, research, and reflective and scholarly writing. Nursing theory and nursing knowledge development will be introduced and applied to advanced nursing roles. Portfolio development will be initiated for completion during the remainder of the program. Prerequisites: Grad Status. Typically offered Fall, Spring.

This course prepares nurses or other healthcare professionals for the scholarly writing required of these disciplines. Students will strengthen skills in the general mechanics of writing to include APA formatting most frequently required of the sciences, as well as the genre of writing used in healthcare. Students will gain experience in structuring papers, developing arguments/theses to include synthesis of literature, and manuscript preparation. Prerequisites: ENGL 150 and ENGL 250 and ENGL 321. Typically offered Fall, Spring, Summer.

This course prepares the graduate nursing student to transform care environments utilizing effective collaboration and communication skills in inter-professional team settings. Students will analyze key issues and challenges affective outcomes and learn how to be an effective organizational and systems leader. Prerequisites: NURS 501 Typically offered Fall.
This course is designed to explore the political structures and social forces that shape health care delivery. In this course, students will examine the role of the masters-prepared nurse as political activist and policy advocate within the U.S. health care delivery systems of care. Policies that influence health care economics, access, safety, quality, or efficacy will be investigated. Prerequisites: NURS 501. Typically offered Spring.

This course will prepare specialty nurses in scholarly critique of current evidence to identify the foundational steps of evidence-based practice (EBP). The focus will be on the translation of EBP from research literature to implementation in professional practice. Prerequisites: NURS 501. Typically offered Summer.

This course prepares the graduate nurse to take a leadership role in identifying systems and process failures that lead to errors, monitoring and analyzing information, and initiating quality improvements within organizations. Prerequisites: NURS 501. Typically offered Spring.

A focus on the health care needs at the aggregate and community level based within the context of eliminating health disparities while promoting equity and social justice. A public health scientific approach will be utilized to explore relevant population based topics. Students will participate in designing, implementing, and evaluating a health education program to improve population outcomes. Prerequisites: NURS 501. Typically offered Summer.

This course is designed to introduce the student to curriculum and instructional design in academic and practice educational settings. Students will have the opportunity to apply evidence based practices and established professional standards in the development of a simulated nursing education program. In addition, students will explore current issues which impact nursing curriculum design. Prerequisites: NURS 501. Typically offered Spring.

Statistics for Nursing Science will introduce the student to basic concepts of probability, common distributions, statistical methods for hypothesis testing, data analysis and interpretation. Measures used to describe (parametric and non-parametric statistics), compare, and relate variables of focus in nursing science will be addressed. While reviewing the basics of statistics, the student will apply data entry and statistical methods for data analysis. Prerequisites: COHP 350. Typically offered Fall, Spring, Summer.
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<th>Program</th>
<th>Level</th>
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<td>NURS616</td>
<td>Nursing</td>
<td>HP</td>
<td>3</td>
</tr>
<tr>
<td>NURS621</td>
<td>Nursing</td>
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<td>Nursing</td>
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<tr>
<td>NURS631</td>
<td>Nursing</td>
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**NURS611 Nursing HP Graduate 3**

This course provides the graduate nursing student an overview of the nurse educator role. Students will examine a variety of teaching and learning theories, with an emphasis on the learner-centered philosophy. A wide selection of instructional methodologies appropriate for the higher education setting and staff development will be examined. These methods will be analyzed within the context of nursing education and emerging health care mandates. Students will also examine methods of learning assessment and program evaluation based on current educational and nursing research. 

Prerequisites: NURS 501. Typically offered Fall.

**NURS616 Nursing HP Graduate 3**

This course is designed to assist graduate nursing students as emerging nurse leaders with an opportunity to participate in a study abroad experience. This experience will provide them with a forum to engage in a critical and reflective examination of their cultural competence and to encourage them to closely examine and interrogate the ways in which they can support culturally-sensitive nursing care. Prerequisites: NURS 500. Typically offered Spring and Summer.

**NURS621 Nursing HP Graduate 3**

This course is designed for master’s level nursing students to expand their knowledge and skills in health and physical assessment, pathophysiology, and pharmacotherapeutics, which will provide an advanced foundation for clinical assessment, decision-making, and patient management. The intent is to develop a thorough understanding of the patient’s condition in order to guide novice nursing students in their learning and advance nursing practice.

Prerequisites: NURS 501. Typically offered Summer.

**NURS630 Nursing HP Graduate 3**

This course provides an introduction to the theoretical and logistical components of the clinical educator role within the discipline of nursing education. Student Clinical Educators (SCEs) will learn strategies that promote effective nursing student learning in the clinical setting. A clinical teaching assignment may occur concurrently with this course so the student has application for his or her learning and can be mentored in the role of clinical instructor. Prerequisites: Graduate status or permission from School of Nursing. Typically Offered Fall, Spring and Summer.

**NURS631 Nursing HP Graduate 3**

This course is specifically designed for nursing graduate students who are pursuing the nurse executive or nurse administrator role. In this course, students will explore, examine, and analyze the role of the nurse leader in administrative or executive roles with a strong focus on organizational and systems leadership with the goal of improving patient and health care outcomes. Knowledge gained in this course will aid current and future nurse leaders in meeting the demands of changing patient care services within the entire spectrum of complex, adaptive, health care systems. Prerequisites: NURS 501. Typically offered Fall.
This course is specifically designed for nursing graduate students who are pursuing the informatics specialist (INS) role. In this course, students will learn how to lead the implementation and optimization of health care information systems that directly impact nursing and positive patient outcomes. Prerequisites: NURS 501. Typically offered Fall.

NURS711 Nursing HP Graduate 2
This course builds upon MSN core courses and the Institute of Medicine Core Competencies for health care professionals. Student will design a quality improvement project to be implemented and evaluated in NURS 791. Required project elements include a focus on patient-centered care, interprofessional teamwork, evidence-based practice, quality improvement strategies and information technology. Pre-requisites: All Core MSN courses to include NURS 501, 510, 521, 531, 541, 551 and All Specialty Courses in one of the following MSN concentrations: Nursing Education, Nursing Administration or Nursing Informatics. Typically offered Fall, Spring, Summer.

NURS712 Nursing HP Graduate 2
This clinical practicum preparation course is designed to assist graduate students in the design and preparation of their practicum experience that will occur in NURS 792. In this course, the student will design an individualized practicum to prepare for advanced specialty role practice. The student will develop a proposal to synthesize, apply, and demonstrate advanced specialty role knowledge from practice theory and research, within a practice setting chosen by the student related to the specialty field of study. Prerequisites: All 500 and 600 level courses must be complete. Typically offered Fall, Spring, Summer.

NURS750 Nursing HP Graduate 1
This course provides an introductory experience to FSU, emphasizing available FSU and SON resources. It is an introduction to the DNP program structure and expectations for completion. In this seminar the students will explore transitioning to the DNP role, interprofessional implications and issues associated with the DNP role, scholarly writing and portfolio development. This course provides an initial opportunity to network on a face-to-face basis with the student cohort. Prerequisites: Admission to the DNP program or faculty permission. Typically offered Fall.

NURS760 Nursing HP Graduate 3
This course is designed to provide the foundation for applying and implementing research by exploring the nature of inquiry and evaluating designs, methods, and measurements of evidence. Topics of validity, reliability, generalizability, rigor and trustworthiness will be addressed in this course. Likewise, it will focus on the applicability and contribution of research to evidence. Prerequisites: Admission to DNP program or faculty permission. Typically offered Spring.
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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>College</th>
<th>Component</th>
<th>Credits</th>
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<tbody>
<tr>
<td>NURS765</td>
<td>Translational Research for the DNP</td>
<td>Nursing HP Graduate</td>
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<td>The course explores translational research for the DNP. Translational research refers to the application of research findings to clinical practice and the process of generating and evaluating outcomes. Translating research joins discovery or research findings to practice. This course focuses on identification of practice problems, the systematic review and synthesis of evidence, and utilization of that evidence in decision making for changing practice. The course places emphasis on the process of translational research. Prerequisites: NURS 760 or faculty permission. Typically offered Fall.</td>
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<td>NURS770</td>
<td>Theoretical Foundations of Advanced/Specialty Nursing Practice</td>
<td>Nursing HP Graduate</td>
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<td>The course will explore the philosophical and scientific base of theories, different levels of theory, and the evolution of nursing science. Grand nursing theories, midlevel theories, and practice theory including theories and models of evidence-based practice will be critiqued in relationship to scholarly literature and research. Ethical foundations of practice along with multiple patterns of knowing will be addressed in this course. Prerequisites: Admission to DNP program or faculty permission. Typically offered Spring.</td>
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<tr>
<td>NURS775</td>
<td>Midlevel and Practice Theories</td>
<td>Nursing HP Graduate</td>
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<td>This course will focus on midlevel and practice theories, originating in nursing and other scientific disciplines. Theories of health, health promotion, behavioral change, and chronic disease in populations that shape healthcare will be explored. In the context of emergent health and disease theories, this course will look at new directions and innovative problem solving for health promotion with chronic disease and formulate potential research and practice agendas. Prerequisites: Admission to DNP program or faculty permission. Typically offered Fall.</td>
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<tr>
<td>NURS791</td>
<td>Quality Improvement Project</td>
<td>Nursing HP Graduate</td>
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<td>This course builds upon MSN core courses and the Institute of Medicine Core Competencies for health care professionals. Students will implement the quality improvement project plan developed in NURS 710. This practicum will have 120 hours with an expert nurse clinician preceptor. Prerequisites: NURS 711. Typically offered Fall, Spring, Summer.</td>
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<tr>
<td>NURS792</td>
<td>Capstone Practicum</td>
<td>Nursing HP Graduate</td>
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<td>This capstone practicum will integrate previous knowledge from the MSN specialty courses and allow the student to develop proficiency in the advanced specialty role. This course is designed for application, demonstration, and synthesis of theory and competencies related to the role of nurse administrator, educator, or informatics nurse specialist. Learning experiences are planned and negotiated to meet individual learning goals in the context of preceptor supervised experiences. This practicum will have 120 hours with an approved preceptor in the specialty role. Prerequisites: NURS 712. Typically offered Fall, Spring, Summer.</td>
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NURS800 Nursing HP Graduate 1

This seminar provides an overview of the changing culture of Western healthcare as context for the clinical doctorate in nursing. Professional issues such as communication, intellectual capital, diversity, and personalizing healthcare (relationship-based care) protocol-based or standardized healthcare will be discussed. Research with specific populations (including transcultural and vulnerable populations) will be focused on. Scholarly projects will be reviewed to date with plans for problem solving and completion.

Prerequisites: NURS 750 or faculty permission. Typically offered Summer.

NURS820 Nursing HP Graduate 3

This course will explore the ongoing digital transformation of healthcare and impacts of the electronic environments on healthcare at multiple levels. The EMR and data mining with utilization and interpretation will be a focus of this course. Special issues that integrate with digital healthcare measures will be addressed, including, correlation and causation, credibility, privacy, consent and confidentiality, social networking, medicine by web, personalization of healthcare. Likewise, this course will evaluate the use of digital technology for health promotion of populations and the improvement of healthcare delivery.

Prerequisites: Admission to the DNP program or faculty permission. Typically offered Spring.

NURS823 Nursing HP Graduate 3

This course is focused on the constructs of social justice and social determinants in population healthcare. It will explore the legislative and economic policies and policy pathways impacting healthcare. Policy change processes, issues, implications, and policies currently intersecting with and impacting healthcare will be appraised. Social issues such as vulnerable populations, health disparities at the individual, community, state, national levels, health literacy, provider shortages, and economics of healthcare will be the focus of this course. US healthcare structures and systems will be examined along with worldwide healthcare structures and models in the framework of current healthcare issues. Prerequisites: Admission to DNP program or faculty permission. Typically offered Summer.

NURS825 Nursing HP Graduate 3

Principles of communication, collaboration, resource allocation, quality and safety, excellence, and evidence-based decision making for best practices will be integrated for strategic program development, implementation, and evaluation for optimal micro systems of healthcare. Implementation models will be explored with evaluation of care systems. Tools for evaluation of program outcomes will be designed for quality and prospective system changes. Macro-system variables on healthcare will be explored in relationship to risk and productivity. Prerequisites: Admission to DNP program or faculty permission. Typically offered Fall.
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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Description</th>
<th>Prerequisites</th>
<th>Offered Terms</th>
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<tbody>
<tr>
<td>NURS870</td>
<td>Evidence-based Practice III</td>
<td>Focuses on population based research methods (including epidemiology, cohort and case controlled research), analysis and utilization. Research in select population health and program or intervention effectiveness will be addressed in relation to healthcare practices, outcomes, and data usage. Prerequisites: NURS 760 and NURS 765 or faculty permission. Typically offered Fall.</td>
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<td>NURS880</td>
<td>This course centers on creative inquiry with the application and integration of implementation models, and systems theories of leadership embedded in healthcare structures and organizations. Problem-solving in complex organizations with collaboration and communication skills will be framed with leadership theories. Leadership theories for population health and relationship-based care are addressed in the contexts of change in complex healthcare systems, best practice, dimensions of excellence, and emerging research. Prerequisites: Admission to DNP program or faculty permission. Typically offered Spring.</td>
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<td>NURS891</td>
<td>Residency is clinical immersion with leadership experience in which research is translated and integrated within a healthcare system. Residency provides clinical hours in one, two, or three semesters in a leadership capacity in the student’s advanced practice/specialty area with a preceptor. Each residency includes clinical hours that contribute towards the scholarly DNP project. Prior to initiation of immersion courses, scholarly project proposals will be completed and approved by faculty advisors. Part of the initial immersion is to refine the proposal and negotiate the scholarly project with mentor and place of residency. The second and third immersion courses include implementation, evaluation, and dissemination of the project. Clinical hours will be adjusted on an individual basis. Prerequisites: Advisor permission. Typically offered Fall, Spring, Summer.</td>
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<tr>
<td>NURS892</td>
<td>Residency is clinical immersion with leadership experience in which research is translated and integrated within a healthcare system. Residency provides clinical hours in one, two, or three semesters in a leadership capacity in the student’s advanced practice/specialty area with a preceptor. Each residency includes clinical hours that contribute towards the scholarly DNP project. Prior to initiation of immersion courses, scholarly project proposals will be completed and approved by faculty advisors. Part of the initial immersion is to refine the proposal and negotiate the scholarly project with mentor and place of residency. The second and third immersion courses include implementation, evaluation, and dissemination of the project. Clinical hours will be adjusted on an individual basis. Prerequisites: NURS 891 or advisor permission. Typically offered Fall, Spring, Summer.</td>
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NURS893 Nursing HP Graduate 3
Residency is clinical immersion with leadership experience in which research is translated and integrated within a healthcare system. Residency provides clinical hours in one, two, or three semesters in a leadership capacity in the student's advanced practice/specialty area with a preceptor. Each residency includes clinical hours that contribute towards the scholarly DNP project. Prior to initiation of immersion courses, scholarly project proposals will be completed and approved by faculty advisors. Part of the initial immersion is to refine the proposal and negotiate the scholarly project with mentor and place of residency. The second and third immersion courses include implementation, evaluation, and dissemination of the project. Clinical hours will be adjusted on an individual basis. Prerequisites: NURS 892 or advisor permission. Typically offered Fall, Spring, Summer.

NURS899 Nursing HP Graduate 4
DNP Integration is a synthesis of DNP course and residency/project work. Integration includes a comprehensive oral defense and presentation of the DNP project. The comprehensive defense represents mastery and integration of clinical doctoral knowledge and skills preparatory for, and deemed as essential for scholarly activity and clinical practice in, advanced/specialty nursing. Plans for project dissemination and sustainability will be included in the defense. The final project represents the synthesis and application of appropriate literature, scientific research, and advance practice knowledge for practice modification with research translation. Finally, the student will submit a professional portfolio of student-selected scholarly work from across the DNP experience/curriculum. Pre-requisites: NURS 891 and advisor permission. Typically offered: Fall, Spring, Summer.

OPTM511 Optometry OP 1st Professional 1
An overview of the profession of optometry and optometric education. The concept of professionalism as it relates to being a professional level student and to the practice of optometry. Typically Offered Fall Only

OPTM514 Optometry OP 1st Professional 1
Basic ethical theory, fundamental principles and decision making. Codes of ethics and ethics applied to patient care. Effective doctor/patient communication and rapport. Typically Offered Fall Only

OPTM524 Optometry OP 1st Professional 5

An examination of the basic techniques, terminology, concepts, and fundamental data involved in the study of human vision, including specification of the visual stimulus, visual optics, duplicity, photochemistry, color vision, ocular motility and spatio-temporal monocular afferent processing. Psychophysical and electrophysiological data will be considered and compared. Pre-Requisites: OPTM 524 and OPTM 534. Typically Offered Spring Only

A detailed discussion of the anatomy of the orbit. Particular emphasis is given to cellular, histological, and gross anatomical organization of the eye. The anatomical relationships of the orbital contents including the extraocular muscles, the orbital nerves, the orbital blood vessels, and the ocular adnexa are described. Physiology and biochemistry of the principal constituents of the eye, including: the cornea, crystalline lens, aqueous humor, vitreous humor, retina, ciliary apparatus and tear film. Typically Offered Fall Only

Basic understanding of objective and subjective refractive error determination of the human eye, accommodative and oculomotor function testing, and the interrelation and analysis of relevant data. Pre-Requisites: OPTM 524 and OPTM 534. Typically Offered Spring Only

Theoretical and practical experience in using electronic health records to improve patient care outcomes. Topics include HIPAA security, medical terminology, adding/editing patient records, professional communications. Typically offered: Spring

This course will involve strategies for debt management and personal finance, as they affect optometric practice. In addition, adjunct topics include financial management, managed care, HIPAA, and other legal issues which may affect optometric practice. Prerequisites: OPTM 511. Typically Offered Fall Only

This course is a continuation of Vision Science 1. Content will include advanced analysis of spatial vision, binocular vision, extra striate processing of visual information, an integrated approach to ocular motility, and developmental issues in vision science. Prerequisites: OPTM 526. Typically Offered Fall Only
OPTM628 Optometry OP 1st Professional 4

The physical and optical consideration of ophthalmic spectacle lenses including shape, thickness, weight, materials, coatings, impact resistance. Dress Lens Rx Standards and Verification. Prism, Decentration, Slab-off. Corrected Curve Lenses, Aspheric Lenses, Multifocals, Progressive Add Lenses, Radiation Protective Lenses (Sunglasses and Occupational), Occupational Lens Standards, Layout and Edging. Prerequisites: OPTM 525. Typically Offered Fall Only

Course provides students with a basic knowledge base to address environmental concerns related to visual safety, protection, and potential hazards. The course also includes a laboratory portion preparing the student to competently address issues commonly found in modern ophthalmic dispensary. Prerequisites: OPTM 628. Typically Offered Spring Only

OPTM630 Optometry OP 1st Professional 4

The course will introduce students to the principles, diagnostic strategies, and therapies associated with various pathological disorders of the human body. Systemic anomalies, as well as specific local phenomena will be described, with emphasis on possible ocular implications. Prerequisites: BIOL 538. Typically Offered Fall Only.

Principles and techniques of general physical examination of patients and associated diagnostic tests and procedures. Enables the optometrist to more effectively communicate with other health care professionals about the general health of their patients. Prerequisite: OPTM 630. Typically offered in the spring.

OPTM633 Optometry OP 1st Professional 1

History, theory and clinical application of ocular laser procedures will be discussed. Laser surgery for the treatment of anterior and posterior segment ocular diseases and refractive surgery for correction of myopia, hyperopia, astigmatism and presbyopia will be emphasized. Typically offered in the spring.

Study of the cells of the nervous system and synaptic transmission. Development of the nervous system and comprehensive review of functional anatomy of the central and peripheral nervous systems. Special emphasis on brainstem, cranial nerve, and cortical anatomy. Prerequisites: BIOL 538. Typically Offered Fall Only

Diagnosis and management of anterior segment trauma and disease including specific signs and symptoms common with the eyelid, conjunctiva, cornea, lacrimal apparatus, orbit, sclera, and episclera. Prerequisites: OPTM 534 and OPTM 644. Typically Offered Spring Only

Theory and practical experience in basic tests, instrumentation and procedures necessary to evaluate the ocular health status of a patient. Topics include: case history, sphygmomanometry, gross external examination of the eye and adnexa, pupil and muscle functions, anterior and posterior segment examination, tonometry, visual acuity, and visual fields assessment. Prerequisites: OPTM 543. Typically Offered Fall Only
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<tr>
<th>Course Code</th>
<th>Department</th>
<th>OP Level</th>
<th>Credits</th>
<th>Description</th>
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<tbody>
<tr>
<td>OPTM645</td>
<td>Optometry</td>
<td>1st Professional</td>
<td>4</td>
<td>This course teaches the theory and clinical evaluation of anomalies of the binocular system. Description and case presentation of non-strabismic anomalies (heterophoria, accommodation, and eye movement disorders) develops the clinical understanding of diagnostic and management sequences and clinical procedures. These skills are further developed in the diagnosis and management of strabismus and its complications (amblyopia and anomalous correspondence). Prerequisites: OPTM 627 and OPTM 644. Typically Offered Spring Only</td>
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<tr>
<td>OPTM648</td>
<td>Optometry</td>
<td>1st Professional</td>
<td>4</td>
<td>Course includes the theory and practice of the physiology, optics, design, fitting, and inspection related to hydrogels and rigid gas permeable contact lenses. Also, the pharmacology and use of related solutions and contact lens care systems will be covered. Prerequisites: OPTM 534, OPTM 628 and OPTM 644. Typically Offered Spring Only</td>
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<tr>
<td>OPTM650</td>
<td>Optometry</td>
<td>1st Professional</td>
<td>1</td>
<td>Introductory patient care experience. Includes professionalism, clinical skills, patient management, and case analysis. Prerequisites: OPTM 644. Typically Offered Spring Only</td>
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<tr>
<td>OPTM657</td>
<td>Optometry</td>
<td>1st Professional</td>
<td>1</td>
<td>Simulated patient experiences will be completed by the participants in order to enhance their abilities to 1) elicit an organized case history; 2) complete an appropriate, problem-oriented examination; 3) arrive at accurate differential diagnoses; 4) develop effective and appropriate treatment plans; 5) write accurate prescriptions for legend drugs; and 6) properly code the simulated visit for reimbursement. A variety of refractive, accommodative, convergence and ocular disease conditions that are representative of primary optometric care will be presented. Typically Offered Spring Only</td>
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<tr>
<td>OPTM681</td>
<td>Optometry</td>
<td>1st Professional</td>
<td>1 TO 13</td>
<td>Direct patient care experience in the clinical practice of optometry at the on-campus clinic. Contact hours depend on number of credits assigned. Pre-Requisites: OPTM 533 &amp; 551 &amp; 581 and Department approval. Typically Offered Summer Only</td>
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<tr>
<td>OPTM717</td>
<td>Optometry</td>
<td>1st Professional</td>
<td>3</td>
<td>This course will introduce the student to relevant principles of public health and their application to clinical optometry. Topics include U. S. health care system, health care economics, third party payment programs, managed care, and governmental organizations. Delivery of eye care services in a hospital environment will also be discussed. Typically Offered: Summer Only</td>
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<tr>
<td>OPTM718</td>
<td>Optometry</td>
<td>1st Professional</td>
<td>3</td>
<td>Advanced optometric practice management covering personal financial planning, practice acquisition, business financial planning, marketing, optometric risk management and optometric office management. Prerequisites: OPTM 615. Typically Offered Spring Only</td>
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<td>Course Code</td>
<td>Department</td>
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<td>OPTM732</td>
<td>Optometry</td>
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<td>1st Professional</td>
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<td>The pharmacological aspects of topical, oral, injectible, and other drugs used to manage ocular conditions are presented. In addition, simulated case studies are used to illustrate the basic and subtle clinical aspects of treating patients using pharmaceutical agents. Prerequisites: OPTM 636 and OPTM 733. Typically Offered Fall Only</td>
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<tr>
<td>OPTM733</td>
<td>Optometry</td>
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<td>1st Professional</td>
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<td>The general principles of pharmacology including the actions, mechanisms of actions, absorption, rate, excretions, toxicity, and the diagnostic and therapeutic uses of both systemic and ocular drugs will be discussed. Also included are the pharmaceutical treatments for HIV and AIDS. The systemic effects of ocularly administered drugs and the ocular effects of systemically administered drugs are included. Prerequisite: OPTM 630. Typically offered in the summer.</td>
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<td>OPTM734</td>
<td>Optometry</td>
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<td>1st Professional</td>
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<td>Anatomy and physiology of the eye related to the mechanism of glaucoma will be reviewed. Diagnosing primary and secondary open angle glaucoma and acute closed angle glaucoma utilizing computerized visual fields, photography, nerve fiber layer analysis, gonioscopy and optic nerve head examination along with advancements in medical and surgical treatment strategies for open angle, closed angle and secondary glaucoma will be discussed. Prerequisites: OPTM 636. Typically Offered Fall Only</td>
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<tr>
<td>OPTM736</td>
<td>Optometry</td>
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<td>1st Professional</td>
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<td>The diagnosis and management of posterior segment disorders including uveal disease, infectious disease, connective tissue disease, cardiovascular disease, blood disorders, diabetes, maculopathies, and peripheral retinal disorders. Prerequisites: OPTM 636. Typically Offered Fall Only</td>
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<tr>
<td>OPTM737</td>
<td>Optometry</td>
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<td>1st Professional</td>
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<td>Course emphasizes the specific surgical, laser and/or medical management of patients with ocular disease. A portion of the course is taught by visiting optometrists and ophthalmologists from various specialties (retina, glaucoma, cornea, etc.). The differential diagnosis of eye disease is also emphasized. Prerequisites: OPTM 732, OPTM 734 and OPTM 736. Typically Offered Spring Only</td>
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<tr>
<td>OPTM738</td>
<td>Optometry</td>
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<td>1st Professional</td>
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<td>This course covers the cognitive and psychomotor skills necessary for injectable pharmaceuticals used in optometric practice including the proper techniques for starting intravenous infusions and administering subconjunctival, subtenon, subcutaneous, subdermal and intramuscular injections. Typically offered: Summer Only</td>
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<tr>
<td>OPTM739</td>
<td>Optometry</td>
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<td>A clinical approach to neuro-optometric issues. The course covers eye movement diagnostics and disorders, pupil disorders, headaches, nystagmus, visual field defects and the effects of traumatic brain injury. Prerequisites: OPTM 635. Typically Offered Spring Only</td>
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<td>Course Code</td>
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<td>Credits</td>
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<tr>
<td>OPTM741</td>
<td>Optometry</td>
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<td>This course combines infant and pediatric primary eye and vision care and care of patients with vision-related learning problems. Topics include infant vision assessment, pediatric visual acuity testing, pediatric binocular vision assessment, ocular disease in children, concepts of child development, disturbances in normal development, learning disabilities, attention, memory, visual-motor integration and reading and dyslexia. Prerequisites: OPTM 746. Typically Offered Fall Only</td>
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| OPTM744     | Optometry  | OP   | 1st  | 1       |
|             |            |      | Professional |         |
|             |            |      | 1           |         |
| The course objective is for students to develop an increased understanding of the elderly. The course content is adapted from A Recommended Continuing Curriculum: Geriatric Optometry for the Primary Care Practice prepared by the AOA Geriatrics and Nursing Facility Committee in June 2000. Content experts will give presentations on a variety of topics impacting the elderly and students will collaboratively evaluate the information for optometric significance. Typically offered: Spring Only |

| OPTM745     | Optometry  | OP   | 1st  | 3       |
|             |            |      | Professional |         |
|             |            |      | 3           |         |
| The course identifies testing methods to determine the visual acuity, contrast sensitivity, color vision, and visual field of individuals who are either visually impaired of legally blind. Management of these functional losses may include use of optical and nonoptical devices, rehabilitation services and orientation/mobility services. Optometric issues related to the geriatric patient are also covered. Prerequisites: OPTM 629. Typically Offered Spring Only |

| OPTM746     | Optometry  | OP   | 1st  | 3       |
|             |            |      | Professional |         |
|             |            |      | 3           |         |
| This course will discuss indentifying a patient’s visual demands in comparison to his/her visual abilities, including various occupations with special visual demands. The student will learn how to use vision therapy techniques to improve a patient’s visual abilities. Therapies for suppression, accommodative dysfunction, oculomotor disorders, noncomitance, and abnormal correspondance will be discussed, along with sports vision therapies for children. Prequisite: OPTM 645 Typically Offered: Summer Only |

| OPTM749     | Optometry  | OP   | 1st  | 2       |
|             |            |      | Professional |         |
|             |            |      | 2           |         |
| Course pertains primarily to advanced contact lens topics including extended wear, bifocal/multifocals, high toric, irregular cornea, keratoconus and orthokeratology. The fitting of cosmetic contact lenses and the management of complications resulting from contact lens wear will also be covered. Ongoing assessment will be performed utilizing the Computer Performance System. Prequisite: OPTM 648 Typically Offered: Summer Only |

| OPTM751     | Optometry  | OP   | 1st  | 1       |
|             |            |      | Professional |         |
|             |            |      | 1           |         |
| Additional patient care experiences to refine clinical skills and analysis of visual problems. Prerequisite: OPTM 650 Typically Offered: Summer Only |

<p>| OPTM752     | Optometry  | OP   | 1st  | 6       |
|             |            |      | Professional |         |
|             |            |      | 6           |         |
| Patient care experience in the clinical practice of optometry. Includes seminar and record review to sharpen decision making in diagnosis, management, and treatment. Prerequisites: OPTM 633, OPTM 746, OPTM 749 and OPTM 751. Typically Offered Fall Only |</p>
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Description</th>
<th>Prerequisites</th>
<th>Typically Offered</th>
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</thead>
<tbody>
<tr>
<td>OPTM753</td>
<td>Optometry OP 1st Professional 6</td>
<td>Patient care experience in the clinical practice of optometry. Includes seminar and case study review to sharpen decision making in diagnosis, management and treatment. Prerequisites: OPTM 752. Typically Offered Spring Only</td>
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<tr>
<td>OPTM758</td>
<td>Optometry OP 1st Professional 1</td>
<td>Simulated patient experiences will be completed by the participants in order to enhance their abilities to 1) elicit an organized case history; 2) complete an appropriate, problem-oriented examination; 3) arrive at accurate differential diagnoses; 4) develop effective and appropriate treatment plans; 5) write accurate prescriptions for legend drugs; and 6) properly code the simulated visit for reimbursement. A variety of refractive, accommodative, convergence and ocular disease conditions that are representative of primary optometric care will be presented. Prerequisite: OPTM 657 Typically Offered: Summer Only</td>
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<tr>
<td>OPTM759</td>
<td>Optometry OP 1st Professional 1</td>
<td>Simulated patient experiences will be completed by the participants in order to enhance their abilities to 1) elicit an organized case history; 2) complete an appropriate, problem-oriented examination; 3) arrive at accurate differential diagnoses; 4) develop effective and appropriate treatment plans; 5) write accurate prescriptions for eyeglasses, contact lenses, and legend drugs; and 6) properly code the simulated visit for reimbursement. A variety of refractive, accommodative, convergence, and ocular disease conditions that are representative of primary optometric care will be presented. Prerequisites: OPTM 758. Typically Offered Spring Only</td>
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<tr>
<td>OPTM811</td>
<td>Optometry OP 1st Professional 1</td>
<td>An asynchronous interactive Web based course covering such topics as the 4th year clinical experience, clinical self-assessment, optometric patient cases, practice management and ethics. Typically Offered Summer Only</td>
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<tr>
<td>OPTM812</td>
<td>Optometry OP 1st Professional 1</td>
<td>An asynchronous interactive Web based course covering such topics as the 4th year clinical experience, clinical self-assessment, optometric patient cases, practice management and ethics. Typically Offered Fall Only</td>
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<tr>
<td>OPTM813</td>
<td>Optometry OP 1st Professional 1</td>
<td>An asynchronous interactive Web based course covering such topics as the 4th clinical experience, clinical self-assessment, optometric patient cases, practice management and ethics. Typically Offered Spring Only</td>
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<tr>
<td>OPTM817</td>
<td>Optometry OP 1st Professional 2</td>
<td>Individual or group research project resulting in a paper. Typically Offered Spring Only</td>
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<tr>
<td>OPTM854</td>
<td>Optometry OP 1st Professional 13</td>
<td>Advanced patient care experience in the clinical practice of optometry at on and/or off campus clinics. Pre-Requisites: OPTM 753. Typically Offered Summer Only</td>
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<tr>
<td>OPTM855</td>
<td>Optometry OP 1st Professional 13</td>
<td>Advanced patient care experience in the clinical practice of optometry at on and/or off campus clinics. Pre-Requisites: OPTM 753. Typically Offered Fall Only</td>
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<tr>
<td>OPTM856</td>
<td>Optometry OP 1st Professional 13</td>
<td>Advanced patient care experience in the clinical practice of optometry at on and/or off campus clinics. Pre-Requisites: OPTM 753. Typically Offered Spring Only</td>
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</tr>
</tbody>
</table>
This course enables students to study at another college/university outside of the United States, but remain registered at Ferris and be eligible for financial aid through Ferris. The site and student must be approved through the appropriate department office as well as the University Center for Extended Learning Office. No money is paid to Ferris for this course - it is charged and paid through the institution or program the student is registered through. Pre-Requisites: Completed Study Abroad Approval Form. Typically Offered Fall, Spring, Summer.

This course enables students to study at another college/university outside of the United States, but remain registered at Ferris and be eligible for financial aid through Ferris. The site and student must be approved through the appropriate department office as well as the University Center for Extended Learning Office. This course will be billed to the student at the appropriate FSU rate. Pre-Requisites: Completed Study Abroad Approval Form. Typically Offered Fall, Spring, Summer.

This course enables students to study at another college/university outside of the United States, but remain registered at Ferris and be eligible for financial aid through Ferris. The site and student must be approved through the appropriate department office as well as the University Center for Extended Learning Office. No money is paid to Ferris for this course - it is charged and paid through the institution or program the student is registered through. Pre-Requisites: Completed Study Abroad Approval Form. Typically offered Fall, Spring, Summer.

PDET Orientation and Degree Planning is a seminar intended to assist first-year Product Design Engineering Technology (PDET) students in developing an individual program plan which will complete the requirements for the BS in PDET in four academic years while allowing each student to include courses within an area of personal interest. The seminar will provide an overview of the mechanical product design profession and familiarize PDET students with the requirements of relevant existing certificates and minors that could be included in their four-year degree plan. Each student will complete for approval an individualized plan of study including areas of personal interest that include all existing PDET degree requirements. Typically offered Spring.

This is an introductory course in which the student will focus on techniques for developing 3 dimensional computer generated models. Students will develop skills using parametric based Computer Aided Design software. The student will receive exposure to basic 3-D modeling principles used to generate robust models in 3-D space. Typically Offered Fall and Spring.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
<th>Department</th>
<th>Level</th>
<th>Pre-Requisites</th>
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<tr>
<td>PDET210</td>
<td>Product Design Engineering Technologies</td>
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<td>Undergraduate</td>
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<tr>
<td>PDET220</td>
<td>Product Design Engineering Technologies</td>
<td>3</td>
<td>Undergraduate</td>
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<tr>
<td>PDET311</td>
<td>Product Design Engineering Technologies</td>
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<td>Undergraduate</td>
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<tr>
<td>PDET312</td>
<td>Product Design Engineering Technologies</td>
<td>2</td>
<td>Undergraduate</td>
<td>2</td>
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<tr>
<td>PDET321</td>
<td>Product Design Engineering Technologies</td>
<td>3</td>
<td>Undergraduate</td>
<td>3</td>
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<tr>
<td>PDET322</td>
<td>Product Design Engineering Technologies</td>
<td>2</td>
<td>Undergraduate</td>
<td>2</td>
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<tr>
<td>PDET393</td>
<td>Product Design Engineering Technologies</td>
<td>4</td>
<td>Undergraduate</td>
<td>4</td>
<td></td>
</tr>
</tbody>
</table>
Principles of design as they relate to sizing and shaping of machine elements are covered. Calculations made in creating elements, as well as justifying the use of commercially available elements is emphasized. Selection of material and optimization under given loads considered in designing. Pre-Requisites: MECH 340 and MATH 126 or MATH 130. Typically Offered Fall Only

Study of basic procedures used in analyzing data that is gathered in industrial settings. Focuses on the design of descriptive and inferential studies which analyze relationships among two or more variables through probabilistic models. Prerequisites: Junior status or by permit. Meets General Education Requirements for Collaboration. Typically Offered Fall Only

Provides the product designer with an understanding of applied fluid mechanics and thermodynamics adequate to analyze, design and/or modify a wide range of products. Begins with the development of critical fluid flow terms and concepts common to both fluid and thermodynamic problems. The thermodynamic portion addresses the concept of energy conversion and extends into the development and applications of the first law. The second and third laws are presented and developed into an understanding of thermal efficiency. Heat transfer thermodynamics is a significant area of concentration. The fluid dynamics portion covers basic fluid science concepts and develops the background necessary to design / understand basic hydraulic systems. Pre-Requisites: MATH 126 or MATH 130. Typically Offered Fall Only

Course covers advanced concepts in three dimensional CAD solid modelling. Students will use advanced software features to create CAD models suitable for rapid prototyping. Pre-Requisites: PDET 322. Meets General Education Requirements for Collaboration. Typically Offered Fall Only

This course is a continuation of POET 411. The course initially reviews the basics of mechanical power transmission. Detailed coverage is then provided for three major drive components (belts, chain and gear drives). In a parallel portion of the course, the student is provided with the knowledge to complete basic static Finite Element Analysis (FEA) of mechanical components using a representative commercially available software package. Completing the course is a representative Product Design problem using FEA. Pre-Requisites: PDET 322 and PDET 411. Meets General Education Requirements for Problem Solving. Typically Offered Spring Only

A study in the synthesis of all academic material related to the development and computerized design documentation of a fully defined product design problem. Capstone assessment tool for all product design engineering technology program students. Meets General Education Requirements for Problem Solving. Typically Offered Spring Only
This is a PGA Golf Management specific course that explores career opportunities in golf industry, PGA PGM program components, the two pathways to PGA Membership and the role of the golf professional in the industry. Other topics covered in this course include, History of the PGA of America, The PGA Constitution, an introduction to the Rules of Golf, and Career Enhancement. Students are required to pass the PGA Qualifying Level test to earn credit for the course. Credit/no credit grading. Pre-Requisites: Professional Golf Management students only. Typically Offered Fall Only

Full-time (35-40 hrs./wk.) supervised work experience for no less than 12 weeks in a golf related position within PGA eligible classifications (B-1 thru B-23) with or without supervision of a PGA Professional. Prior approval required before placement, includes a pre- and post-internship meeting. Assignments include written activities, PGA Level 1 topics, and beginning teaching videos. Prerequisites: PGMG 101 & PGA Golf Management students in Level 1 only. Typically Offered Fall, Spring, Summer

PGA Golf Management program specific course to cover PGA Level 1 Facility Management. Topics covered include, Business Planning, Career Enhancement, Customer Relations, Golf Car Fleet Management, Merchandising, Rules of Golf, Tournament Operations and Turfgrass Management. Students must pass the PGA Level 1 – Facility Management test to earn credit for the course. Prerequisites: PGMG 101. Co-requisite with PGMG 211. Typically offered Spring only.


Full-time (35-40 hrs./wk.) supervised work experience for no less than 12 weeks in a golf related position within PGA eligible classifications (B-1 thru B-23) with or without supervision of a PGA Professional. Prior approval required before placement, includes a pre- and post-internship meeting. Assignments include written activities, PGA Level 2 topics and intermediate teaching videos. Prerequisites: PGMG 101 & PGA Golf Management students in Level 2 only. Typically Offered Fall, Spring, Summer
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Degree</th>
<th>Credits</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>PGMG310</td>
<td>Professional Golf Management</td>
<td>BU</td>
<td>3</td>
<td>PGA Golf Management program specific course to cover PGA Level 2 Facility Management. Topics covered include, Business Planning, Customer Relations, Golf Operations, Merchandising and Inventory Management and Tournament Operations. Student must pass the PGA Level 2 Facility Management test to earn credit for the course. Prerequisite: PGMG 210 &amp; PGMG 211. Co-requisite with PGMG 311 – Level 2 Teaching &amp; Coaching. Typically offered Spring only.</td>
</tr>
<tr>
<td>PGMG311</td>
<td>Professional Golf Management</td>
<td>BU</td>
<td>3</td>
<td>PGA Golf Management program specific course to cover PGA Level 2 Teaching and Coaching. Topics covered include, Feedback and Transfer Practice, The Tempo of Teaching, Teaching Methodologies and Physical Performance, and The Player development Process. Student must pass the PGA Level 2 Teaching &amp; Coaching test to earn credit for the course. Prerequisite: PGMG 210 &amp; PGMG 211. Co-requisite with PGMG 310 – Level 2 Facility Management. Typically offered Spring only.</td>
</tr>
<tr>
<td>PGMG392</td>
<td>Professional Golf Management</td>
<td>BU</td>
<td>2</td>
<td>Full-time (35-40 hrs./wk.) supervised work experience for no less than 12 weeks in a golf related position within PGA eligible classifications (B-1 thru B-23) with or without supervision of a PGA Professional. Prior approval required before placement, includes a pre- and post-internship meeting. Assignments include written activities, PGA Level 2 topics and intermediate teaching videos. Prerequisites: PGMG 210, PGMG 211 &amp; PGA Golf Management students in Level 2 only. Typically offered Fall, Spring, Summer. Typically Offered Fall, Spring, Summer.</td>
</tr>
<tr>
<td>PGMG410</td>
<td>Professional Golf Management</td>
<td>BU</td>
<td>3</td>
<td>PGA Golf Management program specific course to cover PGA Level 3 Facility Management. Topics covered include, Business Planning, Career Enhancement, Food and Beverage Management, Golf Car Fleet Management, Merchandising and Inventory Management, Supervising and Delegation, and Turfgrass. Students must pass the PGA Level 3 Facility Management test to earn credit for the course. Prerequisite: PGMG 310 &amp; PGMG 311. Co-requisite with PGMG 411 – Level 3 Teaching &amp; Coaching. Typically offered Summer only.</td>
</tr>
<tr>
<td>PGMG411</td>
<td>Professional Golf Management</td>
<td>BU</td>
<td>3</td>
<td>PGA Golf Management program specific course to cover PGA Level 3 Teaching and Coaching. Topics covered include, Altering Golf Clubs to Optimize Performance, Making Swing Changes in Advanced Golfers, Business Plans for Golf Instruction Businesses, Developing Instructional Programs that also Promote the Game. Students must pass the PGA Level 3 Teaching &amp; Coaching test to earn credit for the course. Prerequisite: PGMG 310 &amp; PGMG 311. Co-requisite with PGMG 410 – Level 3 Facility Management. Typically offered Summer only.</td>
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<tr>
<td>Course Code</td>
<td>Course Title</td>
<td>Degree</td>
<td>Level</td>
<td>Credits</td>
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<tr>
<td>PGMG492</td>
<td>Professional Golf Management</td>
<td>BU</td>
<td>Undergraduate</td>
<td>2</td>
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<td>Conf: Full-time (35-40 hrs./wk.) supervised work experience for no less than 12 weeks in a golf related position within PGA eligible classifications (B-1 thru B-23) with or without supervision of a PGA Professional. Prior approval required before placement, includes a pre- and post-internship meeting. Assignments include written activities, PGA Level 3 topics and advanced teaching videos. Prerequisites: PGMG 310, PGMG 311 &amp; PGA Golf Management students in Level 3 only. Typically Offered Fall, Spring, Summer.</td>
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</table>

| PGMG493     | Professional Golf Management | BU     | Undergraduate | 2      |
|             |                              |        |        |         |
|             | Introduces pre-pharmacy students to pharmacy including the different settings that a pharmacist might practice in; contemporary practice issues; College of Pharmacy program and curricula, the applications process, and making a successful transition into a health professional program. Typically offered in Fall and Spring. |

| PHAR250     | Pharmacy                     | PH     | Undergraduate | 1      |
|             |                              |        |        |         |
|             | Principles of novel drug delivery by the oral, parenteral and topical routes of administration will be discussed. Both commercially available and research based delivery systems will be incorporated into class discussions and formal presentations given by the students. Pre-Requisites: PHAR 326. Typically Offered On Demand. |

| PHAR446     | Pharmacy                     | PH     | 1st Professional | 2      |
|             |                              |        |        |         |
|             | Principles of manufacturing, formulation and quality control relative to pharmaceutical industry. Lecture and laboratory instruction includes solid, semisolid and liquid dose systems. Required for industrial pharmacy track. Pre-Requisites: PHAR 325. Typically Offered Spring Only. |

| PHAR452     | Pharmacy                     | PH     | 1st Professional | 2      |
|             |                              |        |        |         |
|             | The interaction between delivery from a drug product and its design is the focus of this course. Emphasis on role of formulation variables and physiological factors in controlling drug release from various dosage forms. Appraisal of drug product quality and performance. Case histories are presented. Pre-Requisites: PHAR 326. Typically Offered On Demand. |

| PHAR456     | Pharmacy                     | PH     | 1st Professional | 2      |
|             |                              |        |        |         |
|             |                              |        |        |         |
This course will introduce the concepts of natural products and specialized metabolism. This course will survey the biosynthetic strategies that elaborate several clinically relevant natural products. Examples of relevant natural product classes are polyketides, terpenes, alkaloids, and glycopeptides. The role of these natural products as drugs for treatment of human disease will be emphasized throughout the course. Chemical approaches towards understanding natural products biosynthesis will also be considered. Students will conduct a capstone research project into the biosynthesis of a natural product. This course will meet the 2 credit elective requirement for the P2 year. Pre-requisites: PHAR 311 and PHAR 312. Typically offered: Fall

Covers the health care delivery systems of the United States with comparisons to relevant systems in other parts of the world. Reviews the professional roles of the pharmacist in historical and contemporary practice. The fundamentals of reimbursement models from the governmental and private perspective will be covered; as well as the legal and professional basis for pharmacy practice. Typically offered: Fall

Covers humanistic health outcomes and examines how social, linguistic and cultural factors play a role in pharmacy care. Involves the application of behavioral science principles to provide public education and/or promote public awareness of disease prevention with an eye toward cultural influences and global burden of disease. The course introduces students to the concepts and methods of pharmacoepidemiology. In addition, the principles of bioethics are covered and applied to relevant issues in pharmacy practice to broaden the students understanding of professional behavior. Throughout the course, an emphasis is placed on assessing and interpreting socio economic and cultural factors and identifying ways to integrate them into the delivery of patient-centered services. Typically offered: Spring

Considers the physiochemical properties of biological molecules, describes bioenergetics, and details enzyme structure, function, kinetics, and regulation. Metabolic pathways involving the various categories of biomolecules (carbohydrates, lipids, and proteins) are covered in depth with emphasis placed upon the interrelationships particularly as they pertain to the human system. Typically offered: Fall

Considers extracellular and intracellular signaling (autocrine, paracrine, and endocrine systems). Considers cholinergic, dopaminergic, hallucinogenic, sympathomimetic, sedative-hypnotic. Considers replication, transcription and translation of genetic material. The scientific fundamentals of recombinant drugs (e.g. monoclonal antibodies, RNAi drugs), pharmacogenetics, and pharmacogenomics in clinical practice and outcomes on patient care are also considered. Typically offered: Spring
PHAR523 Pharmacy PH 1st Professional 4

This course will cover the physicochemical properties of drugs, excipients and dosage forms. Physicochemical properties including drug dissolution, drug partitioning, ionic equilibria, and rheology will be related primarily to sterile and non-sterile solution and suspension dosage forms. The manufacturing/compounding and quality attributes of each type of dosage form will also be covered. Biopharmaceutics and pharmacokinetic principles will be introduced as they become relevant. Typically offered: Fall

PHAR524 Pharmacy PH 1st Professional 4

This course will cover the application of physicochemical properties to pharmaceutical dosage forms and drug delivery. Formulation, biopharmaceutical and pharmacokinetic principles of dosage forms used to deliver drugs oral, rectal, vaginal, intrauterine, ophthalmic, topical and pulmonary routes will be discussed. The manufacturing/compounding and quality attributes of each type of dosage form will also be covered. Pharmacokinetic principles and models introduced in this course will be built on to include more advanced principles and models. Typically offered: Spring

PHAR531 Pharmacy PH 1st Professional 3

This course will serve as an introduction to non-prescription medications, dietary supplements, home testing and monitoring devices, and their use in self-care and/or remedies to common illnesses. Students will begin to recognize differences in patient’s clinical needs as well as how to determine whether a patient is appropriate for self-care approaches. By the end of the course, students will be able to assist patients in determining a reasonable therapeutic plan related to self-care. Typically offered: Spring

PHAR587 Pharmacy PH 1st Professional 3

This course will provide students an opportunity to develop foundational skills necessary for modern practice as a pharmacist. Students will be introduced to non-sterile compounding, clinical calculations, and basic physical assessment. An overview of the JCPP Patient Care Process, with emphasis on the communication-focused aspects of the process, will take place. The course will focus on community pharmacy practice and will involve discussion of the top 200 prescription medications. Typically offered: Fall

PHAR588 Pharmacy PH 1st Professional 2

This course will provide students an opportunity to develop foundational skills necessary for modern practice as a pharmacist. Students will be introduced to sterile compounding, clinical calculations, and basic physical assessment. An overview of the JCPP Patient Care Process, with emphasis on the documentation focused aspects of the process, will take place. The course will focus on health system pharmacy practice and will involve discussion of the top 200 prescription medications. Typically offered: Spring
PHAR593 Pharmacy PH 1st Professional 2

The Medication Distribution Community Introductory Pharmacy Practice Experience course is designed to integrate skills learned in the classroom with foundational medication use process functions of a community pharmacist. This includes dispensing, interpersonal communication, calculations and application of non-prescription medicines and self-care. Students will begin to apply standards, guidelines, best practices, and established processes for safe and effective medication use in the community setting. It is expected that this introductory course will begin to prepare the student with the foundational elements necessary to practice patient centered pharmacy care in the community setting. Typically offered: Fall, Spring, Summer.

PHAR600 Pharmacy PH 1st Professional 6

This course will provide the student with an opportunity to provide patient centered care in an acute/inpatient setting. Skills emphasized will be communication, drug information provision, monitoring of patient outcomes, drug therapy assessment, and patient/health care provider education. Prerequisites: Successful completion of PHAR 514. Typically Offered Fall, Spring and Summer.

PHAR602 Pharmacy PH 1st Professional 6

This course will provide the student with an opportunity to provide patient centered care in an ambulatory care setting. Skills emphasized will be communication, drug information provision, monitoring of patient outcomes, drug therapy assessment, and patient/health care provider education. Prerequisites: Successful completion of PHAR 514. Typically Offered Fall, Spring and Summer.

PHAR610 Pharmacy PH 1st Professional 6

The Institutional APPE is an inpatient hospital experience that allows for a broader understanding of hospital pharmacy management with emphasis on regulatory, human resources, technology and medication management. The student will experience advanced pharmacy operations and services relating to systems for medication distribution, reconciliation, safety and control, management of the department, scope of clinical services provided by the department, the impact of various regulatory and accrediting agencies on the department and department relationships within the institution and health system. Prerequisites: Successful completion of PHAR 514. Typically Offered Fall, Spring and Summer.

PHAR611 Pharmacy PH 1st Professional 6

The Community APPE will provide the student an opportunity to refine basic and develop advanced skills needed for the delivery of patient-centered pharmacy services in the community setting. The student will develop competency in the following critical elements: communication with practitioners and patients, assessment and monitoring of drug therapy, health promotion, disease state management, patient education and effective pharmacy management. Prerequisites: Successful completion of PHAR 514. Typically Offered Fall, Spring and Summer.
PHAR619 Pharmacy PH 1st Professional 4
This course will consist of extensive discussion of the pathophysiology, pharmacology, medicinal chemistry, and therapeutics associated with commonly encountered disease states so that students can design and manage drug-related care plans for patients with those disease states. Emphasis will be placed on development of a clinical understanding of the disease process, the role of pharmacological intervention in the patient-specific and/or population-based disease management plan and the development of an appropriate therapeutic regimen. Pre-requisite: PHAR 520. Typically offered: Fall

PHAR620 Pharmacy PH 1st Professional 4
This course will consist of extensive discussion of the pathophysiology, pharmacology, medicinal chemistry, and therapeutics associated with commonly encountered disease states so that students can design and manage drug-related care plans for patients with those disease states. Emphasis will be placed on development of a clinical understanding of the disease process, the role of pharmacological intervention in the patient-specific and/or population-based disease management plan and the development of an appropriate therapeutic regimen. Pre-requisite: PHAR 520. Typically offered: Fall

PHAR621 Pharmacy PH 1st Professional 4
This course will consist of extensive discussion of the pathophysiology, pharmacology, medicinal chemistry, and therapeutics associated with commonly encountered disease states so that students can design and manage drug-related care plans for patients with those disease states. Emphasis will be placed on development of a clinical understanding of the disease process, the role of pharmacological intervention in the patient-specific and/or population-based disease management plan and the development of an appropriate therapeutic regimen. Pre-requisite: PHAR 520. Typically offered: Fall

PHAR622 Pharmacy PH 1st Professional 4
This course will consist of extensive discussion of the pathophysiology, pharmacology, medicinal chemistry, and therapeutics associated with commonly encountered disease states so that students can design and manage drug-related care plans for patients with those disease states. Emphasis will be placed on development of a clinical understanding of the disease process, the role of pharmacological intervention in the patient-specific and/or population-based disease management plan and the development of an appropriate therapeutic regimen. Pre-requisite: PHAR 621. Typically offered: Spring
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<tr>
<th>Course Code</th>
<th>Program</th>
<th>Term</th>
<th>Credits</th>
<th>Description</th>
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<tr>
<td>PHAR623</td>
<td>Pharmacy</td>
<td>PH 1st Professional</td>
<td>4</td>
<td>This course will consist of extensive discussion of the pathophysiology, pharmacology, medicinal chemistry, and therapeutics associated with commonly encountered disease states so that students can design and manage drug-related care plans for patients with those disease states. Emphasis will be placed on development of a clinical understanding of the disease process, the role of pharmacological intervention in the patient-specific and/or population-based disease management plan and the development of an appropriate therapeutic regimen. Pre-requisite: PHAR 621. Typically offered: Spring</td>
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<tr>
<td>PHAR624</td>
<td>Pharmacy</td>
<td>PH 1st Professional</td>
<td>4</td>
<td>Covers the fundamental managerial functions necessary to support the supervision of medication delivery systems in the institutional and community settings. This course includes marketing principles and strategic planning for a contemporary pharmacy operation or customer services; and principles of organizational behavior and human resource management that are relevant to professional and technical staff. The course also covers the safe design, quality assurance and management of drug delivery systems in different practice settings; as well as the function and management of different medication therapy management programs. Pre-requisite: PHAR 516. Typically offered: Fall</td>
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<tr>
<td>PHAR630</td>
<td>Pharmacy</td>
<td>PH 1st Professional</td>
<td>3</td>
<td>This course covers the concepts and practical considerations necessary to enable students to evaluate the medical literature, including study design and statistical techniques used in clinical research, and apply that information in the clinical setting. It also covers evidence-based medicine techniques involved in caring for patients and answering drug information questions. Finally, the course will cover medical informatics related to pharmacy practice. Co-requisite: PHAR 622. Typically offered: Spring</td>
</tr>
<tr>
<td>PHAR640</td>
<td>Pharmacy</td>
<td>PH 1st Professional</td>
<td>3</td>
<td>In this introductory course, students will be exposed to the basic principles of public health and the public health delivery system. The student will learn about the pharmacist's role as a public health professional and how pharmacists play an integral role in caring for and improving the health of the community. As part of this course, students will be expected to design and implement a community public health educational campaign. Typically offered: Fall, Spring</td>
</tr>
</tbody>
</table>
PHAR652 Pharmacy PH 1st Professional 2
This course presents information and issues that are unique to the practice of pharmacy in the institutional setting. This will include logistics and distribution, purchasing and inventory control, automation, and clinical services in the contemporary hospital practice setting along with relevant evolutions to long-term care and hospice. Typically offered: Fall, Spring

PHAR653 Pharmacy PH 1st Professional 2
This is an upper level biochemistry course concentrating on issues related to nutrition. Of special importance will be energy metabolism, roles of vitamins and minerals in metabolic systems, issues of dietary deficiency, dietary supplements, diet and disease states and diet and exercise. Typically offered: Fall, Spring

PHAR654 Pharmacy PH 1st Professional 2
This course will present contemporary issues in medicine. Current controversies in health care that affect public policy decisions will be discussed in the framework of contemporary literature. Students will be encouraged to frame decisions about these issues in the context of the health professional - patient relationship, health policy, social justice, allocation of scarce resources, professional standards and definitions of the beginning and end of human life. Typically offered: Fall, Spring

PHAR656 Pharmacy PH 1st Professional 2
This course presents information on general concepts of legal regulation of pharmacy professional acts and services as well as an overview of the legal process in the United States. It also introduces students to ethical concepts and gives them an opportunity to apply ethical principles and develop skills in problem-solving and critical thinking. Typically offered: Fall, Spring

PHAR657 Pharmacy PH 1st Professional 2
This course will examine the development and validation of instruments for measuring social, behavioral and patient reported outcomes as well as the analysis of data using simple univariate and multivariate inferential statistics. Emphasis will be placed on students gaining expertise in utilizing the available university statistical analysis software package. Typically offered: Fall, Spring

PHAR658 Pharmacy PH 1st Professional 2
Students actively participate in discussing topics of current importance and relevance in the pharmaceutical sciences. A wide selection of professional publications of primary literature is utilized. Strategy and tactics of oral presentations are incorporated during the course. Students make presentations on pharmaceutical topics of interest to them. Typically offered: Fall, Spring

PHAR659 Pharmacy PH 1st Professional 2
This course will acquaint the student to the therapeutic utility of a variety of herbal supplements and alternative regimens. Safety and evidence-based efficacy issues will be discussed as well as counseling herbal/alternative therapy users. Student who take this course cannot receive elective credit for PHAR 554. Typically offered: Fall, Spring
PHAR660 Pharmacy PH 1st Professional 2

This course will acquaint the student with the scope; general and specific principles of treatment; and prevention measures for common plant, mushroom, food and Marine toxins. Additionally the student will be introduced to information sources; brief taxonomic considerations; how to handle a poisoning and how to handle a poisoning call to the pharmacy. Field trips to view local plants and the Medicinal Garden will be included. Typically offered: Fall, Spring

The student will learn the process for bringing a new drug to market including drug discovery; what is involved in discovering potential drug candidate(s); investigating structure activity relationships; evaluating results for receptor selectivity; and improving upon existing drugs. The student will learn about proving a hypothesis scientifically, synthetically, biologically and clinically. Students will gain an appreciation of drug discovery techniques used in pharmaceutical research and insight into drug candidates in cancer and type II diabetes. Typically offered: Fall, Spring

PHAR665 Pharmacy PH 1st Professional 2

This course will present a number of current topics with a focus on the discipline of medicinal chemistry. There will be an emphasis placed on those that relate to pharmacy practice. Topics may shift from semester-to-semester depending on changes in this discipline. Guest speakers presenting on advances in medicinal chemistry may be used. Typically offered: Fall, Spring

The course will acquaint the student with the identification of carcinogens and mechanisms for carcinogenesis of selected agents such as chemicals, radiation and infections. The role of environmental factors (lifestyle, diet, social and behavioral practices) in influencing susceptibility to cancer and the genetic differences (germline and somatic mutations, epigenetics, DNA repair) that have been causally implicated in cancer will be discussed. Typically offered: Fall, Spring

PHAR667 Pharmacy PH 1st Professional 2

This course will assist pharmacy students in better understanding geriatric patients’ unique healthcare needs by exposing them to lecture, discussion, observation, reading assignments, video, as well as one on one interaction with patients in clinical settings. Various experts from the geriatric field will be invited to discuss material with which they are most familiar. Students will develop a basic skill set for understanding and eventually, meeting the health care needs of geriatric patients. Typically offered: Fall, Spring

This course focuses on the adverse effects in patients caused by excessive exposure from environmental or medicinal substances. Accidental and intentional poisonings, medication overdosing, and excessive environmental exposures will be discussed. An introduction into the legal aspects and analytical techniques involved in criminal investigations and lawsuits will be included. Typically offered: Fall, Spring
<table>
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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>PHAR671</td>
<td>Pharmacy PH 1st Professional 2</td>
<td>This course examines the epidemiologic principles used in non-experimental studies to assess drug safety and efficacy in the absence of specific evidence from experimental studies; provides an introduction to pharmacoepidemiologic methods, databases and examples of use in current research; and examines the use of pharmacoepidemiology in drug development and approval. This course will also examine the role of pharmacoepidemiology in public policy; and the pitfalls and limitations of these types of study designs. Typically offered: Fall, Spring</td>
</tr>
<tr>
<td>PHAR672</td>
<td>Pharmacy PH 1st Professional 2</td>
<td>The art and science of compounding pharmaceutical preparations at an advanced level will be discussed. Students will build on their compounding experience in PHAR 385 and 386 to develop an advanced understanding of formulation, stability and quality of compounded pharmaceuticals and the role a pharmacist plays in the specialized practice of compounding pharmacy. Advanced compounding methods will be used to make pharmaceutical dosage forms and develop formulations as they would in the practice of compounding pharmacy. Typically offered: Fall, Spring</td>
</tr>
<tr>
<td>PHAR673</td>
<td>Pharmacy PH 1st Professional 2</td>
<td>This course will provide students an opportunity to engage in hands-on research with faculty in the College of Pharmacy. Students will work with an individual faculty member on projects of varying focus. Activities may include laboratory, population-based health outcomes, or clinical research. Instructor Permission. Typically Offered Fall and Spring.</td>
</tr>
<tr>
<td>PHAR674</td>
<td>Pharmacy PH 1st Professional 2</td>
<td>This course will introduce the concepts of natural products and specialized metabolism. This course will survey the biosynthetic strategies that elaborate several clinically relevant natural products. Examples of relevant natural product classes are polyketides, terpenes, alkaloids, and glycopeptides. The role of these natural products as drugs for treatment of human disease will be emphasized throughout the course. Chemical approaches towards understanding natural products biosynthesis will also be considered. Prerequisites: PHAR 520 or Permission of Instructor. Typically offered Fall, Spring.</td>
</tr>
<tr>
<td>PHAR675</td>
<td>Pharmacy PH 1st Professional 2</td>
<td>The History of Pharmacy elective course will provide you with an overview of the progression of the history of pharmacy. Emphasis will be placed on development of pharmacy in the United States of America. This course will use readings or other assignments, lecture, and active learning techniques. Prerequisites: PHAR 515. Typically Offered Fall, Spring.</td>
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</table>
PHAR676 Pharmacy PH 1st Professional 2
This course will provide an opportunity for pharmacy students to discuss a variety of leadership topics based on current and/or classic leadership books pertinent to pharmacy leaders. A diverse group of leaders will share instruction so as to expose students to different leadership philosophies and practices. This course will require students to read a series of books and to critically discuss potential application of leadership theory to real world pharmacy scenarios. Typically offered Spring.

PHAR677 Pharmacy PH 1st Professional 2
This course will identify problems in the medication use system and the unmet patient safety needs in health care systems in the US. Students will review and critique scientific articles in outcomes research and will learn about the direct observational methods in population-based outcomes research. Typically offered Spring.

PHAR680 Pharmacy PH 1st Professional 0.5
Doctoral Project is a longitudinal course during the 4th year of the Pharm.D. program, showcasing a student's ability to take a relevant professional question, perform research to answer the question, summarize the data, and defend their findings and conclusions logically and systematically.
Prerequisites: Successful completion of PHAR 540 (D- or better) and PHAR 513 (D- or better) and PHAR 514 (D- or better) or permission of instructor. Typically Offered Fall, Spring and Summer.

PHAR691 Pharmacy PH 1st Professional 0.5
The Direct Patient Care Introductory Pharmacy Practice Experience course is designed for students to expand upon skills learned in the classroom and the medication distribution IPPE. This experience will provide students with the opportunity to work directly with patients in a healthcare setting as a caregiver, educator, and collaborator. Skills emphasized will be effective communication, gathering of patient data, documentation, active listening, interprofessional practice, and cultural sensitivity. It is expected that this introductory course will begin to prepare students to provide patient-centered care as the medication expert. Pre-requisite: PHAR 593. Typically offered: Fall, Spring, Summer

PHAR693 Pharmacy PH 1st Professional 2
The Medication Distribution Health System Introductory Pharmacy Practice Experience course is designed to integrate skills learned in the classroom with foundational medication use process functions of a health system pharmacist. This includes dispensing, interpersonal communication and calculations. Students will begin to apply standards, guidelines, best practices, and established processes for safe and effective medication use in the health system setting. It is expected that this introductory course will begin to prepare the student with foundational elements necessary to practice patient centered care in the health system setting. Pre-requisite: PHAR 624. Typically offered: Fall, Spring, Summer
PHAR 719 Pharmacy PH 1st Professional 4
This course will consist of extensive discussion of the pathophysiology, pharmacology, medicinal chemistry, and therapeutics associated with commonly encountered disease states so that students can design and manage drug-related care plans for patients with those disease states. Emphasis will be placed on development of a clinical understanding of the disease process, the role of pharmacological intervention in the patient-specific and/or population-based disease management plan and the development of an appropriate therapeutic regimen. Pre-requisite: PHAR 624. Typically offered: Fall

PHAR 720 Pharmacy PH 1st Professional 4
This course will consist of extensive discussion of the pathophysiology, pharmacology, medicinal chemistry, and therapeutics associated with commonly encountered disease states so that students can design and manage drug-related care plans for patients with those disease states. Emphasis will be placed on development of a clinical understanding of the disease process, the role of pharmacological intervention in the patient-specific and/or population-based disease management plan and the development of an appropriate therapeutic regimen. Pre-requisite: PHAR 624. Typically offered: Fall

PHAR 721 Pharmacy PH 1st Professional 4
This course will consist of extensive discussion of the pathophysiology, pharmacology, medicinal chemistry, and therapeutics associated with commonly encountered disease states so that students can design and manage drug-related care plans for patients with those disease states. Emphasis will be placed on development of a clinical understanding of the disease process, the role of pharmacological intervention in the patient-specific and/or population-based disease management plan and the development of an appropriate therapeutic regimen. Pre-requisite: PHAR 624. Typically offered: Fall

PHAR 722 Pharmacy PH 1st Professional 4
This course will consist of extensive discussion of the pathophysiology, pharmacology, medicinal chemistry, and therapeutics associated with commonly encountered disease states so that students can design and manage drug-related care plans for patients with those disease states. Emphasis will be placed on development of a clinical understanding of the disease process, the role of pharmacological intervention in the patient-specific and/or population-based disease management plan and the development of an appropriate therapeutic regimen. Pre-requisite: PHAR 721. Typically offered: Spring
This course will consist of extensive discussion of the pathophysiology, pharmacology, medicinal chemistry, and therapeutics associated with commonly encountered disease states so that students can design and manage drug-related care plans for patients with those disease states.

Emphasis will be placed on development of a clinical understanding of the disease process, the role of pharmacological intervention in the patient-specific and/or population-based disease management plan and the development of an appropriate therapeutic regimen. Pre-requisite: PHAR 721.

Typically offered: Spring

Covers the managerial functions involved in the support of pharmaceutical supply chains including basic reimbursement; third party and managed care systems; and fundamental accounting principles. In addition, the course covers the principles of pharmacoeconomics and their role in the formulary and managerial decisions; as well as project management and more advanced topics on informatics. Pre-requisite: PHAR 630. Typically offered: Fall

This course covers the legal basis of pharmacy practice, including the administrative, civil and criminal laws that impact practice. Federal and state jurisprudence, along with the regulatory codes that impact on the practice of pharmacy in the institutional as well as community settings are covered. Pre-requisite: PHAR 630. Typically offered: Spring

This course is designed to provide an introduction to managed care pharmacy and a basic understanding of the impact it has on the U.S. health care system. The course will present material in both the consumer and health care professional perspective. The course includes lectures, guest speakers, group discussions and presentations. Typically offered: Fall, Spring

This course presents topics and controversies in Infectious Diseases. Topics covered go beyond those covered in Pharmacotherapeutics. In addition to reviewing specific disease entities, students will be exposed to contemporary strategies for the management of the infected patient in various practice settings. Typically offered: Fall, Spring
Students will be introduced to the non-pharmacologic and pharmacologic decisions required for patients (or caregivers) approaching the end of life. Emphasis will be placed on the role of the pharmacist in providing appropriate pharmaceutical care for pain and symptom management. Students will be required to complete a series of advanced pain cases (unique to palliative care/hospice patients), create a hospice formulary as a group orientated project, and visit a local hospice center. Typically offered: Fall, Spring

This elective course covers complementary and alternative medicine and how it impacts clinical pharmacy. Students who have taken PHAR 463 Herbal Remedies and Alternative Therapies may not take this elective for credit. This course will be primarily instructor led with guest lecturers from the community. Patient cases will be presented by the students. Typically offered: Fall, Spring

This course is designed to foster the development of essential practice skills needed for the provision of pharmaceutical care in a community pharmacy setting. Examples of practice skills targeted for development include: communication, data collection, drug therapy problem identification, therapeutic drug monitoring, and drug information. In addition to clinical practice skills, the student will gain practice management skills from the standpoint of the community pharmacist practitioner. Typically offered: Fall, Spring

This course includes medical research, data management, and information dissemination. Students are introduced to the professional ethics and regulations that govern medical research; in addition to methodological aspects of medical research including study design, protocol development, data management/analysis, and data dissemination. Students will participate in sessions designed to introduce them to software commonly used in medical research. Students will identify a scientific question and develop a research proposal that allows them to test their hypothesis. Typically offered: Fall, Spring

The purpose of this course is to augment health professionals' education through participation in an interdisciplinary community-based health initiative and to engage the community in the promotion of overall health and well-being through partnership. Through this course, the student will improve cultural competency skills, provide health services to a local community, enhance his/her interdisciplinary team skills and gain a greater appreciation for current healthcare issues from the perspective of the assigned community. Typically offered: Fall, Spring
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<tr>
<th>Course Code</th>
<th>Program</th>
<th>Year</th>
<th>Semester</th>
<th>Description</th>
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<tbody>
<tr>
<td>PHAR757</td>
<td>Pharmacy</td>
<td>PH 1st Professional</td>
<td>2</td>
<td>This course is designed to provide the student with training and education to assist with a patient requiring advanced cardiac life support (ACLS). This includes basic life support, use of adjunctive equipment and special techniques for establishing and maintaining effective ventilation and circulation, electrocardiographic (ECG) monitoring and arrhythmia recognition, establishment and maintenance of IV access, therapies for emergency treatment for cardiac and respiratory arrests, and treatment of patients with suspected acute myocardial infarction or stroke. Typically offered: Fall, Spring</td>
</tr>
<tr>
<td>PHAR758</td>
<td>Pharmacy</td>
<td>PH 1st Professional</td>
<td>1</td>
<td>Students from multiple professions are paired to display the importance of interprofessional collaboration in patient care. This is accomplished through didactic instruction, group discussions and multiple home visits to a community-dwelling elderly adult over two semesters. Course must be taken both fall and spring semesters. During the course the students will collaborate to identify teaching initiatives, implement plans and assess patient understanding of instruction. Typically offered: Fall, Spring</td>
</tr>
<tr>
<td>PHAR759</td>
<td>Pharmacy</td>
<td>PH 1st Professional</td>
<td>2</td>
<td>This course provides students with advanced topics related to pharmacotherapy in the pediatric and geriatric populations through the use of active and passive learning techniques. Typically offered: Fall, Spring</td>
</tr>
<tr>
<td>PHAR760</td>
<td>Pharmacy</td>
<td>PH 1st Professional</td>
<td>2</td>
<td>Interprofessional education focused on integrated patient-centered practice is key to building effective health care teams that improve the experiences and the outcomes of participants. This course will apply principles of interprofessional education, which include collaborative, egalitarian, group-directed, experiential, reflective, and applied learning with, from and about multiple health professions students. Typically offered: Fall, Spring</td>
</tr>
<tr>
<td>PHAR761</td>
<td>Pharmacy</td>
<td>PH 1st Professional</td>
<td>2</td>
<td>The course is designed to help students gain a deeper understanding of how to evaluate the primary literature from a clinical perspective. It is designed to help students become more comfortable evaluating the primary literature that will be required in the P4 year to help them complete various activities (e.g. journal club, patient cases) and provide better patient care. Students will work in small groups throughout the course evaluating and discussing various aspects of the primary literature, including study design, and application of results. This course will build upon the traditional methods taught in various pharmacy courses throughout the pharmacy curriculum, including the required drug literature evaluation course as well as provide exposure to more complicated topics that are not covered in the required courses. Pre-requisite: PHAR 640. Typically offered: Fall, Spring</td>
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PHAR762 Pharmacy PH 1st Professional 2
This course will provide a broad overview of direct patient care activities in outpatient pharmacy practice, known commonly within the pharmacy community as medication therapy management (MTM). Additional considerations for care transitions, continuity of care, and disease state management will also be discussed. Introductory topics related to medication therapy management will be provided. Prerequisites: PHAR 486 with a C or better. Co-requisites: PHAR 589, PHAR 724. Typically Offered Spring Semester.

PHAR763 Pharmacy PH 1st Professional 2
Pharmacists must be able to identify business and practice opportunities in order to serve patients and maintain relevancy. Students in this course will be exposed to a number of existing innovative practice models such as pharmacogenetic screening, Clinical Laboratory Improvement Amendments-waived point-of-care testing based disease management, travel medicine, medication therapy management, and wellness programs. Additionally, students will gain practice skills required to support such programs. Billing and reimbursement strategies will be discussed. Students will develop a business plan and return on investment analysis for an innovative pharmacy service. Typically Offered Spring.

PHAR764 Pharmacy PH 1st Professional 2
Students are introduced to a leading cloud computing service architecture. Students will learn cloud architecture principles, services, value proposition, pricing models, and security fundamentals. Students will create, configure, secure, and deploy cloud computing services. Prerequisites: PHAR 624 with grade of C or better. Typically offered Fall and Spring semester.

PHAR791 Pharmacy PH 1st Professional 0.5
The Direct Patient Care Introductory Pharmacy Practice Experience course is designed for students to expand upon skills learned in the classroom and the medication distribution IPPE. This experience will provide students with the opportunity to work directly with patients in a healthcare setting as a caregiver, educator, and collaborator. Skills emphasized will be effective communication, gathering of patient data, documentation, active listening, interprofessional practice, and cultural sensitivity. It is expected that this introductory course will begin to prepare students to provide patient-centered care as the medication expert. Pre-requisite: PHAR 624. Typically offered: Fall, Spring, Summer

PHAR800 Pharmacy PH 1st Professional 6
This course will provide the student with an opportunity to provide patient centered care in an acute/inpatient setting. Skills emphasized will be communication, drug information provision, monitoring of patient outcomes, drug therapy assessment, and patient/health care provider education. Pre-requisite: PHAR 724. Typically offered: Fall, Spring, Summer
This course will provide the student with an opportunity to provide patient-centered care in an ambulatory care setting. Skills emphasized will be communication, drug information provision, monitoring of patient outcomes, drug therapy assessment, and patient/health care provider education. Pre-requisite: PHAR 724. Typically offered: Fall, Spring, Summer

This course is a health system pharmacy experience that allows for a broader understanding of health system pharmacy management with emphasis on regulatory, human resources, technology and medication management. The student will experience advanced pharmacy operations and services relating to systems for medication distribution, reconciliation, safety and control, management of the department, scope of clinical services provided by the department, the impact of various regulatory and accrediting agencies on the department and department relationships within the institution and health system. Pre-requisite: PHAR 724. Typically offered: Fall, Spring, Summer

This course will provide the student an opportunity to refine basic and develop advanced skills needed for the delivery of patient-centered pharmacy services in the community setting. The student will develop competency in the following critical elements: communication with practitioners and patients, assessment and monitoring of drug therapy, health promotion, disease state management, patient education and effective pharmacy management. Pre-requisite: PHAR 724. Typically offered: Fall, Spring, Summer

Doctor of Pharmacy Seminar is a longitudinal course during the 4th year of the program, which allows the student to refine and demonstrate their ability to develop a relevant professional question, design and perform research to answer the question, interpret the data, and verbally defend their findings and conclusions logically and systematically to their peers and faculty. Pre-requisite: PHAR 724. Typically offered: Fall, Spring

This elective APPE offered at various faculty sites is designed to provide the student with an opportunity to understand the role of the pharmacy educator. The student will develop knowledge and skills in teaching and precepting pharmacy students in the classroom and practice setting. The student will also develop writing and communication skills. Typically offered: Fall, Spring
The student will be responsible for answering questions from health care professionals in the setting of a formal Drug Information Center. Additional responsibilities may include preparing newsletter articles and writing drug evaluations for a pharmacy and therapeutics committee. Skills from previous didactic courses in searching, analyzing, and summarizing literature will be further developed. Emphasis will be placed on enhancing oral and written communication skills in answering drug information inquiries. Typically offered: Fall, Spring

This experiential course will focus in the areas of pharmacy or health-related professional organizations' structures, responsibilities of professional organizations and federal, state and local legislative issues related to the health-care professions. Additionally, governance of professions, through legislative initiatives and self-regulatory methods will be covered. Students will participate in ongoing activities of the organization to which they are assigned including research projects, professional meeting planning, pharmacy advocacy and advancement of the profession. Typically offered: Fall, Spring

This elective APPE will cover basic and advanced principles in managing or owning a community pharmacy. The rotation will also expose the student to all facets of community pharmacy practice and focus on interpersonal skills, leadership skills, process and quality improvement, personnel management, business management, and staff education. Typically offered: Fall, Spring

This elective rotation will provide students with experience in the administrative aspects of health system pharmacy operations as well as administrative considerations in clinical pharmacy practice. Typically offered: Fall, Spring

This elective rotation is designed to introduce the students to the world of managed care under the directive of pharmacy services. The student will be exposed to a broad range of experiences such as formulary management, academic detailing, provider and member education, patient profile reviews, and new drug reviews. Typically offered: Fall, Spring

The Specialized Areas of Community Pharmacy APPE will provide the student an opportunity to refine basic and develop advanced skills needed for the delivery of patient-centered pharmacy services in the community setting. This rotation provides additional experience in unique community pharmacy practice settings such as specialty, compounding, health center, independent or hospital-based pharmacies. Typically offered: Fall, Spring
This elective rotation is designed to provide students with exposure to veterinary pharmacy and the physiology and pathophysiology in animal patients. Students will be exposed to patient-care experiences in the areas of surgery, and internal medicine in both large and small animals. Students will gain an understanding of the pharmacy services a pharmacist can provide to a veterinary facility, and familiarity with the unique pharmaceutical needs and specific dosage forms needed in the management of animals. Typically offered: Fall, Spring

This elective rotation is designed to give the student an understanding of the application of radiopharmaceuticals in diagnostic imaging and treatment of various diseases states. The student will gain knowledge of basic radiation safety, quality control, and product preparation of radiopharmaceuticals. The student will become familiar with the pharmacology, mechanism of action, contraindications, and drug interactions of each radiopharmaceutical. The student will experience procedural protocols of nuclear imaging in humans and possibly animals. Finally, the course will stress the appropriateness and cost effectiveness of each imaging modality in the health care system. Typically offered: Fall, Spring

This course will provide the student with an opportunity to provide patient centered care in an acute/inpatient setting. Skills emphasized will be communication, drug information provision, monitoring of patient outcomes, drug therapy assessment, and patient/health care provider education. Typically offered: Fall, Spring

This course will provide the student with additional opportunities to provide patient centered care in an ambulatory care setting. Skills emphasized will be communication, drug information provision, monitoring of patient outcomes, drug therapy assessment, and patient/health care provider education. Practice settings will include specialty clinics as well as general ambulatory care. Typically offered: Fall, Spring

This one-month required rotation is designed to provide students with experiences in the culture, systems, structures, and practices of organization that practices performance metrics based management as applied in the setting of corporate pharmacy practice. Typically offered: Fall, Spring

This one-month required rotation is designed to provide students with experiences in the culture, systems, structures, and practices of an organization that practices performance metrics based management as applied in the setting of the pharmaceutical industry. Typically offered: Fall, Spring
PHAR863 Pharmacy PH 1st Professional 6
This one-month required rotation is designed to provide students with experiences in the culture, systems, structures, and practices of an organization that practices performance metrics based management as applied in the setting of health systems pharmacy practice. Typically offered: Fall, Spring

PHAR864 Pharmacy PH 1st Professional 6
The goal of the International Advanced Pharmacy Practice Experience is to provide selected students with exposure to and involvement in foreign pharmacy practice. This will be facilitated through placement in a variety of clinical settings including hospital (institutional) practice, community practice and clinical practice and will be directed by affiliated Colleges of Pharmacy in the selected country. Typically offered: Fall, Spring

PHAR865 Pharmacy PH 1st Professional 6
This elective APPE provides the interested student an in-depth, hands-on experience in research. Potential rotation opportunities include clinical, pharmaceutical industry and basic science practice sites. Typically offered: Fall, Spring

PHIL115 Philosophy AS Undergraduate 3
A global survey of major philosophers and ideas. Examines ideas such as artificial intelligence, justice, the good life, reality, etc. This course meets General Education requirements: Cultural Enrichment and new Fall 2017 Culture. Typically Offered Fall, Spring, Summer.

PHIL120 Philosophy AS Undergraduate 3
This course in philosophy will explore how traditional philosophical schools have prescribed recipes on how to live "good lives" that are happy, tranquil, meaningful, and stress-free. Typical schools may include Socratic, Stoic, Epicurean, Skeptical, Cynical, Existential, and Cognitive Behavioral. Students will be asked to identify and contrast central features of these different schools, to engage in personal self- exploration, and to apply some of the concepts and techniques to their own lives. This course meets General Education requirement: Culture. Typically offered: Fall, Spring, Summer.

PHIL203 Philosophy AS Undergraduate 3
The course provides the historical issues and figures of the western philosophic tradition from Ancient Greece through Medieval philosophy. Included will be such figures as Socrates, Plato, and Aristotle. The medieval period will concentrate on Christian theology through the study of such philosophers as Augustine and Aquinas. This course meets General Education requirements: Cultural Enrichment, and new Fall 2017 Culture. Prerequisites: ENGL 150. Typically Offered Fall Only, Odd Years.

PHIL204 Philosophy AS Undergraduate 3
The course provides historical issues and figures of the western philosophic tradition from the early modern philosophy of Descartes through Empiricism, Kant and the 19th century, ending with Nietzsche. This course meets General Education requirements: Cultural Enrichment, and new Fall 2017 Culture. Prerequisites: ENGL 150. Typically Offered Winter Only, Even Years.
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<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Degree</th>
<th>Level</th>
<th>Credits</th>
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<tbody>
<tr>
<td>PHIL216</td>
<td>Philosophy</td>
<td>AS</td>
<td>Undergraduate</td>
<td>3</td>
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<td></td>
<td>Moral conduct and ethical knowledge and application of ethical principles to present-day human problems. This course meets General Education requirements: Cultural Enrichment, and new Fall 2017 Culture. Prerequisites: Second Semester Freshman Standing. Typically Offered Fall, Spring, Summer.</td>
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| PHIL217     | Philosophy  | AS     | Undergraduate | 3 |
|             | This course follows the historical development of logical reasoning from Aristotle to today. This course introduces skills that are essential to good critical reasoning – including how to detect forms of arguments, how to test for validity, and how to construct valid arguments. Methods covered include formal logic and informal logic, syllogism, inductive and deductive arguments, and fallacies most commonly encountered in speech and writing. This course meet the requirements for Cultural Enrichment, and new Fall 2017 Culture. Typically Offered Fall, Spring, Summer. |

| PHIL218     | Philosophy  | AS     | Undergraduate | 3 |
|             | This course is designed to develop a knowledge and understanding of the issues surrounding the discussion of sex and love, as well as issues related to the conception of gender. This course also considers the various social/political and ethical issues arising from sex and love, including the status of marriage and the family, adultery, pornography, prostitution, sexual perversion, homosexual relations, and premarital sex. This course meets General Education requirements: Cultural Enrichment and Race/Ethnicity/Gender, and new Fall 2017 Culture and US Diversity. Prerequisites: ENGL 150. Typically Offered Fall only. |

| PHIL220     | Philosophy  | AS     | Undergraduate | 3 |
|             | Moral principles and theories applied to health related issues, e.g. euthanasia, organ donation, AIDS, paternalism and reproductive issues. This course meets General Education requirements: Cultural Enrichment, and new Fall 2017 Culture. Typically Offered Fall, Spring, Summer. |

| PHIL305     | Philosophy  | AS     | Undergraduate | 3 |
|             | The course surveys theories of feminism and gender and their cultural contexts by reading and studying many of the most important feminist and gender philosophers and political and cultural writers. Study will include issues of race, sexuality, power, class and social construction. This course meets General Education requirements Race/Ethnicity/Gender Issues and Cultural Enrichment, and new Fall 2017 Culture and US Diversity. Prerequisites: ENGL 250. Typically Offered Winter Only, Odd Years. |

| PHIL310     | Philosophy  | AS     | Undergraduate | 3 |
|             | A survey course covering the major figures and movements of 20th century philosophy, which may include Dewey, James, Wittgenstein, Rawls, Heidegger, Foucault and Derrida. Emphasis varies with instructor. This course meets General Education requirements: Cultural Enrichment, and new Fall 2017 Culture. Prerequisites: ENGL 250. Typically Offered Fall, Spring and Summer. |
PHIL315 Philosophy AS Undergraduate 3
This course offers a philosophical examination of man in society, the foundation of social and political institutions, and the nature of political obligation. Philosophical readings range from the classical (Plato and Aristotle) to the contemporary (Cornel West and Martha Nussbaum), and their theories will be applied to current news items to gain a deeper understanding of world events. This course meets General Education requirements: Cultural Enrichment and Global Consciousness, and new Fall 2017 Culture and Global Diversity. Prerequisites: ENGL 150. Typically Offered Fall odd year only.

PHIL316 Philosophy AS Undergraduate 3
Students will summarize key arguments in the tradition of ethics; students will test those arguments against real world dilemmas in personal and professional contexts; students will formulate solutions and recommendations to ethical issues facing people in leadership/management positions; and, integrate knowledge from multiple disciplines while working in teams to craft an ethical response that forestalls crises. This course meets General Education Requirements: Cultural Enrichment, and new Fall 2017 Culture. Prerequisites: ENGL 150. Typically offered on demand.

PHIL320 Philosophy AS Undergraduate 3
Ethics in health-related issues, especially as raised by scientific, technological, and cultural societal change. This course meets General Education requirements: Cultural Enrichment, and new Fall 2017 Culture. Prerequisites: ENGL 150. Typically Offered Fall, Spring, Summer.

PHIL350 Philosophy AS Undergraduate 3
A study of variable topics in Philosophy. The course may focus on broad topics like “Environmental Ethics” or on a narrow topic like “Philosophy of Sport and Leisure.” The topic will change with each offering and will be announced when the course is listed. This course meets General Education requirements for Cultural Enrichment and new Fall 2017 Culture. Prerequisite: ENGL 250. Typically Offered in Fall, Spring, Summer.

PHOT101 Photography BU Undergraduate 3
Will explore the educational and cultural significance that photography has had on our society. Will emphasize the history, technology, and art of original photography. Lectures and assignments are designed to build a working knowledge of a camera with manual controls and learn to take more creative pictures using various photographic composition techniques. The course is also intended to create awareness of the impact photography has on our past, present, and future. This course meets General Education requirements: Cultural Enrichment and new Fall 2017 Culture. Pre-Requisites: Need a digital camera with manual exposure control (AP, SP, M) by the third week of class. Typically Offered Fall, Spring, Summer.
<table>
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<tr>
<th>Course Code</th>
<th>Subject</th>
<th>Level</th>
<th>Degree</th>
<th>Credits</th>
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<tbody>
<tr>
<td>PHSC105</td>
<td>Physical Sciences</td>
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<td>PHSC110</td>
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<td>PHSC115</td>
<td>Physical Sciences</td>
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<td>PHYS130</td>
<td>Physics</td>
<td>AS</td>
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<tr>
<td>PHYS211</td>
<td>Physics</td>
<td>AS</td>
<td>Undergraduate</td>
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</table>

This course will introduce students to the important earth science concepts that provide a foundation for viewing the Earth as a system powered by heat energy from the Sun and Earth's interior, and consisting of the geosphere, hydrosphere, atmosphere, and biosphere. The environment in which we all live results from the continuous exchange of matter and energy within and between these earth system spheres. An important theme throughout the course will be the impact of human interactions with these spheres. This course meets the Natural Science general education requirements. Typically offered summer.

This introductory course explores important concepts of geology, oceanography, meteorology and astronomy in order to understand Earth as a system in which land, water, air and space continually interact through the exchange of matter and energy to form our physical environment. The impact of humans on the earth system is an important theme throughout the course.

This course meets general education requirements for scientific understanding. Typically Offered On Demand

This course will focus on fundamental concepts of physics and chemistry, including the scientific method, matter and its properties and transformations, motion and energy, the underlying particulate nature of matter, and electricity.

Laboratory exercises will be used as the basis for laying the foundation for understanding these concepts. This course is suitable for students in elementary education and meets the general education requirements for Scientific Understanding and new Fall 2017 Natural Sciences. Typically Offered On Demand

A survey of physical concepts including mechanics, wave motion, heat, electricity and magnetism, light, and selected topics in modern physics. A minimum of mathematics is utilized to develop problem solving skills.

Emphasis is placed on concept development so that science in a modern society may be recognized and appreciated. This course meets General Education requirements: Scientific Understanding, Lab and new Fall 2017 Natural Sciences Lab. Pre-Requisites: MATH 110 with a grade of C- or better or 19 on ACT or 460 on pre 2016 SAT or 500 post 2016 SAT. Typically Offered Fall, Spring

Basic concepts and applications of motion, force, energy, fluids, heat and sound. This course meets General Education requirements: Scientific Understanding, Lab, and new Fall 2017 Natural Sciences and Natural Sciences Lab. Pre-Requisites: MATH 116 or 120 with a grade of C- or better or 26 on ACT or 590 on pre 2016 SAT or 610 post 2016 SAT. Typically Offered Fall, Spring, Summer
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<td>PHYS212</td>
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<td>PHYS241</td>
<td>Physics</td>
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<tr>
<td>PHYS242</td>
<td>Physics</td>
<td>AS</td>
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<td>PHYS260</td>
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<td>PHYS261</td>
<td>Physics</td>
<td>AS</td>
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<td>3</td>
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<tr>
<td>PHYS311</td>
<td>Physics</td>
<td>AS</td>
<td>Undergraduate</td>
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</table>

Continuation of PHYS 211. Basic concepts and applications of electricity, magnetism, light and modern physics. This course meets General Education requirements: Scientific Understanding, Lab, and new Fall 2017 Natural Sciences and Natural Sciences Lab. Pre-Requisites: PHYS 211 with a grade of C- or better. Typically Offered Fall, Spring, Summer

Principles and practical applications of motion, force, energy, fluids, heat and sound. Intended for science and engineering majors. Calculus is utilized. This course meets General Education requirements: Scientific Understanding Lab, and new Fall 2017 Natural Sciences and Natural Sciences Lab. Pre-Requisites: MATH 220 with a grade of C- or better. Typically Offered Fall Only

Continuation of PHYS 241. Principles and practical applications of electricity, magnetism, light and modern physics. This course meets General Education requirements: Scientific Understanding Lab, and new Fall 2017 Natural Sciences and Natural Sciences Lab. Pre-Requisites: PHYS 241 and MATH 230 with a grade of C- or better. Typically Offered Spring Only

Concepts of mechanical equilibrium involving forces and moments. Vector methods will be utilized in both two and three dimensional situations. Force analysis of structures and beams, free-body diagrams of rigid objects, simple and complex friction situations, and centroids and moments of inertia of objects will be examined in detail. Co-Requisites: PHYS 241 and Math 230. Typically Offered On Demand

Concepts of mechanical dynamics involving objects in motion. Vector calculus methods will be utilized extensively. Newton's laws of force and motion are applied to particle systems and rigid body situations in various frames of reference. Linear and angular momentum and energy concepts are applied to a variety of dynamic situations. Co-Requisites: PHYS 242 and Math 330. Typically Offered On Demand

Presents the fundamental topics in modern physics to students who have already completed a full year of introductory physics. The concepts and practical applications of special relativity, quantum physics, atomic and subatomic structure, and solid state physics will be presented. Pre-Requisites: PHYS 212 or PHYS 242 & MATH 216 or Math 220. Typically Offered Spring Only
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<tr>
<td>PHYS460</td>
<td>Physics AS Undergraduate</td>
<td>1 TO 3</td>
<td>Undergraduate</td>
<td>1 TO 3</td>
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<tr>
<td>PLSC121</td>
<td>Political Science AS Undergraduate</td>
<td>3</td>
<td>Undergraduate</td>
<td>3</td>
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<tr>
<td>PLSC122</td>
<td>Political Science AS Undergraduate</td>
<td>3</td>
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<tr>
<td>PLSC221</td>
<td>Political Science AS Undergraduate</td>
<td>3</td>
<td>Undergraduate</td>
<td>3</td>
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</tbody>
</table>

PHYS 450 offers future educators the opportunity to integrate their science content knowledge, pedagogical knowledge as it applies to teaching elementary or secondary school students, and pedagogical content knowledge as it applies to science learning. Students will experience science instruction in the laboratory context, assess the effectiveness of laboratory experiments, and learn about the resources available to support laboratory instruction. This course meets General Education requirements: Scientific Understanding, Lab and new Fall 2017 Natural Sciences, Lab. Pre-Requisites: PHYS 212 or PHYS 242 or INPS 320. Typically Offered Summer Only

A required course for the minor in physics teaching. Students design, develop, implement and present an original laboratory exercise and lecture presentation on a current physics topic. Co-Requisites: PHYS 450. Typically Offered Summer Only

Explores basic political concepts and what distinguishes democracy from other forms of government. Traces formative ideas and forces that shaped U.S. Constitution. Expansion of civil liberties and rights is examined. Attention to relations of national, state and local governments. Shows how public opinion through the media, interest groups, political parties, and elections makes demands on—and places restraints on—government. What new challenges for government arise from scientific, demographic, economic, and social change? This course meets General Education requirements: Social Awareness, Race/Ethnicity/Gender Issues; Social Foundations and new Fall 2017 Self and Society, U.S. Diversity and Self and Society Foundations. Typically Offered Fall, Spring, Summer

Careful examination of the institutions of American national government and its policies. How the legislative, executive, and judicial branches work with—and against—each other to shape public policy. Explores the labyrinth of the bureaucracy. The complex interactions of these political structures are illustrated with current events. Considerable time is given to the resulting policies on the budget, the economy, technology, health care, welfare, military, foreign relations, and issues of gender and equality. This course meets General Education requirements: Social Awareness Foundations and Race/Ethnicity/Gender Issues and new Fall 2017 Self and Society Foundations and U.S. Diversity. Typically Offered Fall, Spring, Summer

Origin, structure, types, functions, and development of political parties, and the corresponding role of interest groups and public opinion in the United States. Critical evaluation of the ways political parties provide opportunities and leadership for a variety of groups and individuals to participate in the election, governing, and policy processes. This course meets General Education requirements: Social Awareness, Race/Ethnicity/Gender Issues, and new Fall 2017 Self and Society, U.S Diversity. Typically Offered Spring Only
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<tr>
<td>PLSC225</td>
<td>Political Science</td>
<td>AS</td>
<td>3</td>
<td>Study of public policy formation in the political system, and the decision making and problem solving processes and procedures involved. Emphasis on how and why political, social, and economic change takes place in society. Examines informal and formal demands upon the system, pluralistic and elite response, representative democratic behavior, and international, national and community power as they relate to political decision making and policy formation. This course meets General Education requirements: Social Awareness, Race/Ethnicity/Gender Issues, and new Fall 2017 Self and Society, US Diversity. Pre-Requisites: Sophomore Status. Typically Offered On Demand</td>
</tr>
<tr>
<td>PLSC245</td>
<td>Political Science</td>
<td>AS</td>
<td>3</td>
<td>This course focuses upon a variety of dilemmas in U.S. foreign policy-making determined by recent history and current events. Specific topics are chosen annually by the World Affairs Council and have a regional/thematic focus. The course is also designed to coincide with the World Affairs Council’s lecture series which are web case to the class. This course meets General Education requirements for Social Awareness and Global Consciousness, and new Fall 2017 Self and Society and Global Diversity. Typically Offered Spring.</td>
</tr>
<tr>
<td>PLSC251</td>
<td>Political Science</td>
<td>AS</td>
<td>3</td>
<td>Principles and problems of state, local, national, and international administrative organizations. The how and why of organizational and bureaucratic decision making. Focuses upon the coordination, management, and responsibilities of public servants. This course meets General Education requirements: Social Awareness, Race/Ethnicity/Gender Issues, new Fall 2017 U.S Diversity, and Self and Society. Pre-Requisites: Sophomore Status. Typically Offered Fall Only</td>
</tr>
<tr>
<td>PLSC301</td>
<td>Political Science</td>
<td>AS</td>
<td>3</td>
<td>This course involves a comparative approach in order to achieve an understanding and appreciation of the potentials and resources of developing nations in Asia, Africa, and Latin America. Models of development, the population issue and the status of women will be explored. Their relations with each other, to the United Nations, to non-governmental organizations and to the United States will also be examined. Pre-Requisites: Junior Status. Typically Offered Spring Only</td>
</tr>
<tr>
<td>PLSC311</td>
<td>Political Science</td>
<td>AS</td>
<td>3</td>
<td>State and local governments across the United States are studied with emphasis on legislative, executive, and judicial process, administrative functions, personnel and fiscal problems, and intergovernmental relations. Special attention is given to the vitality and ranking of Michigan government and politics with reference to socio-economic, quality of life issues. This course meets General Education requirements: Social Awareness, Race/Ethnicity/Gender Issues. Meets General Education requirements for Collaboration and Problem Solving, new Fall 2017 Collaboration, U.S. Diversity, Problem Solving, Self and Society. Typically Offered Spring Only</td>
</tr>
</tbody>
</table>
PLSC323 Political Science AS Undergraduate 3
Explores the web of arrangements for handling movements of people, trade, and ideas across national boundaries. The United Nations and its forerunners are examined, as well as agencies to handle trade, finance, telecommunications, law enforcement, and other specialized concerns. Multinational corporations and independent organizations like Amnesty International, Red Cross, Greenpeace, and labor unions are looked at. What are the special concerns of non-Western nations? Does European unification provide a model for other regions? This course meets General Education requirements: Social Awareness, Global Consciousness; Race/Ethnicity/Gender Issues, Collaboration and Problem Solving. Typically Offered Spring, Summer

PLSC331 Political Science AS Undergraduate 3
Government and politics of major Western and non-Western world powers. Designed to give students a better understanding of American politics through comparisons with the politics of major world powers. The characteristics of other kinds of governments and nondemocratic governments will be provided, and a comparative evaluation of political developments in other parts of the world will be made. This course meets General Education requirements: Social Awareness, Global Consciousness, Race/Ethnicity/Gender Issues and new Fall 2017 Global Diversity, US Diversity and Self and Society. Typically Offered Fall, Summer

PLSC341 Political Science AS Undergraduate 3
Traces shifting patterns of power in 20th Century international politics. Is a new pattern emerging? What is America’s place in the world? Explores the roots of American foreign policy. Current events are used to illustrate basic principles of state behavior. Examines nationalism, terrorism, trade, economic development, military trends, arms control, diplomacy, and Third World issues. Why do nations go to war? What are the conditions of peace? Class discussion is encouraged. This course meets general education requirements: Social Awareness, Global Consciousness; Race/Ethnicity/Gender Issues and new Fall 2017 Global Diversity, US Diversity and Self and Society. Typically Offered Spring, Summer

PLSC375 Political Science AS Undergraduate 3
The two major issue areas of constitutional law, the exercise of governmental power and the extension of civil liberties/civil rights, will be covered by way of landmark Supreme Court decisions. How the Supreme Court functions and makes decisions will be a major topic. The jurisprudence issue of judicial activism versus judicial restraint also will guide this course. This course meets General Education requirements: Social Awareness and new Fall 2017 Self and Society. Pre-Requisites: Junior Status. Typically Offered Fall Only
PLSC410 Political Science AS Undergraduate 3

Provides a survey of the interrelationships between the media and the political system. Focuses upon (1) the culture of the media, (2) media, public, and private actors, (3) the media and the government, (4) news making and reporting, (5) political socialization, (6) the media and democracy, (7) the media and decision-making institutions, (8) the media and public policy, and (9) future trends and new technologies. This course meets General Education requirements: Social Awareness and Race/Ethnicity/Gender and new Fall 2017 Self and Society, and U.S. Diversity. Pre-Requisites: Instructor approval. Typically Offered Spring Only

PLSC411 Political Science AS Undergraduate 3

This course examines planning concepts and the role of planning in the formulation of public policy and the meeting of critical social problems regarding "livability" that shape our urban and regional environments. Also the uses of planning will be covered to show how people's concerns about their quality of life can be accommodated while providing employment, services and facilities. This course will delineate the impacts of people upon their environment, society, and governments. This course meets General Education requirements: Social Awareness and new Fall 2017 Self and Society. Pre-Requisites: PLSC 121 or PLSC 122; & PLSC 251. Typically Offered Fall Only, Odd Years

PLSC421 Political Science AS Undergraduate 3

This course examines the means through which public administrators allocate human abilities to fulfill program goals and choose among competing political, social, and economic priorities. In addition, job analysis and classification methods as well as employment compensation and benefits programs are reviewed. Human resource planning and forecasting is also examined. Pre-Requisites: PLSC 121 or PLSC 122; & PLSC 251. Typically Offered Fall Only, Even Year

The making of budgets including revenue forecasting, tax policy, capital budgeting, debt management, economic development, purchasing and inventory, unions and pensions, and policy issues will be covered. A practical, case study approach at the local government level will be used. Pre-Requisites: PLSC 121 or PLSC 122; & PLSC 251. Typically Offered Spring Only, Even Ye

PLSC465 Political Science AS Undergraduate 3

A seminar devoted to capping the student's entire academic training in the Political Science Program. Summarizes and integrates political science values, knowledge, and skills developed as a result of the student's classroom experience. This course meets General Education requirements: Social Awareness and new Fall 2017 Self and Society. Pre-Requisites: Political Science students' only and senior status and PLSC 491. Typically Offered Summer Only

PLSC481 Political Science AS Undergraduate 3

A seminar devoted to capping the student's entire academic training in the Political Science Program. Summarizes and integrates political science values, knowledge, and skills developed as a result of the student's classroom experience. This course meets General Education requirements: Social Awareness and new Fall 2017 Self and Society. Pre-Requisites: Political Science students' only and senior status and PLSC 491. Typically Offered Summer Only
Consists of actual field work and experience in a political or public organization. The student will spend 160 clock hours during the semester in the placement organization, with time devoted to assisting practicing professionals in conducting their daily organizational activities. This course meets General Education requirements: Social Awareness/ Self and Society. Pre-Requisites: Political Science students' only & senior status. Typically Offered Fall, Spring, Summer

Provides the student with the current business related skills needed to accomplish the job duties typical to those in plastics engineering. It assumes the student has had little exposure to these skills on a direct, participatory level. It explores and enhances tools which assure success in a manufacturing environment. It provides the skills which make the implementation of the engineering technologist's knowledge of (and with) products, processes, tooling, and materials both evolve and continuously improve. It provides management tools which assist in completing programs and projects, helping to optimize processes, systems to assure customer satisfaction, and by which success can be measured. Pre-Requisites: Plastics or Rubber Engineering Technology students only. Meets General Education requirements for Collaboration and Problem Solving. Typically Offered On Demand

The student will study the concepts of part design starting with defining the "Customer/End-Use Requirements", through the "Design Cycle" guideline and product application. Special emphasis will be given to understanding the role of these critical elements: Material selection, prototyping and modeling, product drawing, review of basic design rules, form, fit and function in product application, part quality, relationship of tool design to part design, advanced tooling concepts, process factors including use of CAD and flow software, part costing and design to cost, end-use factors, and mechanical design with plastic. Pre-Requisites: Plastics or Rubber Engineering Technology students only. Typically Offered Spring

This survey course will review all the major polymeric materials currently commercially available. Major attributes, manufacturers and applications will be discussed. The student will learn correct materials handling methods, including safety with respect to drying, storage, regrinding (reuse), and compounding or blending and additives. Students will be shown the advantages and disadvantages of recycling. The learner will be presented with a historical perspective on each material and its chemical structure. Pre-Requisites: Plastics or Rubber Engineering Technology students only. Typically Offered Fall Only
A theoretical approach to injection molding. Plastics processing is examined from a molecular perspective. Various engineering plastics are described in rheological terms of flow response to forces applied. Advanced troubleshooting and process optimization is dealt with in terms of process monitoring and cavity pressure sensing. Varying process parameters, cycle times, and moisture are evaluated for their effects on the final parts. Various types of injection molding techniques are introduced. Pre-Requisites: Plastics or Rubber Engineering Technology students only. Meets General Education requirements for Collaboration and Problem Solving. Typically Offered Fall.

Provides the student in the manufacturing engineering technology program with the basic terminology of plastics and elastomers, the nature of the plastics and rubber industry, the end-use applications of plastics and rubber, the basic operational processing techniques for plastics and rubber, and the safety procedures applicable to the plastics and rubber industry. Pre-Requisites: Manufacturing Engineering Tech and Industrial Chemistry students only. Typically Offered Spring Only

Demonstrates the procedures one should follow to select plastics for an application. Major plastics fabrication techniques and the main plastics design "rules of thumb" are reviewed. Classwork covers plastics failure mechanisms and weakness which plastics materials exhibit. Emphasis is on plastics materials, specifications, economics, and historical application areas. Pre-Requisites: Junior status & Product Design Eng Tech, Performance Motorsports and Industrial Chemistry students only. Typically Offered Spring Only

Students will be introduced to common processing methods and equipment for the rubber industry. Processes covered include: Compression Molding, Transfer Molding, Injection Molding, Extrusion (hot and Cold Feed) with continuous vulcanization, Calendaring, and Autoclave Curing. Each process will be covered in lecture at a high level, introducing students to the theory behind each practice. Labs will build on the information presented in the lecture content. With the students doing simple design of experiments and basic troubleshooting. The lab will build on the students’ knowledge gained in the PPET 280 course. The student will compound recipes and complete the necessary rheological testing and compare their results to how the material performs in each process. This class is meant to introduce students to the processes associated with the rubber industry. Give them the knowledge and skills to do basic troubleshooting and speak in proper terminology when discussing rubber processing on internships. Prerequisites: PPET 280. Typically offered Spring.
The student will be introduced to all aspects of composite materials including:
(1) History of Composites/Future of Composites, (2) Composite Materials, (3)
Composite Processing, (4) Use and Applications of Composites, (5) Composite
Issues (Design, Cost, Environmental). This course provides the student with an
understanding of the effects of combining other materials with plastics to
produce composite materials. The practical applications of plastics composite
materials are stressed to emphasize the value of plastics composite products.
Pre-Requisites: BS Plastics Students only or Instructor approval. Typically
Offered Fall Only, Odd Years

This course will provide students with hands-on training to prepare
rubber compounds and samples for ASTM tests. Students will be taught with
the standard material classification system such as line-call outs used by
the industry according to ASTM and SAE. They will practice with safety
and operation of the compounding equipment and instruments for testing.
They will become familiar with standard ASTM test methods for
various commercially important rubbers. At the end of each test, students will
apply statistics required by the ASTM to report their tests in the format of
technical reports generally acceptable by the industry. Prerequisites: PPET 280.
Typically offered Fall.

The student works on-the-job with one cooperating firm under the guidance
of both the University and the firm personnel to broaden and reinforce
knowledge of plastics materials, processing, production tooling, quality
control, engineering, sales, design, and production supervision. Pre-
Requisites: Plastics or Rubber Eng Tech. students only. Typically Offered Fall,
Spring, Summer

This class covers the current topics relative to the business and operational
aspects of a plastics company. It focuses on the economic aspects relative to
profitability and to making sound financial decisions. It also includes topics
relative to modern part packaging technology. Discussions include concepts
related to company ownership, financial risks, fiscal responsibility, capital
purchases, quoting, cost structures, and the principle cost and practical
implementation issues of packaging. Pre-Requisites: Plastics or Rubber
Engineering Technology students only. Typically Offered Spring Only

Provides the student with a basic knowledge of secondary processes
associated with plastics product manufacturing. The course develops and
expands the students’ understanding of the complete plastics manufacturing
process which includes assembly, decorating, and packaging of plastics parts.
Pre-Requisites: Plastics or Rubber Engineering Technology students only.
Typically Offered Fall Only
Students will apply chemistry of raw materials and elastomers and techniques used in rubber compounding. They will be guided to explore the composition of various types of rubber commonly used in the industry, emphasizing on elastomers selection, curing package, filler system, plasticizers, and other compounding additives such as stabilizing agents, processing oil and processing aid. They will apply and practice “designed experiments” to evaluate key ingredients and explore their synergy to optimize processability, performance, and cost of vulcanizates, and preparing technical reports suitable for presentation in technical meetings.

Prerequisites: PPET 280. Typically offered Fall.

Students will expand on knowledge gained in PLTS361 and PLTS362. The class will focus on machine controls and process parameters of the equipment in the lab. Students will construct detailed design of experiments around multiple variables associated with the process. Samples will be collected and analyzed to form a deeper understanding of the machine parameters impact on the process and the final part. Students will also explore tooling design and its impact to the process / product. A look will be taken into the various components and design elements of rubber tooling (molds and extrusion dies). Instructor will also explore product design with the assistance of industry professionals. Some common rubber parts will be reviewed and discussed how they go from concept to final product. Examining the approach a designer takes from a material, part geometry, part function, tooling, and process considerations.

Prerequisites: PPET 280. Typically offered Spring.

A series of special presentations designed to prepare the prospective plastics engineering technology graduate for entry into the plastics industry workforce. Verbal and written communications, interviewing and job search techniques, social interaction, industry structure, professional organizations, peer and supervisor relationships are presented by discussion, role playing, and case studies.

Prerequisites: Plastics or Rubber Engineering Technology students only. Typically offered Fall.

This is a survey course designed to acquaint potential Plastics Majors and NON Plastics Majors with basic concepts of Plastics and Elastomer Technology. Students will become familiar with history, basic materials, application/design, processing, markets, and future of Plastics and Elastomer Technology.

Students require no previous background in the subject. Instructor permission required. Typically offered in Fall.

This course assumes the student has little or no prior knowledge of the manufacturing activities of making plastics or rubber products. The course provides the student with an “awareness” level of the basics of making polymer based products as a manufacturing industry. Instructor permission required. Typically offered in Fall.
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<tr>
<th>Course Code</th>
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<th>Credits</th>
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<th>Description</th>
<th>Prerequisites</th>
<th>Typically Offered</th>
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<tbody>
<tr>
<td>PPET127</td>
<td>Plastics/Polymer Eng Tech.</td>
<td>4</td>
<td>Undergraduate</td>
<td>This is a polymer processing course that assumes the student has no prior knowledge of typical methods used to create polymer products. The course is directed toward providing the student with a “functional” level of operations of the FSU processing lab and of the core polymer industry processing equipment. Prerequisites: PPET 115 of Instructor permission. Typically offered in Spring.</td>
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<tr>
<td>PPET131</td>
<td>Plastics/Polymer Eng Tech.</td>
<td>2</td>
<td>Undergraduate</td>
<td>This course will provide the student with knowledge and experience in programming a linear robot for use in a plastics manufacturing environment. The course seeks to relate the robot control parameters to their effects on the automation components and ultimately to the efficiency of the process. The student will program the robot for injection molding production runs. Added emphasis will be placed on primary troubleshooting and process optimization. Typically offered Fall.</td>
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<tr>
<td>PPET193</td>
<td>Plastics/Polymer Eng Tech.</td>
<td>4</td>
<td>Undergraduate</td>
<td>This course places students into an industrial setting for 10 weeks of supervised, on-the-job training with a plastics/rubber manufacturer, processor, or related firm. The professional experience that the student will receive is a combined effort of the training site, university, and student. Students will be involved in the production of polymeric products and the daily activities of engineers in the plastics/rubber industry. Prerequisites: Acceptance into the AAS PPET program. Typically offered Fall, Spring and Summer.</td>
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<tr>
<td>PPET211</td>
<td>Plastics/Polymer Eng Tech.</td>
<td>5</td>
<td>Undergraduate</td>
<td>This course will provide the student with knowledge and experience in solving common problems encountered running injection molding production equipment. The course seeks to relate the machine control parameters to their effects on the process and ultimately to the final part quality. The student will set-up processes for production runs. Added emphasis will be placed on primary troubleshooting and process optimization. Prerequisites: PPET 100 and PPET 115 or PLTS 325. Typically offered in Spring.</td>
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<tr>
<td>PPET212</td>
<td>Plastics/Polymer Eng Tech.</td>
<td>4</td>
<td>Undergraduate</td>
<td>This course will provide the student with the knowledge of plastics product and tool design as it pertains to successful production tooling. Special emphasis will be given to understanding the role of the following critical elements in Plastic Product and Tool Design: Plastic Material selection, Mold Filling analysis, Mold Components and their functions, Compression/Transfer Mold Design, Injection Mold Design, Plastic Part Design Criteria, Blow Mold Design, Extrusion/ Die Design, Rotational Mold Design, Thermoform Mold Design, Heating and Cooling of Molds, Runner and Gate Design, Tool Steels/Heat Treating selection, Geometric Dimensioning and Tolerancing. Prerequisites: PPET 100 and ETEC 140. Typically offered in Fall.</td>
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This course is designed to provide an introductory overview of the medical device industry, and its unique design and manufacturing challenges. The course first examines the industry itself, reviewing basic industry statistics, current trends, and the many types of products that make up the medical device industry. The course is focused on defining and understanding of medical devices in the growing medical market. The other accompanying theme is the gain an understanding of device design and how to innovate to create and then sustain a medical product. Prerequisites: Entrance into the Plastics/Polymer technology program or permission from instructor. Typically offered in Fall, Spring, Summer.

The course focuses on the taxonomy of plastics and polymer materials, an overview of their key characteristics, an overview of the companies that produce these materials, and the relationship between materials costs and feedback materials. Additionally, there is an overview of additive materials and their basic influences on plastic compounds. There will be an overview of the sustainability issues associated with plastics materials and plastic product manufacturers. Prerequisites: PPET 100. Typically offered Spring.

This course acquaints students with the concepts of: The procedures used in evaluating plastics materials, test samples, and molded parts; Standard testing methods used for evaluation of plastics materials in particular ASTM and ISO; Interpretation of testing results with respect to raw materials selection, processing parameters, and part design considerations; Basic quality control/quality assurance techniques related to plastic testing. Prerequisites: PPET 100, MATH 115, CHEM 121. Typically offered in Fall.

This is an introductory polymer technology course in the AAS Plastics and Polymer Engineering Technology curriculum. The course assumes the student has prior knowledge of polymer materials, processing methods, and the plastics industry. The course provides the student with a working knowledge of the basics of the plastics packaging industry. The student will be exposed to the requirements parameters of, issues facing, and career opportunities within this growing segment of the plastics industry. Prerequisites: Acceptance into AAS PPET program or instructor permission. Typically offered Fall.

This is an introductory rubber technology course in the AAS Plastics and Polymer Engineering Technology curriculum. The course assumes the student has no, or limited, prior knowledge of the rubber industry. The course is directed toward providing the student with a foundation of rubber technology, such as the nature of the industry, applications and basic processing techniques, and the safety of operating equipments commonly used in the industry, before entering the BS program of Rubber Engineering Technology. Typically offered Fall.
PPET284 Plastics/Polymer Eng Tech. TE Undergraduate 2

This course acquaints students with various categories of TPE, such as thermoplastic olefins (TPO), thermoplastic urethanes (TPU), ionomers, and thermoplastic vulcanizates (TPV). Students will learn the unique properties of TPEs because of their morphology and processability so that they behave like “rubber” while being able to be processed like thermoplastics. In addition to the characteristics and fabrication of different TPEs, students will also learn the “dynamic vulcanization” to prepare different TPVs. Prerequisites: PPET 100 or instructor approval. Typically offered in Fall.

PREL201 Public Relations BU Undergraduate 3

This course serves two primary purposes: 1) as a practical orientation to jobs and basic skills in the public relations industry from the framework of PR as an ethical leadership function, and; 2) initiating students in career preparation to gain internships and, ultimately, a job in the field. Students begin the process of ethical leadership training and career development that continues throughout the entire curriculum. Membership in Public Relations Student Society of America (PRSSA) is also discussed. Prerequisites: PR Major, Sophomore standing. Typically offered Fall, Spring, Summer.

PREL240 Public Relations BU Undergraduate 3

PREL 240 is a thorough overview of the core concepts of public relations, which includes: a historical summary of the industry; key PR & communication theories; foundational codes of law & ethics; basic job functions (tactics, strategy, skills & abilities); and an overview of key PR industries (i.e. employee relations, media relations, community relations, consumer relations, etc.). Two overarching principles are emphasized throughout the course (and program): 1) PR as a critical business leadership component, and 2) the importance of PR in organizational reputation management. Pre-Requisites: ENGL 150. Typically Offered Fall, Spring, Summer.

PREL341 Public Relations BU Undergraduate 4

PREL 341 is heavily focused on PR writing (the number one skill in PR). This course requires students to create a wide variety of relevant public relations tactics (new releases, feature stories, pitch emails, blog posts, etc.). Students are held to high standards of quality and excellence, particularly in writing skills and general industry professionalism. Additionally, real-world traits of critical thinking, initiative, and resourcefulness will be key to student success. Pre-requisites: ENGL 150 and ENGL 250 and PREL 240, all with a grade of B or higher. Typically offered Fall, Spring, Summer.

Application of ethical and legal standards and requirements to the professional practice of public relations. Study of ethical concepts and their application through the PRSA, IABC, SPJ and related professional codes of conduct and ethical standards. The laws and government regulations as applied to public relations practices and programs including privacy, libel, copyright, financial disclosure, etc. will be studied, analyzed and applied. Prerequisites: PREL 240. Typically Offered Spring only.
The heart of public relations is reputation management. This ties PR directly to the bottom line, but many leaders overlook this vital part of the business. Today’s leaders must learn the value of public relations and how it helps (or hurts) the organization’s reputation. This class teaches how good, effective PR builds from an ethical foundation, cultivating a favorable reputation over time through strategic relationships, goodwill, transparency, effective crisis communication, and, ultimately, increased shareholder value. Students who take this course are expected to have strong communication skills (particularly writing); this is strictly enforced. Prerequisites: Junior status. Typically offered Spring.

PREL 440 is an in-depth study of public relations strategies. This training is done primarily through the combination of two channels: 1) research, analysis, and presentation of several classic and current PR cases from a variety of industries, and 2) detailed, thorough, and applied practice of several four-step PR plans. Students will also be required to produce (or participate in) a variety of real-world PR tactics, while also building their professional network. PREL 440 also continues the practice of high expectations in regard to professionalism, ethics, quality, and excellence. Pre-requisite: PREL 341 w/C or higher. Typically offered: Fall, Spring, Summer.

PREL 455 is the capstone course for students completing the public relations major and pursuing a career in the profession. The class is structured as a PR consulting agency with students taking the role of account executives applying previously learned critical strategic thinking to research, plan, prepare, evaluate, and present a public relations campaigns for a real-world client. PREL 455 also continues the practice of high expectations in regard to professionalism, ethics, quality, and excellence. Pre-requisite: PREL 440 w/C or higher. Typically Offered Spring Only

Internship experience with cooperating employer organizations in business, industry, government, and education. The internship experience is designed to be relevant to the student's academic pursuits, personal development, and professional preparation. The internship must last a minimum of 10 weeks. Each credit hour requires a minimum of 80 internship hours. A 3 credit internship requires a minimum of 240 internship hours over at least 10 weeks. Pre-Requisites: Completion of 56 semester hours and Department Approval. Typically Offered Fall, Spring, Summer
**PROJ320 Project Management BU Undergraduate 3**

This course examines the foundations of project management as defined by experts including Eliyahu Goldratt and the Project Management Institute. A review of the project management lifecycle and knowledge areas is conducted using resources such as the Project Management Body of Knowledge, course textbooks, and case studies. The course focuses on applying the techniques and tools of project management to specific deliverables including the Work Breakdown Structure (WBS), schedule, budget, risk management plan, RACI chart and others. Prerequisites: Sophomore standing or instructor approval. Typically offered Fall, Spring, Summer.

**PROJ325 Project Management BU Undergraduate 3**

Students will explore agile project methodologies. Agile project management will be compared and contrasted to traditional project management. The Scrum framework will be incorporated into the planning, organizing, delivering, and motivating agile project teams to deliver business value. The roles and responsibilities of a Scrum team (product owner, scrum master, and team) will be defined, analyzed and applied to a project. Prerequisites: Sophomore status or instructor approval. Typically offered Fall, Spring, Summer.

**PROJ350 Project Management BU Undergraduate 3**

This course will build on project management fundamentals and evaluate various project management techniques used to build project schedules including time estimation, PERT, critical path, critical chain, and the use of float and buffers. This course will also examine cost estimating techniques and project budget preparation. Lastly, this course will review risk management tools and techniques including risk identification, quantitative and qualitative risk assessment, and risk mitigation strategies. Prerequisites: PROJ 320. Typically offered Fall.

Communication activities are estimated to take up to 90% of a project manager's time. This course will take an in-depth look at project communication management, team building and conflict management. Ethical issues, professional responsibility and diversity issues related to project management will be discussed. The course will examine various communication and conflict resolution techniques; the challenges of managing project teams particularly in the virtual environment; and assess various team building tools and techniques. Prerequisites: PROJ 320. Typically offered Spring.

**PROJ351 Project Management BU Undergraduate 3**

This course will examine the various challenges present in the procurement process including and bid process, vendor selection and contract management. This course will provide best practices, tools and techniques to manage procurement through its entire process from Bid Document Preparation to Contract Closure. This course will also review the Project Management Body of Knowledge in terms of preparing for the PMP and CAPM Certification tests. Prerequisites: PROJ 320, PROJ 350 and PROJ 351. Typically offered Fall and Spring.
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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Degree</th>
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<th>Description</th>
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<tbody>
<tr>
<td>PROJ444</td>
<td>Project Management</td>
<td>BU</td>
<td>3</td>
<td>This course will introduce students to project risk and quality management. Various risk management tools and techniques will be utilized to plan, identify, assess (qualitative and quantitative), mitigate, and monitor project risk. Students will also examine project quality management from the perspective of quality assurance and quality control. Ethical considerations in risk and quality management will be applied to project management. Prerequisites: PROJ 351 w/ C or higher. Typically offered Fall, Spring, Summer.</td>
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<tr>
<td>PROJ491</td>
<td>Project Management</td>
<td>BU</td>
<td>3</td>
<td>This course provides students with an opportunity to demonstrate project management knowledge, skills, and abilities through work experience with cooperating employer organizations in business, industry, government, and education. The work experience is designed to be relevant to the student's academic pursuits, personal development, and professional preparation. The work experience must last a minimum of 15 weeks with the total hours worked approved by the department head. Prerequisites: Advisor approval. Typically offered Fall, Spring and Summer.</td>
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<tr>
<td>PROJ499</td>
<td>Project Management</td>
<td>BU</td>
<td>3</td>
<td>This course provides students with an opportunity to demonstrate the knowledge, skills, and abilities that they acquired in the project management major by creating a comprehensive project management plan, which may be applied and implemented in the workplace. Students will investigate and apply emerging project management methodologies to projects. Students will also assess career paths in project management, prepare for the project management exam, or compete in project management competitions. Prerequisites: PROJ 325 and PROJ 351 and PROJ 444. Typically offered Fall, Spring, Summer.</td>
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<tr>
<td>PROJ640</td>
<td>Project Management</td>
<td>BU</td>
<td>3</td>
<td>Students examine the project management framework, including project management context and processes. Topics include project management processes, knowledge areas, life cycles and standards. Particular emphasis is placed on project integration, scope and time management. Prerequisites: Graduate Status. Typically Offered Fall, Spring, Summer.</td>
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<tr>
<td>PROJ642</td>
<td>Project Management</td>
<td>BU</td>
<td>3</td>
<td>This course will assess best practices on leadership, communication and management of virtual teams in project management. Students will gain insights into their own leadership skills through assessments and case studies. The course will also examine various communication and conflict resolution techniques and the challenges of managing virtual teams and assess various team building tools and techniques. Related topics such as ethics and diversity will be included in our discussions and learning activities. Prerequisites: PROJ 640 and Graduate Status. Typically Offered Fall, Spring Even Years, Summer Odd Years.</td>
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</table>
Students will identify and demonstrate project risk management processes including risk identification, risk assessment (qualitative and quantitative), developing a risk contingency budget, and determining risk mitigation strategies. Students will also examine project quality management including the history of quality management, identification of quality standards and goals for projects, and tools and techniques for monitoring quality in the context of ethical and cultural constraints. Prerequisites: PROJ 640 and Graduate Status. Typically Offered Fall, Spring Even Years, Summer Odd Years.

Psychology, its tools and techniques, psychological factors influencing behavior, and some applications of psychological principles to understanding behavior patterns and societal problems. Topics typically include psychological methods, development, learning and memory, motivation and social factors. Other topics will be drawn from biological factors, mental processes, individual differences and mental health. This course meets General Education requirements: Social Awareness, Social Foundations and Race/ Ethnicity/Gender Issues and new Fall 2017 Self and Society, Self and Society Foundations and U.S. Diversity. Typically Offered Fall, Spring, Summer

Introduces the use of descriptive and inferential statistics in psychological science. Covers measures of central tendency, variability, probability, confidence intervals, statistical significance and statistical power, as well as Chi-square, correlation coefficients, T-Tests, and Analysis of Variance. Includes the calculation of these statistics using computer software, and their proper interpretation. A sequence of STQM 260 and STQM 322 can be substituted for this course to fulfill the Psychology Major statistics requirement. Pre-Requisites:MATH 115 or 117 with grade of C or 24 on ACT or 560 on pre 2016 SAT or 580 post 2016 SAT; & PSYC 150. Typically Offered Fall Only

Human development from conception to old age and death. Includes a discussion of prenatal development, infancy and childhood, adolescence, adulthood, and the elderly. This course meets General Education requirements: Social Awareness, Race/Ethnicity/Gender Issues, Self and Society, US Diversity and Collaboration. Pre-Requisites:PSYC 150. Typically Offered Fall Only

Characteristics, needs, and types of services required for children who are mentally retarded, gifted, emotionally disturbed, or who have visual, hearing, speech, language, motor, or learning handicaps. This course meets General Education requirements: Social Awareness, Race/Ethnicity/Gender Issues, and new Fall 2017 Self and Society, US Diversity. Pre-Requisites: PSYC 150. Typically Offered Fall Only
Introduces psychological research design and the collection of meaningful evidence. Covers experimental, quasi experimental, correlational, and descriptive designs, as well as various methods of data collection. Explores the advantages, disadvantages and ethical implications of each method. Each student will prepare an APA-style research proposal as a final project. This course meets General Education requirements for Problem Solving. Pre-requisites: PSYC 150 & PSYC 210; or STQM 260. Typically Offered Spring Only

Psychological principles and methods relevant to human learning and their application in a variety of instructional settings. Study of learner characteristics and environmental factors involved in teaching, and the instructor’s role in facilitating the learning process. This course meets General Education requirements: Social Awareness, Race/Ethnicity/Gender Issues, and new Fall 2017 U.S. Diversity and Self and Society. Pre-requisites: PSYC 150. Typically Offered Fall, Spring, Summer

Interpersonal relationships play a pivotal role in mental health, well-being and happiness but problems with interpersonal relationships are the primary reason why individuals seek psychological therapy. This course will examine fundamentals of interpersonal relationships and what relationships tell us about broader psychological processes. The course examines parent-child relationships, friendships, and intimate sexual adult relationships, in addition to looking at research methods used to study relationships. Additional topics include attraction and mating, love, stress and conflict, divorce, loneliness, jealousy, and therapeutic interventions. Prerequisites: PSYC 150 with D or better. Typically offered Fall, Spring, Summer.

Study of influences of social situations upon the individual’s behaviors, feelings, and thoughts; social-psychological investigation of the processes of causal attribution, attitude formation and change, interpersonal attraction, conformity and obedience, helping and hurting behaviors, leadership and social facilitation, and environmental effects on social behavior. This course meets General Education requirements: Social Awareness, Race/Ethnicity/Gender Issues, Collaboration and Problem Solving. Pre-requisites: PSYC 150. Typically Offered Fall, Spring

Application of psychological principles to business and industry. Topics include selection, placement, and evaluation of employees; motivation, leadership, and worker satisfaction. The role of psychology in productive organizations and service agencies, as well as society in general. This course meets General Education requirements: Social awareness, Race/Ethnicity/Gender Issues and new Fall 2017 US Diversity and Self and Society. Pre-requisites: PSYC 150. Typically Offered Fall, Spring, Summer
PSYC331 Psychology AS Undergraduate 3

Individual differences and review of basic theoretical orientations to the understanding of personality and complex human behavior. Overview of related techniques, procedures, and findings of personality assessment and research. Discussion of critical issues in evaluation of personality theories. This course meets General Education requirements: Social Awareness, Race/Ethnicity/Gender Issues, US Diversity and Self and Society and Collaboration. Pre-Requisites: PSYC 150. Typically Offered Fall Only

This course will cover issues focusing on psychological issues inherent to all aspects of police/investigative work and administration. Students will be prepared to apply psychology within law enforcement and the legal system at large to diffuse potential conflicts and will gain a comprehensive understanding about police administration and policies on topics such as police personnel selection, instruction, and training. This course will prepare the student to apply psychological theory in a wide variety of settings like forensic assessment, clinical treatment and risk assessment procedures. Theories of criminal behavior will be covered. Specific attention is given to particular areas of concern surrounding violence and aggression, sex offences and the role of substance abuse in criminal behavior and the psychological aspects of working within a police agency. This course meets General Education requirement: Self and Society. Pre-requisite: PSYC 150. Typically offered: Fall, Spring, Summer.

Development of the individual from conception to adolescence; includes biological, family, peer, and school influences; emphasizes learning, emotional, perceptual, cognitive, moral, physical, and social development. This course meets General Education requirements: Social Awareness, Race/Ethnicity/Gender Issues, US Diversity and Self and Society and Collaboration. Pre-Requisites: PSYC 150. Typically Offered On Demand

Adolescence discussed as a stage of development. An examination of the complexities of adolescence including physical, social, cognitive, and moral development. Discussions include historical perspectives, cross cultural comparisons, and deviance. This course meets General Education requirements: Social Awareness, Race/Ethnicity/Gender Issues and Collaboration and Problem Solving. Typically Offered Fall, Spring, Summer. Pre-Requisites: PSYC 150.
This course focuses on issues related to death and dying. Some of the topics covered are: coping with loss and grief, different cultural approaches to death and funeral practices, hospice movement, suicide, developmental perspectives on death (children, adolescents and elderly). The course explores psychological issues and concepts related to death in our culture and therapeutic approaches that are used throughout history. This course meets General Education requirements: Social Awareness and new Fall 2017 Self and Society. Prerequisites: PSYC 150 or instructor permission. Typically offered Fall, odd years.

This course is an introduction to the roles and functions of psychology in forensic settings. Research and practice, with an emphasis on practices, are addressed. The major areas of application covered include police and investigative psychology, criminal psychology, psychology and the courts, victimology and victim services, and forensic psychology. This course meets General Education requirements: Social Awareness and new Fall 2017 Self and Society. Prerequisites: PSYC 150 with minimum grade of C. Typically Offered Fall even years.

Explores the biological basis of behavior. Emphasizes the structure and function of the nervous system at both the cellular and anatomical levels for all aspects of behavior, including survival, emotions, sleep, reasoning, and language. Methodological, evolutionary, behavior-genetic, developmental, abnormal-clinical and hormonal/biochemical issues are also discussed. Pre-Requisites: PSYC 150. Typically Offered Spring.

A survey of theories and research findings on how neurological and mental representations of the outside world are formed and used. Topics include psychophysical methodology, the function of sense organs and sensory systems of the brain, stimulus cues, perceptual interpretive processes, sensory and perceptual errors, space perception, speech perception, reading, and perceptual learning and development. Although all of the sense modalities are covered, vision and hearing are the emphasis. Pre-Requisites: PSYC150. Typically Offered Fall.

An examination of traditional learning theory as it has been developed through the use of operant and classical conditioning techniques. The course will draw heavily on research findings from animal studies but also discuss the application of those findings to human behavior modification, psychopathology, addiction, and education. Exercises will involve the application of conditioning techniques learned in the course. This course meets the General Education Requirements for Social Awareness and new Fall 2017 Self and Society. Prerequisites: PSYC 150. Typically offered Fall, Spring, Summer.
PSYC375 Psychology AS Undergraduate 3
This course will introduce research, practice and legal aspects of forensic child psychology. Issues related to children and adolescents as victims, witnesses and offenders will be covered. The roles of the psychologist in assessment, consultation, and testimony will be addressed. Criminal and civil matters related to forensic child psychology are addressed. Ethical principles and legal considerations of forensic practice are covered. Pre-requisite: PSYC 150. Typically offered: Fall.

PSYC406 Psychology AS Undergraduate 3
Explores basic issues in human thought and language, presenting current theory and research on attention, perception, memory, knowledge structures, comprehension, language, reasoning, and problem solving. Includes a cognition laboratory for students to make observations of human cognition using accepted scientific methods. Pre-Requirements: PSYC 150. Typically Offered Spring Only

PSYC410 Psychology AS Undergraduate 3
Theory and application of operant conditioning principles to modify behavior in infra-human animals and humans with emphasis on human behavior modification. Practical experience with techniques is gained by dealing with oneself or small groups in nonclassroom settings. This course meets General Education requirements: Social Awareness, Race/Ethnicity/Gender Issues and new Fall 2017 Self and Society, and U.S. Diversity. Pre-Requisites: PSYC 150. Typically Offered Fall, Spring, Summer

PSYC415 Psychology AS Undergraduate 3
Examines the testing, measurement, and assessment of psychological characteristics, especially including intelligence and personality. The development, administration, scoring, and evaluation of tests and assessment instruments, as well as their interpretation, limitations, correlations, application, and pitfalls are discussed. Pre-Requisites: PSYC 150 and PSYC 210 Typically Offered Spring Only, Odd Year

PSYC422 Psychology AS Undergraduate 3
Study of abnormal behavior, a search for why people behave in unexpected and maladaptive ways. An examination of the DSM IV-R categories and descriptions, historical and theoretical perspectives, critiques of concepts, diagnostics and therapies, scientific inquiry into the causes of psychopathology, and the search for ways to prevent and alleviate mental disorders. This course meets General Education requirements: Social Awareness, Race/Ethnicity/Gender Issues, Self and Society, and US Diversity and Collaboration. Prerequisites: PSYC 150 Typically Offered Spring Only

PSYC430 Psychology AS Undergraduate 3
Study of factors influencing perception of other people. Focus on the development, maintenance, and change of attitudes and stereotypes within and between cultures with analysis and discussion of current ethnic, national, and Gender issues. This course meets General Education requirements: Social Awareness, Race/Ethnicity/Gender Issues and new Fall 2017 Self and Society, and U.S. Diversity. Pre-Requisites: PSYC 150. Typically Offered On Demand
The purpose of this course is to provide a broad overview of the scientific research and the issues relevant to the psychology of gender. Topics to be covered include social and cognitive development, gender stereotypes, gender in the workplace (e.g., prejudice), evolutionary theory concerning human gender differences, relationship development, and mental health issues. This course meets General Education requirements: Social Awareness, and Race/Ethnicity/Gender Issues and new Fall 2017 Self and Society, and U.S. Diversity. Prerequisites: PSYC 150 Typically Offered Fall Only, Odd Years

There are a wide variety of counseling theories currently employed by psychologists in today's world. This course will explore the four basic approaches to therapy (Background-Focused, Emotion-Focused, Thought-Focused, and Action-Focused) as well as the basic skills that are necessary to engage in helping relationships. Students will be asked to engage in self-exploration, compare and contrast major counseling theories, apply the theories to a hypothetical client, practice and apply their helping skills. The course will note the common components between theoretical orientation and note current state of psychological evidence for different approaches. Prerequisites: PSYC 150, Junior/Senior Status, Enrollment in Major. Typically offered Fall, Spring, Summer.

This course will cover the history of psychology and the development of various systems of thought within psychology. More specifically, this course will investigate the major theories that significantly influenced the development of psychology, the lives of those who developed these theories, and the influence of the social and intellectual environment (i.e., die Zeitgeisten) throughout psychology's history (including today). Prerequisites: PSYC 150 & Junior Status or higher; or Instructor Approval. Typically Offered Spring Only

Students will have the opportunity to learn research skills in a "hands on" environment. Each student will be assigned responsibility for particular animal subjects. She/he will run the subjects daily in formal research experiments, record and graph the data. Weekly meetings will be conducted to monitor progress, do data analysis, and decide when to change experimental conditions. Students will review relevant literature and contribute to the publication of the research findings. Prerequisites: PSYC 280 & Junior Status; or Instructor approval. Typically Offered Fall, Spring, Summer
This course serves to afford students the opportunity to experience research in psychology hands on. Specifically, students are supervised while working on all aspects of a research project, including its initial development (e.g., generation of hypotheses), data collection (e.g., running an experiment), data analysis and the reporting of the research. Prerequisites: PSYC 280, Junior Status and Instructor approval. Typically Offered: Spring, Summer, Fall.

A seminar and laboratory devoted to capping the student’s entire academic training in the psychology major and preparing the student for a career in psychology. Each student will complete a major project (either original research or an internship) reflecting a practical and integrative mastery of their curriculum. Students will develop specific career plans taking fullest advantage of their degree in psychology. The seminar requires 150 contact hours. Typically Offered Fall, Spring, Summer

This course serves as a capstone experience. Specifically, it requires that students review what they have learned of psychology thus far and integrate the various ideas, concepts, and theories to which they have been exposed. This is typically accomplished via the in-depth analysis and discussion of psychological topics. Prerequisites: PSYC 280 and PSYC 150 and Senior Status or Instructor approval. Typically Offered Spring.

Students are engaged in a hands-on exploration of psychology as it relates to the human services. Student are offered an overview of the roles of human services professions in various settings through rotations at Family Independence Agency, clinical school settings, courts (with an emphasis on the roles of psychologists), and the like. Other field trips may also be required. Prerequisites: Junior Status in Psychology and Instructor Approval. Typically Offered Fall, Spring, Summer.

A PTM specific introduction class to the PTM program and an introduction to career opportunities in the tennis industry, including necessary job qualifications, and responsibilities. It’s designed to give students personal connections, opportunities to develop skills, knowledge, and resources that will enhance their potential for success in the tennis industry. Course content is delivered through class lectures, independent study, and student research assignments. Pre-Requisites: Professional Tennis Management students only.
This course is designed to prepare students for tennis teaching positions through on-court development. The objective will be on improving students playing and coaching ability through testing, video stroke analysis, and establishing a developmental plan. Focus will be placed on singles and doubles strategy, psychological, and physical components of play. Required of all PTM majors. Students register once, but work under daily supervision until completion of the program, 4 hours per week per semester in residence. In progress grading. Pre-Requisites: Professional Tennis Management students only. Typically offered: Spring

An introductory course designed to prepare students for their teaching internships. This course will provide fundamental knowledge and develop skills in teaching tennis lessons to junior tennis players. It will also include developing a coaching philosophy, understanding professionalism, lesson organization and administration. An emphasis will be given to practicing on-court simulations. Pre-Requisites: PTMG 132 On-Court Development. Typically offered: Fall

Off-campus cooperative in the field working with tennis teaching professionals. Meets first USPTA cooperative requirement. Pre-Requisites: PTMG 132 - On-Court Development, Clay Court Workshop, Racquet Customization and Repair Workshop. Typically Offered: Summer

An advanced course preparing students for teaching adults. This course will cover coaching singles and doubles, understanding high performance principles, designing curriculum, and learning private and group lesson instruction. This will be done through class lectures, independent student research, student presentations, on-court practice demonstrations and textbook study. Pre-Requisites: PTMG 182 Beginning Teaching Techniques. Typically offered: Spring

Off-campus cooperative in the field working with tennis teaching professionals. Meets second USPTA cooperative requirement. Pre-Requisites: PTMG 193. Advanced Teaching Techniques. Typically Offered: Spring, Summer

This course is designed to prepare students for management and administration of a tennis facility, which includes programming, tournaments, lessons, events, and activities. Classroom instruction in marketing, budgeting, and planning through lectures, workshops, assigned student research, and USPTA Specialty Course Videos. USPTA required course. Pre-Requisites: PTMG 272 Advanced Teaching Techniques. Typically Offered: Fall

Off-campus cooperative in the field working with tennis teaching professionals. Meets third USPTA cooperative requirement. Pre-Requisites: PTMG 292. Typically Offered, Summer
PTMG472 Professional Tennis Management BU Undergraduate 2

The course is designed to prepare students for the USPTA teaching certification test through class projects and independent study that is coordinated by the PTM Professor. Additional tennis industry business practices will be discussed. Assigned research, independent study, and presentations. USPTA required course. Pre-Requisites: PTMG 372. Typically Offered Fall Only.

PUBH200 Public Health HP Undergraduate 3

The course introduces the student to the concepts of health and well being as the foundation of public health practice. Students will explore the history of public health as a vital component of the health care delivery system, as well as the structure, principles, values and services as governed by public health laws and the public health code of ethics. Typically offered in Fall and Spring.

PUBH210 Public Health HP Undergraduate 3

This course provides a comprehensive overview of the relationship between global and public health services. The student will explore cross-cultural issues, concerns, problems and needs of different groups of people in a diverse, rapidly changing world. Health problems in developing and developed countries of the world and the roles of health care professionals will be examined as a foundation for an understanding of how other cultures can contribute to the solution of societal problems. Meets General Education requirements for Culture Activity and Global Diversity. Typically offered in Fall and Spring.

PUBH300 Public Health HP Undergraduate 3

The course examines the theories, concepts, practices and methods of social and behavioral sciences relevant to health promotion and education. Students will explore the application of these concepts in the identification, solution and prevention of health behavioral problems/issues as well as other public health challenges. Pre-requisites: PUBH 200 and PUBH 210. Typically offered: Fall

PUBH305 Public Health HP Undergraduate 3

This course introduces the student to the foundations of maternal and child health, the determinants of health and health services at various stages of the human developmental cycle, and various cross-cutting topics that affect the maternal and child population in the US and globally. Students will also gain basic skills related to research, program planning and evaluation, and policy development in the field of maternal and child health. Prerequisites: PUBH 200 or approval by instructor. Typically offered in Fall.

PUBH310 Public Health HP Undergraduate 3

This course examines the types of as well as the issues related to Public Health Services provided for underserved rural populations (RP), including their implications for people's health. The student will explore public health and medical care services related to general health needs and concerns as well as health care service disparities among rural and nonrural populations. Other issues will include collaboration in public health services, planning public health services, and community-based research in rural populations. Pre-requisites: PUBH 200 & PUBH 210. Typically offered: Spring.
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<tr>
<th>Course Code</th>
<th>Course Title</th>
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<th>Level</th>
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<tr>
<td>PUBH315</td>
<td>Public Health</td>
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<td>Undergraduate</td>
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<td>PUBH320</td>
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<td>PUBH330</td>
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<td>PUBH340</td>
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<td>PUBH350</td>
<td>Public Health</td>
<td>3</td>
<td>Undergraduate</td>
<td>Public Health</td>
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</table>

This course is designed to provide the student with the opportunity to explore the complex concepts of how cultural diversity can impact the delivery of public health services. Students will also have the opportunity to gain the skills necessary to provide culturally competent public health services that strive access to all populations. Emerging public health issues, theories and models related to multicultural health, worldview and health decisions, and communication and health promotion in diverse societies and their applications in practice settings will be among the topics discussed. Prerequisites: PUBH 200 or approval by instructor. Typically offered in Fall, Spring or Summer semester.

This course explores the role of nutrition science in health and wellbeing of populations. Basic concepts of the food groups and the implications for health and disease causation and prevention will be comprehensively examined. This course also examines the relationship between nutrition, public health, and epidemiology. Pre-requisites: PUBH 200 & PUBH 210. Typically offered in Fall and Spring.

Environmental health professionals provide a first line of defense against public health hazards caused by the contamination of air, water, soil, and food. This course will provide an overview of environmental and occupational health and safety, followed by an exploration of how and why environmental and occupational standards and guidelines are established. The course will also address specific issues, exposures, and hazards within the field. Pre-Requisites: COHP 102, PUBH 200, PUBH 210. Typically offered: Spring.

This course examines the use of mass media, social marketing and promotion in the dissemination of Public Health education. Terms used by health care professionals in navigating health information management and health information technology will be explained. The student will also explore the concepts, principles, and practice of health information technology and the roles of health care information technology in health care delivery services including Public Health services. Pre-requisites: PUBH 200 & 210. Typically offered: Fall.

This course will facilitate students' understanding of fundamental epidemiological concepts (e.g. terminology, calculations, etc.); methods (e.g. study designs, risk communication, etc.); and applications (e.g. screening, disease surveillance, outbreak investigation, and community needs assessment). Case studies to explore the meaning of distributions and determinants of disease, disabilities and death in human populations; the characteristics and dynamics of human populations; the natural history of disease and the biologic basis of health will be discussed. Pre-requisites: PUBH 200 & PUBH 210. Typically offered: Fall, Spring.
PUBH355 Public Health HP Undergraduate 3
This course introduces the student to the foundations of chronic disease epidemiology, including disease background and risk factor assessment for many of the most common chronic diseases in the United States and other developed countries. The focus of this course is to provide the student with the opportunity to apply epidemiological methods, including study design and ethical aspects, in the investigation of chronic diseases. Student presentations will focus on specific chronic disease topics. Prerequisites: PUBH 350 or approval by instructor. Typically offered in Fall.

PUBH400 Public Health HP Undergraduate 3
The focus of this course is on the planning, organization, administration, management, evaluation and policy analysis of health programs. Students will explore the structure, organization, and function of contemporary health care delivery organizations with emphasis on administrative and managerial concepts. Pre-requisites: PUBH 200 and PUBH 210. Typically offered: Spring.

PUBH405 Public Health HP Undergraduate 3
This course provides the student with the opportunity to apply epidemiological methods, including study design, legal/ethical aspects, and public health Information software programs in the investigation, surveillance, and prevention of infectious/communicable diseases. The focus of the course is on the applications of methods of screening, disease surveillance, outbreak investigation, and community needs assessment specifically regarding infectious-communicable diseases. Student presentations will focus on specific infectious disease topics. Pre-requisites: PUBH 200 & PUBH 210. Typically offered: Summer, Fall.

PUBH410 Public Health HP Undergraduate 3
This course is designed to provide a comprehensive overview and analysis of theories, concepts, principles and practices related to program planning, administration and evaluation. Students will explore the concepts and methods involved in the determination of health needs and the planning, implementation, and evaluation of appropriate programs designed to improve health status in various population groups and community settings. Pre-requisites: PUBH 300 and PUBH 310 and PUBH 320 and PUBH 330 and PUBH 340 and PUBH 350. Typically offered: Spring.
This capstone course provides the student with an internship opportunity to integrate classroom learning and guided experiences with the challenges of the practice environment. Students will collaborate with a faculty advisor and community preceptors(s) to pursue a capstone project in a contemporary health care/public health services facility. The project focuses on the application of public health skills, concepts and principles in terms of solving problems within health care organizations and systems. A professional capstone portfolio will be developed for the experience and the student will make an exit oral presentation. Pre-requisites: Completion of all core PUBH courses. This is the last course taken in the BPH program. Typically offered: Fall, Spring, Summer

This course will provide the student with the opportunity to explore the organizational structure, history, law, ethics, essential services, global programs, and the future of public health. Students will engage in discussion, projects and presentations related to the learning outcomes. Prerequisite: Graduate standing in the MPH program or permission of the instructor is required for non-MPH students. Typically offered in the Fall semester.

This course will provide the graduate student with the opportunity to apply the principles of biostatistics in the context of multiple public health applications. Students will have the opportunity to use public health Information software statistical packages to achieve learning outcomes. Prerequisite: Graduate standing in the MPH program or permission of the instructor is required for non-MPH students. Typically offered in the Fall semester.

This course will provide the graduate student with the opportunity to explore the theories of health behavior and health education and promotion. The interventions and strategies to successfully promote health behaviors through communication and collaboration will be explored within a sociocultural, diversity, and regional perspective as they pertain to public health. Prerequisite: PUBH 500 or permission of course instructor required for non-MPH students. Typically offered in the Fall, Spring, and Summer semesters.

This course is designed for graduate students to gain knowledge and experience in the use of mass media in health communication. It will include two extremely important subjects for today’s for-profit and nonprofit organizations alike – risk communication and social marketing. Much of what you will learn is applicable to many fields (e.g., communicating in a crisis situation or changing consumer behavior). Traditional media and the evolving web-based and mobile media, as well as media ethics, will be explored through case studies and practical exercises. Prerequisites: PUBH 500 (B) in instructor permission. Typically offered Fall, Summer.
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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Description</th>
<th>Prerequisites</th>
<th>Typically offered</th>
<th>Semester(s)</th>
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<tbody>
<tr>
<td>PUBH530</td>
<td>Public Health HP Graduate 3</td>
<td>This course will provide the graduate student with the opportunity to examine the environmental concepts of air quality, water quality, food hygiene, sanitation, vector-borne diseases, solid waste management, hazardous materials management, hazard identification and response, occupational health and safety, and legal issues related to environmental and occupational health. Prerequisite: PUBH 550 or permission of course instructor required for non-MPH students. Typically offered in the Fall, Spring, and Summer semesters.</td>
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<tr>
<td>PUBH540</td>
<td>Public Health HP Graduate 3</td>
<td>This course is designed to provide the graduate student with the opportunity to explore the complex concepts of how cultural diversity can impact the delivery of public health services. Students will also have the opportunity to gain the skills necessary to provide culturally competent public health services that strive for access to all populations. Emerging public health issues, public health professional ethics, health informatics, communication, and their applications in practice settings will be discussed. Pre-requisites: PUBH 520 and PUBH 560. Typically offered in the Fall, Spring, and Summer semesters.</td>
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<tr>
<td>PUBH550</td>
<td>Public Health HP Graduate 3</td>
<td>This course will provide the graduate student with the opportunity to apply epidemiological methods including study design, legal/ethical aspects, and public health information software programs. Applications of methods will include screening, disease surveillance, outbreak investigation, and community needs assessment. Student presentations will focus on special topics such as infectious disease and chronic conditions. Prerequisites: PUBH 500 and PUBH 510, graduate standing, permission of course instructor required for non-MPH students. Typically offered in the Fall, Spring, and Summer semesters.</td>
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<td>PUBH555</td>
<td>Public Health HP Graduate 3</td>
<td>This course introduces the graduate student to the foundations of chronic disease epidemiology, including disease background and risk factor assessment for many of the most common chronic diseases in the United States and other developed countries. The focus of this course is to provide the student with the opportunity to apply epidemiological methods, including study design and ethical aspects, in the investigation of chronic diseases. Student projects will focus on specific chronic disease topics. Prerequisites: PUBH 550 (B) or approval by instructor. Typically offered in Fall, Summer</td>
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<td>PUBH560</td>
<td>Public Health HP Graduate 3</td>
<td>This course will provide the graduate student with the opportunity to analyze the management principles of personnel administration, budgeting, financing, and continuous quality improvement as they pertain to public health. Planning and evaluation principles, grant writing, public health economics, public health policy, and data sources will also be examined for their application to the administrative roles in public health. Prerequisites: PUBH 520 &amp; PUBH 550 or permission of course instructor for non-MPH students. Typically offered in the Fall, Spring and Summer semesters.</td>
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This course provides the MPH student with a “selected elective” option as an opportunity to explore specific topics of current interest to public health workers in greater depth. The MPH program will determine the topic(s) to be addressed with each offering with this information disseminated to students prior to registration each semester. Prerequisite: Graduate standing in the MPH program or permission of course instructor required for non-MPH students. Typically offered Fall, Spring, Summer.

This course is designed as an elective for MPH students who desire additional field experience in public health. The student works with a faculty advisor and community preceptor(s) to work on a meaningful public health issue. This course can be applied to the MPH program as a “selected elective”. Prerequisite: Graduate standing in the MPH program or permission of course instructor required for non-MPH students. Typically offered Fall, Spring, Summer.

This course will provide the graduate student with the opportunity to develop the skills for public health research designs and successful submission of proposals to federal and non-federal funding agencies, including grants management processes. Pre-requisites: PUBH 520 and PUBH 530. Typically offered in Summer semester.

This course is Part 1 of the Evidence-based capstone project sequence for the MPH program. Part 1 prepares the graduate student for the planning and organization phases of the proposed final project. Students will work with a faculty advisor and community preceptor(s) to develop a proposal for a project that will address a meaningful public health issue. Pre-requisites: PUBH 520 and PUBH 550. Typically offered in summer semester at the end of the first year in the MPH program.

This course is Part 2 of the Evidence-based capstone project sequence for the MPH program. Part 2 provides the graduate student with the opportunity to complete the implementation and evaluation phases of the project developed during PUBH 692. The student works with a faculty advisor and community preceptor(s) to address a meaningful public health issue. This work facilitates the integration and synthesis of theories and concepts from the core MPH courses. The student will complete an appropriate scholarly paper demonstrating the application of what was learned in previous courses. Prerequisites: Completion of all PUBH 500 level core courses and PUBH 600 and PUBH 692. This is the final course of the MPH program.
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<th>Course Code</th>
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<td>Radiography</td>
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**RADI104 Radiography HP Undergraduate 2**

Introduction to the general principles of radiographic anatomy, terminology, positioning and patient care in radiography. Students will learn the routine radiographic examination for the chest, abdomen, upper and lower extremities. Prerequisites: Admission to the RADI program. Co-requisite: RADI 105. Typically Offered Fall Semester only.

**RADI105 Radiography HP Undergraduate 1**

Radiographic examinations of the chest, abdomen, upper and lower extremities will be demonstrated and performed in a laboratory setting. Prerequisites: Admission to the RADI program. Co-requisite: RADI 104. Typically Offered Fall Semester only.

**RADI106 Radiography HP Undergraduate 2**

Introduction of the general principles relating to radiographic anatomy, terminology, positioning and patient care in radiography. Students will learn the routine radiographic examinations for the skull, shoulder girdle, spine and thoracic cavity. Prerequisites: RADI 104, 105, 121, 141 and 142. Co-requisite: RADI 107. Typically Offered Spring only.

**RADI107 Radiography HP Undergraduate 1**

Radiographic examinations of the shoulder girdle, spine, thoracic cavity and skull will be demonstrated and performed in a laboratory setting. Prerequisites: RADI 104, 105, 121, 141 and 142. Co-requisite: RADI 106. Typically Offered Spring Only.

**RADI108 Radiography HP Undergraduate 2**

Introduction to the specialized procedures and equipment used in the radiology department. Students will also learn radiographic examinations of the GI, urinary and biliary system. Prerequisites: RADI 106, 107, 122, 143 and 144. Co-requisite: RADI 109. Typically Offered Summer only.

**RADI109 Radiography HP Undergraduate 1**

Radiographic examinations of the upper and lower GI, urinary system, and biliary system will be demonstrated and performed by the student in a laboratory setting. Students will demonstrate competency on specialized radiographic equipment. Prerequisites: RADI 106, 107, 122, 143 and 144. Co-requisite: RADI 108. Typically Offered Summer only.

**RADI110 Radiography HP Undergraduate 3**

This course is designed to introduce the student to the basic principles of radiation physics as well as the nature, sources, and physical properties of ionizing radiation. It also introduces the student to the structure and function of the x-ray tube and other radiographic equipment used to create and control x-radiation. Pre-Requisites: Radiography students only. Typically Offered Fall Only

**RADI111 Radiography HP Undergraduate 3**

Explores radiation protection practices and policies that ensure the safety of patients, radiation personnel, and the general public including the proper usage of protective devices and equipment operation. Included is a discussion of the federal and state laws regarding radiation safety as well as the basic principles of radiation biology and the genetic and somatic effects of radiation on the human body. Pre-Requisites: RADI 104, 105, 121, 141, and 142. Typically Offered Spring Only
An understanding and overview of the theories and concepts used in radiography. Topics addressed are the history of medical imaging, grids, film, IRS, beam restriction, filtration and the prime factors. Prerequisites: Admission to the RADI program. Co-requisite: RADI 142

Radiographic tools and techniques employed to produce quality radiographic images in the laboratory setting. An emphasis is placed on the effect and control of the primary technical factors of density, contrast, detail, and distortion. Prerequisites: Admission to the RADI program. Co-requisite: RADI 141. Typically Offered Spring Semester.

Continuation of RADI 141. Knowledge and skills necessary to apply the principles of radiographic exposure and technique. Students will learn the components of various pieces of x-ray equipment and how this aids in x-ray production. Prerequisites: RADI 104, 105, 121, 141 and 142. Co-requisite: RADI 144. Typically Offered Spring only.

Demonstration of knowledge learned from RADI 143 to produce quality radiographs. Students will demonstrate on various pieces of radiographic equipment. Prerequisites: RADI 104, 105, 121, 141 and 142. Co-requisite: RADI 143. Typically Offered Spring only.

An understanding and overview of how radiographic imaging processing, basic concepts and principles of quality assurance are used in the radiology department. Prerequisites: RADI 106, 107, 122, 143 and 144. Co-requisite: RADI 171. Typically Offered Summer only.

Demonstration of radiographic proficiency in the use of the computed radiography, PACS, and QA test tools in a laboratory setting. Prerequisites: RADI 106, 107, 122, 143 and 144. Co-requisite: RADI 170. Typically Offered Summer only.

This course provides an overview of the components, principles, and operation of digital imaging systems, including factors that impact image acquisition, display, archiving, and retrieval. Guidelines for selecting exposure techniques and evaluating images within a digital system are described. Prerequisites: RADI 106, 107, 122, 143 and 144. Typically Offered Summer only.

This self-paced course investigates various pathologic processes that are commonly identified by radiographic examinations and procedures as well as the radiographic methods of their diagnosis and treatment. Competency in medical terminology needed. Pre-Requisites: RADI 108, 109, 170, 171 and 172. Typically Offered Fall Only

This course will provide an analysis and overview of radiation concepts, theory and positioning. Students will build upon concepts learned during the first year to gain a greater understanding of the process required to produce a quality radiograph in a patient care setting. Prerequisites: RADI 108, 109, 170, 172 and 172. Typically Offered Fall only.
RADI204 Radiography HP Undergraduate 2
This course provides an introduction to the principles of computed tomography imaging and cross-sectional anatomy. Prerequisites: RADI 202, 203, 211 and 291. Typically Offered Spring only.

RADI211 Radiography HP Undergraduate 1
An exploration of the terminology, types, administration, and effects of drugs and pharmaceuticals commonly used in the radiology department. Prerequisites: RADI 108, 109, 170, 171, and 172. Typically Offered Fall Only

RADI212 Radiography HP Undergraduate 1
This self-paced course is constructed to give the student a basic understanding of the principles and practices necessary for the management of a modern radiology department. It includes an introduction to personnel, financial, customer service, technology, decision making, planning, administrative, and regulatory considerations and issues which successful radiology managers must confront. Prerequisites: RADI 204, 213 and 292. Typically Offered Summer Only

RADI213 Radiography HP Undergraduate 1
This course builds upon RADI 203 with further analysis and overview of radiation concepts, theory, and positioning. Students have the opportunity to gain a more complex understanding of the process required to produce a quality radiograph in a patient care setting. Prerequisites: RADI 202, 203, 211 and 291. Typically Offered Spring only.

RADI223 Radiography HP Undergraduate 1
This course builds upon RADI 213 with further analysis of radiation protection, theory and their relationship with advanced modalities. Students will have the opportunity to gain mastery of the process required to produce a quality radiograph in a patient care setting. Prerequisites: RADI 204, 213 and 292. Typically Offered Summer only.

RADI291 Radiography HP Undergraduate 9
The first of three clinical practicum courses providing opportunity for learning basic skills and their application to the radiographic process within the clinical site. Students perform basic radiographic procedures under the supervision and guidance of ARRT registered technologists as well as show competence in film processing, film filing and retrieval, patient care skills, and radiation protection procedures. Prerequisites: RADI 108, 109, 170, 171 and 172. Typically Offered Fall Only

RADI292 Radiography HP Undergraduate 9
A continuation of RADI 291, this practical course provides opportunity for learning advanced skills and radiographic procedures and applying these skills to the radiographic process within the clinical site. Students perform radiographic procedures under the supervision and guidance of ARRT registered technologists. Prerequisites: RADI 202, 203, 211 and 291. Typically Offered Spring Only
RAD293 Radiography  HP  Undergraduate  6
A continuation of RAD2, this course provides the student with the opportunity to learn and practice procedures in advanced imaging modalities. The student will gain experience in such modalities as C.T., M.R.I., ultrasound, and mammography as well as have the opportunity to experience angiography, nuclear medicine, radiation therapy, and heart catheterization. Students perform all radiographic procedures under the supervision and guidance of ARRT registered technologists. Pre-Requisites: RAD204, 213 and 292. Typically Offered Summer Only

RAD299 Radiography  HP  Undergraduate  1
This capstone course provides an assessment of educational outcomes and is intended to prepare the student to successfully pass the national ARRT registry examination. The primary foci of this course are test taking skills and a review of previous course material pertinent to the registry examination. It also aids the student in identifying academic strengths and weaknesses and creating a personal study plan. Pre-Requisites: RAD204, 213, and 292. Typically Offered Summer Only

READ175 Reading  UN  Undergraduate  3
This course will provide students with the opportunity to become critical readers by increasing vocabulary, enhancing reading comprehension and recall, and improving reading skills to better prepare for personal and college-level reading. Students will learn active reading strategies to become a more effective reader, which can lead to improved college success. This course introduces strategies—active learning techniques—and offers practice in skills which allow students to immediately use what they have learned in their own reading. The aim of this course is to increase student reading and help students develop techniques required for college reading. Pre-requisite: Placement by assessment. Accuplacer Reading Score 75 or less Compass Reading Score 74 or less ACT Reading Score 16 or less SAT 16 ERW (Evidence Based Reading and Writing) 430 or less SAT Reading 23 or less Old SAT CR Score (prior to 2016) 430 or less. Typically offered: Fall, Spring
Improve students' analytical reading ability and reading efficiency as needed for advanced college-level material and necessary for research papers and projects. Instruction is designed to assist in the improvement of effective reading skills needed for comprehension, interpretation, analysis and synthesis of college-level content. Critical comprehension skills, such as making inferences, distinguishing between facts and opinions, recognizing biases, making critical judgements, understanding cultural differences, relating social systems and theories, and making critical judgments, are emphasized. These skills are designed to be applicable to texts in other college courses. Pre-requisite: Placement by assessment or successful completion of READ 175 C- or better or Accuplacer Reading Score at least 76 or Compass Reading Score at least 75 or ACT Reading Score 17 or SAT 16 (Evidence Based Reading and Writing) 430 or SAT 16 Reading 24 or SAT Critical Reading Score (prior to 2016) 430. Meets General Education requirements for Self and Society Typically offered: Fall, Spring

Fundamental rights associated with ownership of real property, rights determined and protected by law. Provides an understanding of the theories and practices involved in the purchase and sale of real estate, including purchase contracts, title transfer, and financing. Typically Offered Fall, Spring

Examines the principles and methods of appraising property to lay a foundation for a sound development and further refinement of specialized appraisal problems that may be encountered in business, finance, insurance, government, and legal spheres of activity. A Michigan pre-licensure course may substitute for the prerequisite. Pre-Requisites: REAL 210 or Michigan pre-licensure course. Typically Offered Spring Only

Various types of real estate investments available and explains the techniques for analyzing and comparing the benefits of these investments. All aspects of real estate investment will be covered--from the location and analysis to the procurement and management. A Michigan pre-licensure course may substitute for the prerequisite. Pre-Requisites: REAL 210 or Michigan pre-licensure course. Typically Offered Spring Only

This course is a comparative approach to the study of world religions. We will consider religion critically, from the perspective of diverse philosophical themes. The specific focus of this course is neither eastern nor western in particular. It gives us the additional opportunity to study other religions of the world, such as African religions, Native American religions, and primitive religions. This course meets General Education requirements: Cultural Enrichment, Global Consciousness, and new Fall 2017 Culture, Global Diversity. Typically Offered Fall.
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<th>Type</th>
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<th>Credits</th>
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<td>RELG325</td>
<td>Religions</td>
<td>AS</td>
<td>Undergraduate</td>
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<tr>
<td>An introduction to the religions and cultures of Asia. In this course the emphasis will be on the study of Hinduism and Buddhism, their cultures and scripture; but other texts of sacred scriptures, and other religions of Asia, such as Tibetan Buddhism, Zen Buddhism, Confucianism, Taoism, Shinto, and Sikhism, may be covered at the instructor's discretion. This course meets General Education requirement: Cultural Enrichment, Global Consciousness and new Fall 2017 Culture and Global Diversity. Prerequisites: ENGL 150. Typically Offered Fall, Spring.</td>
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<tr>
<td>RELG326</td>
<td>Religions</td>
<td>AS</td>
<td>Undergraduate</td>
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<td>An introduction to the religions and cultures of the Western world, this course considers critically, in light of their historical, cultural, philosophical, and doctrinal evolution the three monotheistic religions that derive from the ancient Near East, and which constitute the principal religious heritage of the western world: Judaism, Christianity, and Islam. This course meets General Education Requirement: Cultural Enrichment and new Fall 2017 Culture. Prerequisites: ENGL 150. Typically Offered Spring, Summer, Fall.</td>
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<tr>
<td>RELG370</td>
<td>Religions</td>
<td>AS</td>
<td>Undergraduate</td>
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<td>This course is a text intensive critical study of Christianity in the light of other religions and cultures of the Western world. In this course we will study its origin in Judaism, as well as its development into various forms around the world. Topics may include the Roman context of Christianity, the Life of Jesus, the Church Councils, the authorship of the New Testament, the Protestant Reformation, and Christianity and Politics. Specific topics to be determined at the discretion of the instructor. This course meets General Education requirements: Culture. Typically Offered Fall Only, Odd Years.</td>
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<td>RELG371</td>
<td>Religions</td>
<td>AS</td>
<td>Undergraduate</td>
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<td>Buddhism is one of the world's primary religions, originating in India by an individual who became 'awakened' and began teaching about his experience regarding human life. This individual became known as the Buddha. In this course, student will become familiar with the history and cultural contexts of Buddhism both in India and beyond. Students will study the key concepts of the religion and philosophy, including the Four Noble Truths and the Eightfold Path. This course meets General Education requirement: Culture, Global Diversity, U.S. Diversity. Typically offered: Fall, odd years.</td>
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<tr>
<td>RESP100</td>
<td>Respiratory Care</td>
<td>HP</td>
<td>Undergraduate</td>
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<tr>
<td>Introduces student to Respiratory Care as a health science profession. Topics include assessment of personal strengths, historical background of the Respiratory Care profession, professional collaboration, legal and ethical issues, and current trends in professional practice. Pre-requisite: Acceptance into the Respiratory Care Program. Co-requisites: RESP 119, RESP 123, and RESP 124. Typically offered: Fall, Summer</td>
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RESP119 Respiratory Care HP Undergraduate 2
Study of the respiratory, cardiovascular and renal systems as they relate to respiratory care practice. Topics include anatomy of the respiratory and cardiovascular systems, fetal lung development as well as the physiology of aging, respiration, ventilation and fluid and electrolyte balance. Pre-requisite: Acceptance into the Respiratory Care Program. Co-requisites: RESP 100, RESP 123, and RESP 124. Typically offered: Fall, Summer

RESP123 Respiratory Care HP Undergraduate 2
This course provides instruction in beginning therapeutic procedures utilized by the respiratory therapist. Course content includes basic patient and pulmonary assessment, pulse oximetry, basic gas laws, medical gas administration, oxygen therapy delivery systems, and lung expansion techniques. Pre-requisite: Acceptance into the Respiratory Care Program. Co-requisites: RESP 100, RESP 119, and RESP 124. Lecture portion of course will be scheduled prior to the corresponding laboratory sessions, unless there is a scheduling conflict. Typically offered: Fall, Summer

RESP124 Respiratory Care HP Undergraduate 1
This course provides practice and competency in beginning therapeutic procedures utilized by the respiratory therapist. Course content includes basic patient and pulmonary assessment, pulse oximetry, basic gas laws, medical gas administration, oxygen therapy delivery systems, and lung expansion techniques. Pre-requisite: Acceptance into the Respiratory Care Program. Co-requisites: RESP 100, RESP 119, and RESP 123. Lecture portion of course will be scheduled prior in the week to the corresponding laboratory sessions, unless there is a scheduling conflict. Typically offered: Fall, Summer

RESP125 Respiratory Care HP Undergraduate 2
Focused on the appropriate and effective administration of respiratory care medications, including an overview of pharmacology, terminology, routes, techniques of administration, and calculation of dosages. The NAEPP Guidelines for Asthma Management are emphasized. Pre-requisites: RESP 100, RESP 119, RESP 123, and RESP 124. Co-requisites: RESP 145, RESP 146, and RESP 162. Typically offered: Fall, Spring

RESP145 Respiratory Care HP Undergraduate 3
This course provides instruction in therapeutic procedures utilized by the respiratory therapist. Course content includes arterial blood gas collection, emergency life support, airway care, bronchial hygiene and lung expansion therapy. Pre-requisites: RESP 100, RESP 119, RESP 123, and RESP 124. Co-requisite: RESP 146. Typically offered: Fall, Spring

RESP146 Respiratory Care HP Undergraduate 2
Introduction in therapeutic procedures utilized by the respiratory therapist. Course content includes Arterial Blood Gas Sampling, airway care, emergency life support, inhaled medication administration, bronchial hygiene, and lung expansion therapy. Pre-requisites: RESP 100, RESP 119, RESP 123, and RESP 124. Co-requisites: RESP 145. Typically offered: Fall, Spring
RESP162 Respiratory Care HP Undergraduate 2 Emphasizes the assessment and management of patients with cardiopulmonary disease. Students apply techniques and concepts to common disease states seen in the critical care areas. Participants develop treatment plans based on patient scenarios using patient-driven protocols. Pre-requisites: RESP 100, RESP 119, RESP 123, and RESP 124. Co-requisites: RESP 125, RESP 145, and RESP 146. Typically offered: Fall, Spring

RESP171 Respiratory Care HP Undergraduate 2 This course discusses basic pulmonary function testing and electrocardiographic testing. Basic theory and techniques for testing are covered. Pre-requisites: RESP 125, RESP 145, RESP 146, and RESP 162. Co-requisites: RESP 172 and RESP 182. Typically offered: Spring, Summer

RESP172 Respiratory Care HP Undergraduate 1 This course will provide the student opportunities to practice and demonstrate the function of instrumentation and physical principles of cardiopulmonary measurement methods used to obtain patient diagnostic data. Emphasis will be on evaluation and interpretation of results, building on the theoretical concepts presented in RESP 171. Modalities to be introduced include electrocardiography, pacemakers, defibrillation and pulmonary function testing. Pre-requisites: RESP 125, RESP 145, RESP 146, and RESP 162. Co-requisites: RESP 171 and RESP 182. Lecture portion of course will be scheduled prior in the week to the corresponding laboratory sessions, unless there is a scheduling conflict. Typically offered: Spring, Summer

RESP182 Respiratory Care HP Undergraduate 2 This course focuses on the clinical application of science to the practice of respiratory care. Topics include common microbial pathogens seen with pulmonary infection, infection control guidelines, oxygenations, acid-base balance, and the physical principles of ventilation in health and disease. Emphasis is placed on blood gas interpretation, capnography, puncture techniques, protection of the respiratory therapist, and disinfection and sterilization of respiratory care equipment. Pre-requisites: RESP 125, RESP 145, RESP 146, and RESP 162. Co-requisites: RESP 171 and RESP 172. Typically offered: Spring, Summer

RESP192 Respiratory Care HP Undergraduate 2 Development of the clinical skills related to airway management, bronchial hygiene, resuscitation procedures, and oxygenation. Students evaluate, modify, and monitor patients' responses to respiratory care regimens. A four week directed clinical experience which includes ten 12-hour shifts in selected clinical sites. Pre-requisites: RESP 100, RESP 119, RESP 123, and RESP 124. Typically offered: Fall, Spring
Development of the clinical skills related to airway management, removal of bronchopulmonary secretions, CPR, and oxygenation. Students evaluate, modify, and monitor patients' responses to breathing treatment regimens. A 4-week directed clinical experience which includes 120 hours in selected clinical sites. Pre-requisites: RESP 125, RESP 145, RESP 146, RESP 162, and RESP 192. Co-requisites: RESP 220 and RESP 221. Typically offered: Fall, Spring

A study of the theories, techniques, and equipment used to achieve adequate spontaneous and artificial ventilation in the adult patient. Pre-requisites: RESP 125, RESP 145, RESP 146, RESP 162, and RESP 192. Co-requisites: RESP 193 and RESP 221. Typically offered: Fall, Spring

This course will provide the student opportunities to practice and demonstrate the function of common adult mechanical ventilators. Students will practice a wide range of mechanical ventilation interventions used in the care of the adult patient. Pre-requisites: RESP 125, RESP 145, RESP 146, RESP 162, and RESP 192. Co-requisites: RESP 193 and RESP 220. Lecture portion of course will be scheduled prior in the week to the corresponding laboratory sessions, unless there is a scheduling conflict. Typically offered: Fall, Spring

This course will provide the student opportunities to practice and demonstrate the function of common neonatal and pediatric mechanical ventilators. Students will practice a wide range of mechanical ventilation interventions used in the care of the critically ill neonatal and pediatric patient. Pre-requisites: RESP 171, RESP 172, RESP 182, RESP 220, RESP 221 and RESP 193. Co-requisites: RESP 231 and RESP 292. Typically offered: Spring, Summer

This course provides the student an opportunity to apply in simulated settings concepts learned throughout the program. Students spend two hours each week working on computerized clinical case study simulations, selecting appropriate treatments and managing patients. Pre-requisites: RESP 230, RESP 231 and RESP 292. Co-requisites: RESP 294 and RESP 299. Typically offered: Fall, Summer
RESP292 Respiratory Care HP Undergraduate 4

Directed clinical experience that develops therapeutic clinical skills for critical care areas. Emphasis is on assessing needs, designing care plans, and implementing and evaluating the procedures especially for mechanical ventilator support and systemic oxygenation. The student will participate in twenty 12-hours shifts over 11weeks. Pre-requisites: RESP 171, RESP 172, RESP 182, RESP 220, RESP 221 and RESP 193. Co-requisites: RESP 230 and RESP 231. Typically offered: Spring, Summer

RESP294 Respiratory Care HP Undergraduate 4

Directed clinical experience that develops the clinical skills and techniques used to manage neonatal and pediatric patients requiring mechanical ventilator support. This experience also includes specialty rotations that include pulmonary function testing, pulmonary rehabilitation, sleep studies, emergency and cardiac care, sub-acute care and home care. The student will participate in twenty 12-hour shifts over 8 weeks. Pre-requisites: RESP 230, RESP 231, and RESP 292. Co-requisites: RESP 241 and RESP 299. Typically offered: Fall, Summer

RESP299 Respiratory Care HP Undergraduate 2

This course provides the student with a study of the current theory and techniques encountered by the respiratory therapist in a variety of clinical settings. Emphasis is placed on advanced ventilator applications, cardiopulmonary monitoring, and the respiratory care professional's dynamic role in the health care setting. Pre-requisites: RESP 230, RESP 231, and RESP 292. Co-requisites: RESP 241 and RESP 294. Typically offered: Fall, Summer

RESP300 Respiratory Care HP Undergraduate 3

This course is an overview of the transition from the associate degree program to the professional role of a Bachelor of Science degree in Respiratory Therapy. The course will focus on respiratory theory development, critical thinking skills and decision making, alternative career opportunities, professionalism through leadership opportunities and future trends in the profession. Pre-requisites: Acceptance to the RSTH Program. Meets General Education Requirements for Collaboration. Typically offered: Fall.

RESP310 Respiratory Care HP Undergraduate 3

This course covers advanced in-depth integrated physiology of the cardiovascular and respiratory systems. Discusses the physiological dynamics, control mechanisms and system interrelationships of the cardiovascular, respiratory and kidney systems. Students will make application of advanced cardiopulmonary physiology to the management of patients requiring respiratory care services. Pre-requisites: Acceptance in to RSTH Program. Typically offered: Spring
RESP320 Respiratory Care HP Undergraduate 3
This course covers advanced in-depth integrated pathophysiology of the cardiovascular and respiratory disease states. Discusses the dynamics, control mechanisms and system interrelationships occurring in the cardiovascular respiratory and kidney systems when disease is present. Students will apply their knowledge of advanced cardiopulmonary physiology to reflect on clinical management of patients requiring respiratory care services. Pre-requisites: RESP 310 with grade of C. Meets General Education Requirements for Problem Solving. Typically offered: Summer.

RESP350 Respiratory Care HP Undergraduate 3
This course consists of a comprehensive review of the pathophysiology, medication usage, treatment plans and patient education requirements needed for the preparation of completion and passing of the COPD and Asthma Educator Exams. This course will review the GOLD standards for care of COPD and the NAEPP guidelines for care of Asthma patients. Pre-requisites: BIOL 108 or BIOL 205. Typically offered: Spring

RESP400 Respiratory Care HP Undergraduate 3
This course prepares practitioners for advance clinical practice of the adult patient. The student will investigate new advances in technology that alter both the diagnostic and therapeutic approaches to adult critical care. Pre-requisite: RESP 310. Typically offered: Summer

RESP410 Respiratory Care HP Undergraduate 3
This course prepares practitioners for advance clinical practice of the neonatal and pediatric patient. The student will investigate new advances in technology that alter both the diagnostic and therapeutic approaches to neonatal and pediatric critical care. Pre-requisite: RESP 310. Typically offered: Fall

RESP420 Respiratory Care HP Undergraduate 3
This course covers advanced in-depth integrated pathophysiology of the cardiovascular and respiratory disease states. Discusses the dynamics, control mechanisms and system interrelationships occurring in the cardiovascular, respiratory and kidney systems when disease is present. Students will apply their knowledge of advanced cardiopulmonary physiology to reflect on clinical management of patients requiring respiratory care services. Pre-requisite: RESP 310. Typically offered: Summer

RESP450 Respiratory Care HP Undergraduate 3
This course prepares the advanced student to be successful in leadership roles in the field of Respiratory Care. Pre-requisite: RESP 300. Typically offered: Fall

RETG337 Retailing BU Undergraduate 3
Store location and layout, retail institutions, department store organization, chain store organization, store and merchandising policies, receiving and marking operations, pricing, advertising, interpreting consumer demand, techniques of buying, terms of purchase, pricing, advertising and display, retail credit. Pre-Requisites: MKTG 321 w/C- or higher. Typically Offered Fall, Spring, Summer
Organization and responsibilities of merchandising division in a variety of retail formats. Procedures in planning, sourcing, and controlling inventory for profitable management of retail operations. Merchandise selection including information sources, and price lining. Purchase terms, pricing (mark-up and mark-down), turnover, open-to-buy. Presentation of merchandise as related to brand image, sales, and aesthetics with an emphasis on profitability from a managerial perspective. Both planning and presentation to include strategic retail software applications. Pre-Requisites: RETG 337 w/C- or higher and MATH 114 or 115 w/C- or higher or 24 ACT or 560 SAT. Typically Offered Fall, Spring, Summer

Management policies and practices, model stock planning, mark-up planning, unit control systems, store operating statement, inventory methods, expense classification and planning, expense control and analysis, retail audits and selected case readings. Market or area research and research on the selection of channels of distribution. Pre-Requisites: RETG 339 w/C- or higher. Typically Offered Fall, Spring, Summer

Work experience with cooperating employer organizations in business, industry, government, and education. The work experience is designed to be relevant to the student's academic pursuits, personal development, and professional preparation. Need to have complete 60 semester hours prior to taking this course. Pre-Requisites: Completion of 60 semester hours and department approval. Typically Offered Spring, Summer

This course introduces students to the basic principles and concepts of risk management as it relates to everyday personal and business life. Different forms of risk and risk management are examined. Processes for identifying, assessing, controlling, and financing risk exposures are explored. Insurance, as one of the more common risk financing techniques, is studied including the topics of common insurance policy concepts and insurance policy analysis. This is the introductory course for students wishing to pursue a risk management and insurance education. The course is aligned with CPCU 500 allowing successful students to apply for a CPCU exam waiver. Typically offered: Fall, Spring.

This course provides students an overview of commercial insurance, premium determination, and legal liability. Insurance coverages studied include commercial general liability, business auto, garage and motor carrier, commercial property, business income, workers compensation, excess liability, professional liability, cyber risk, terrorism, inland marine, crime, and surety bonds. The course is aligned with CPCU 552 allowing successful students to apply for a CPCU exam waiver. Typically offered: Fall. Prerequisite: RMIN 200.
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<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Degree</th>
<th>Credits</th>
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<tbody>
<tr>
<td>RMIN253</td>
<td>Risk Management and Insurance</td>
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<td>This course explores aspects of personal risk</td>
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<td>management, and the common personal lines</td>
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<td>insurance products used to address such risks.</td>
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<td>Personal automobile, homeowners, and other</td>
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<td>residential insurance products are covered.</td>
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<td>Also addressed in this course are personal</td>
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<td>liability, life and health insurance products,</td>
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<td>disability, and retirement planning. The course</td>
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<td>is aligned with CPCU 553 allowing successful</td>
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<td>students to apply for a CPCU exam waiver.</td>
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<td>Typically offered: Spring.</td>
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<td>Prepares students to successfully complete the</td>
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<td></td>
<td>Michigan property and casualty insurance</td>
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<td>producers licensing examination. This course</td>
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<td>satisfies Michigan’s mandatory pre-licensing</td>
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<td>education requirement and covers Michigan</td>
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<td>insurance code and regulation, ethics, general</td>
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<td>insurance concepts, property and casualty</td>
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<td>insurance basics, personal lines and commercial</td>
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<td>lines of insurance. Specific lines of</td>
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<td>insurance reviewed include homeowners, automobile,</td>
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<td>commercial packages, business owner’s policy,</td>
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<td>workers’ compensation, and various specialty</td>
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<td>lines. Typically offered: Fall.</td>
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<td>RMIN320</td>
<td>Risk Management and Insurance</td>
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<td>An overview of the operations of an insurance</td>
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<td>company and associated entities. This course</td>
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<td></td>
<td>also explores the regulations that apply to the</td>
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<td>insurance industry. Students will study major</td>
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<td>insurance company functions including</td>
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<td>marketing, distribution, underwriting, risk</td>
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<td>control, premium auditing, claims, actuarial,</td>
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<td>reinsurance, and strategic management. The course</td>
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<td>is aligned with CPCU 520 allowing successful</td>
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<td>students to apply for a CPCU exam waiver.</td>
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<td>Typically offered: Fall, Spring. Prerequisite:</td>
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<td>RMIN 200.</td>
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<td>RMIN401</td>
<td>Risk Management and Insurance</td>
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<td>Explores the information needs and a variety of</td>
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<td>applications of technology within the risk and</td>
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<td>insurance industry. This course examines current</td>
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<td>technological trends as they relate to risk</td>
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<td>management and insurance including the</td>
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<td>marketing of insurance products on the Internet,</td>
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<td>predictive analytics, information security,</td>
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<td>cyber risks, and project management. The course</td>
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<td>will survey current software systems including</td>
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<td>agency management systems, risk management</td>
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<td>information systems, carrier interfaces,</td>
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<td>underwriting systems, and claims administration</td>
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<td>systems. Hands-on learning opportunities are an</td>
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<td>integral component of this course. Typically</td>
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<td>offered: Spring. Prerequisite: RMIN 200.</td>
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<tr>
<td>RMIN454</td>
<td>Risk Management and Insurance</td>
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<td>Students will become fluent in the principles</td>
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<td>and practices of risk management as they study</td>
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<td>the standards and guidelines followed by</td>
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<td>professional risk managers. This course examines</td>
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<td>the nature of hazard, operational, financial, and</td>
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<td>strategic risks, and the risk management process</td>
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<td>and framework. Students will learn the</td>
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<td>fundamentals of risk identification, analysis,</td>
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<td>treatment, monitoring, and reporting, including</td>
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<td>the areas of financial statement and capital</td>
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<td>investment risk analysis. Typically offered:</td>
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<td>Fall. Prerequisite: RMIN 200.</td>
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<td>Course Code</td>
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<td>RMIN457</td>
<td>Risk Management and Insurance</td>
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<td>Explores the broader scope of enterprise-wide risk management and its implications for the strategic planning process. This course provides knowledge of the enterprise risk management framework and process, and how it can be implemented in an organization. Major areas of instruction include risk oversight, risk-based performance management, internal audit, regulatory compliance, risk modeling, risk-based capital allocation, and the risk management culture. Typically offered: Spring. Prerequisite: RMIN 200.</td>
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<td>RMIN483</td>
<td>Risk Management and Insurance</td>
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<td>Examines the basic principles of insurance agency formation and operational environment including principles of organizational management, sales management, and production plans. Agency marketing considerations are addressed including insurance carrier relationships, public image, agency growth, customer communications, and insurance market segmentation. This course also explores the role of information technology (particularly regarding agency/carrier interfaces), agency financial management, and customer service. Typically offered: Fall. Prerequisite: RMIN 200.</td>
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<td>RMIN489</td>
<td>Risk Management and Insurance</td>
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<td>Employing a high degree of practical activity, role plays, and interaction, this course teaches the aspects of information gathering, evaluation, analysis, and proposal development which are common to the risk management and insurance field. Students are provided practical experience working as a part of a team to create and present persuasive proposals (both written and oral) that reflect real-world risk and insurance scenarios. The course also examines and practices ethical and effective communication, persuasion, and negotiating techniques that are common in the insurance industry. Typically offered: Spring. Prerequisites: RMIN 320 and RMIN 252.</td>
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<td>RMLS101</td>
<td>Recreation Mgmt and Leisure St</td>
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<td>Students earn credit for participation in intercollegiate sports offered by the university on a Pass/Fail basis. Only one credit may be earned in any one sport in an academic year. May be repeated, but not more than four hours may be counted toward graduation. Prerequisites Head Coach Approval. Typically Offered Fall, Spring</td>
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<td>RMLS111</td>
<td>Recreation Mgmt and Leisure St</td>
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<td>The basic components of fitness: cardiovascular endurance, muscular strength and endurance, flexibility, body composition, and nutrition. Some aerobic activities and brief fitness assessment will occur. Not to be taken by students with credit in RMLS 112. For full development of a fitness program, students should take RMLS 112. Typically Offered Fall, Spring, Summer</td>
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<td>RMLS112</td>
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<td>The main components of health-related fitness: cardiovascular endurance, muscular strength and endurance, flexibility and body composition. Typically Offered Fall, Spring, Summer</td>
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<td>Course Code</td>
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<td>RMLS113</td>
<td>Recreation Mgmt and Leisure St</td>
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<td>RMLS115</td>
<td>Recreation Mgmt and Leisure St</td>
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<td>RMLS116</td>
<td>Recreation Mgmt and Leisure St</td>
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<td>RMLS118</td>
<td>Recreation Mgmt and Leisure St</td>
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<td>RMLS119</td>
<td>Recreation Mgmt and Leisure St</td>
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<td>RMLS121</td>
<td>Recreation Mgmt and Leisure St</td>
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<td>RMLS122</td>
<td>Recreation Mgmt and Leisure St</td>
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<td>RMLS123</td>
<td>Recreation Mgmt and Leisure St</td>
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<td>RMLS124</td>
<td>Recreation Mgmt and Leisure St</td>
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<td>RMLS125</td>
<td>Recreation Mgmt and Leisure St</td>
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<td>RMLS126</td>
<td>Recreation Mgmt and Leisure St</td>
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<td>RMLS127</td>
<td>Recreation Mgmt and Leisure St</td>
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<td>RMLS128</td>
<td>Recreation Mgmt and Leisure St</td>
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<td>RMLS130</td>
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<td>RMLS131</td>
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<td>RMLS132</td>
<td>Recreation Mgmt and Leisure St</td>
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<td>RMLS141</td>
<td>Recreation Mgmt and Leisure St</td>
<td>1</td>
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<td>Course Code</td>
<td>Department</td>
<td>Title</td>
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<tr>
<td>RMLS147</td>
<td>Recreation Mgmt and Leisure St</td>
<td>The course covers rules and strategies of the game of badminton with emphasis on fundamental: serves, clear and drop shots. Movements and court positions are presented that enhance the skill performance.</td>
<td>Typically Offered Fall, Spring, Summer Vinyasa yoga is a series of poses that will move you through the power of inhaling and exhaling. Vinyasa movements are smoothly flowing and almost dance-like. Vinyasa yoga is for every level of fitness since all the poses can be modified and advanced students can also be challenged. Typically offered Fall, Spring Summer.</td>
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<tr>
<td>RMLS151</td>
<td>Recreation Mgmt and Leisure St</td>
<td>Vinyasa yoga is a series of poses that will move you through the power of inhaling and exhaling.</td>
<td>Zumba combines Latin and International music with a fun and effective workout system. This activity provides an excellent group exercise experience. Typically offered Fall, Spring, Summer.</td>
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<tr>
<td>RMLS152</td>
<td>Recreation Mgmt and Leisure St</td>
<td>Vinyasa movements are smoothly flowing and almost dance-like. Vinyasa yoga is for every level of fitness since all the poses can be modified and advanced students can also be challenged.</td>
<td>A variety of self defense and martial arts will make up the course with emphasis on fitness. The instructor will incorporate self defense moves with other forms of exercises that may include Tae Kwon Do, Tae Chi, or Kick Boxing. Typically Offered Fall, Spring, Summer.</td>
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<tr>
<td>RMLS155</td>
<td>Recreation Mgmt and Leisure St</td>
<td>A variety of self defense and martial arts will make up the course with emphasis on fitness.</td>
<td>The course covers fundamental skills of golf: putting, chipping, use of irons, woods, and special shots. Basic rules of play will be discussed. Typically Offered Fall, Summer.</td>
</tr>
<tr>
<td>RMLS168</td>
<td>Recreation Mgmt and Leisure St</td>
<td>The course covers fundamental skills of golf: putting, chipping, use of irons, woods, and special shots. Basic rules of play will be discussed.</td>
<td>This kayaking class is designed to teach students how to use kayaks for recreational use. Students learn principles and techniques of river and lake travel by kayak. Students will be introduced to paddling strokes/techniques, kayak safety procedures, choosing kayaking gear and clothing, reading the weather and river dynamics. Typically Offered Spring Only.</td>
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<tr>
<td>RMLS169</td>
<td>Recreation Mgmt and Leisure St</td>
<td>Half-semester course. Introduction to necessary skills and knowledge about equipment, food, food preparation, first aid, wilderness travel, navigation and trip planning for backpacking. A 45 hour wilderness backpacking experience is required.</td>
<td>The rules and strategies in playing the game of tennis with emphasis on the basic strokes of serving and forehand and backhand ground strokes and volleys. Movement and court position will be stressed. Typically Offered Fall, Spring, Summer</td>
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<tr>
<td>RMLS171</td>
<td>Recreation Mgmt and Leisure St</td>
<td>The rules and strategies in playing the game of tennis with emphasis on the basic strokes of serving and forehand and backhand ground strokes and volleys. Movement and court position will be stressed.</td>
<td>The primary purpose of this course is to give the student a basic introduction to top-rove rock climbing skills. Students will gain a basic understanding of the equipment, techniques, and procedures necessary for safe top-rove climbing. Students will learn techniques used for face and crack climbing, as well as dihedrals and chimneys. Risk management issues will be discussed for artificial climbing walls and natural rock. Typically Offered Fall, Spring</td>
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<tr>
<td>RMLS172</td>
<td>Recreation Mgmt and Leisure St</td>
<td>The primary purpose of this course is to give the student a basic introduction to top-rove rock climbing skills. Students will gain a basic understanding of the equipment, techniques, and procedures necessary for safe top-rove climbing. Students will learn techniques used for face and crack climbing, as well as dihedrals and chimneys. Risk management issues will be discussed for artificial climbing walls and natural rock. Typically Offered Fall, Spring</td>
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<td>Course Code</td>
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<td>RMLS173</td>
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<td>RMLS174</td>
<td>Recreation Mgmt and Leisure St</td>
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<td>RMLS178</td>
<td>Recreation Mgmt and Leisure St</td>
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<td>RMLS180</td>
<td>Recreation Mgmt and Leisure St</td>
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<td>RMLS181</td>
<td>Recreation Mgmt and Leisure St</td>
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<td>RMLS185</td>
<td>Recreation Mgmt and Leisure St</td>
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<td>Undergraduate</td>
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<td>RMLS189</td>
<td>Recreation Mgmt and Leisure St</td>
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<td>RMLS210</td>
<td>Recreation Mgmt and Leisure St</td>
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<td>RMLS211</td>
<td>Recreation Mgmt and Leisure St</td>
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<td>RMLS213</td>
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<td>RMLS216</td>
<td>Recreation Mgmt and Leisure St</td>
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<td>RMLS217</td>
<td>Recreation Mgmt and Leisure St</td>
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<td>RMLS221</td>
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<td>RMLS224</td>
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<td>RMLS225</td>
<td>Recreation Mgmt and Leisure St</td>
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<td>Undergraduate</td>
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</table>
RMLS229  Recreation Mgmt and Leisure St  ED  Undergraduate  3
A teaching methods course covering all American Red Cross swimming levels, Basic and Emergency Water Safety and Lifeguard Training. Emphasis is on skill development and practice teaching. LGI and WSI certification upon successful completion. Pre-Requisites:Current American Red Cross Lifeguard certification. Typically Offered Spring Only

Students are taught the principles and techniques of river travel by canoe. Students are introduced to canoe tripping, including trip planning, paddling strokes/techniques, water reading, introductory to map reading, and canoeing safety procedures. Students learn how to plan trip destinations, duration, travel logistics, food, equipment, natural history consideration, and companions. Weekend trip required. Prerequisites: RML majors receive registration preference. Typically Offered Fall-Even Years, Summer

RMLS231  Recreation Mgmt and Leisure St  ED  Undergraduate  2
Learn about the appropriate gear, specialized camping skills, and transportation skills needed for a safe winter outdoor experience as students prepare for a winter weekend backpacking experience. Weekend trip required. Prerequisites: RML majors receive registration preference. Typically Offered Spring Only-Even Years

The course will provide students with a learning experience involving initiatives and low elements on a ropes/challenge course. They will be exposed to philosophy of adventure education, facilitation techniques that enhance the participants learning outcomes, and safety procedures. Typically Offered Fall, Summer

RMLS232  Recreation Mgmt and Leisure St  ED  Undergraduate  2
This kayaking class is designed to teach students the principles and techniques of river and lake travel by kayak. Students will be introduced to choosing kayaking gear and clothing, kayak trip planning, paddling strokes/techniques, kayak safety procedures, capsize and reentry techniques, reading the weather and river dynamics. Weekend trip required. Prerequisites: RML majors receive registration preference. Typically Offered Spring Odd Years

The course will provide students with information and skills necessary to become familiar with top rope rock climbing instruction skills. Students will gain basic understanding of the equipment, techniques, and procedures necessary for safe top rope climbing. Risk management issues, policy, procedures, and pedagogical techniques used to teach top rock climbing for artificial and natural rock will be discussed. Weekend trip required. Prerequisites: RLM majors receive registration. Typically offer Fall Odd Years.

RMLS234  Recreation Mgmt and Leisure St  ED  Undergraduate  2

RMLS235  Recreation Mgmt and Leisure St  ED  Undergraduate  2

RMLS236  Recreation Mgmt and Leisure St  ED  Undergraduate  2
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<th>Course Code</th>
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<th>Description</th>
<th>Prerequisites</th>
<th>Typical Offering</th>
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<tr>
<td>RMLS240</td>
<td>Recreation Mgmt and Leisure St ED</td>
<td>Undergraduate</td>
<td>3</td>
<td>Provides an understanding of the special and unique needs to therapeutic and inclusive recreation services to individuals with social, physical, or mental/psychological disabilities. An ecological model will focus on the interfacing of facilities; family and community attitudes; individual’s function level and interests to mainstreaming them into a leisure lifestyle. An intervention process will be used in the development of activity selection for inclusive recreation programming. Prerequisites: RMLS 121 or approval by instructor. Typically Offered Fall Only</td>
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<tr>
<td>RMLS248</td>
<td>Recreation Mgmt and Leisure St ED</td>
<td>Undergraduate</td>
<td>3</td>
<td>Introduction to principles and techniques of the master planning and design process used to leisure and recreation professionals. Present and future development, management, participant use and area safety will be studied with relationship to final design and selection. The master planning and design process will be reviewed and studied relative to funding sources and governmental regulation. Use of computer software for planning and design will be employed. Prerequisites: RMLS 121 or approval by instructor. Typically offered Spring semester.</td>
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<tr>
<td>RMLS250</td>
<td>Recreation Mgmt and Leisure St ED</td>
<td>Undergraduate</td>
<td>3</td>
<td>The course will focus on theory and application of marketing, management, budgeting, customer service and other business aspects of sport facilities, organizations or programs and industry sectors in a variety of community or commercial recreation venues. Partnerships between non-profit/government or commercial agencies to create sport tourism based facilities, consumer equipment, multiplexes/arenas, and recreational related activities sectors will be studied. Programming for tournaments, sports tourism, and sponsorships of facilities will be incorporated in the content. Prerequisites: RMLS 121 or approval by instructor. Typically offered Fall even years.</td>
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<td>RMLS275</td>
<td>Recreation Mgmt and Leisure St ED</td>
<td>Undergraduate</td>
<td>1 TO 2</td>
<td>The course is designed to provide a Recreation Leadership &amp; Management major student the opportunity to work as a teaching assistant under the supervision of a RLSW department faculty member in one of the many course offerings. Student may use up to three credits towards graduation electives. Pre-Requisites: By permit only. Typically Offered Fall, Spring, Summer</td>
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<td>RMLS294</td>
<td>Recreation Mgmt and Leisure St ED</td>
<td>Undergraduate</td>
<td>3</td>
<td>The field experience will have two options available to students. Option A is to submit evidence to support extensive professional work experience in leisure service setting(s) that warrants not having to complete the 150 hours of field study work and submit the preliminary RLM portfolio for review. Option B for individuals not having adequate evidence or work experience in leisure service setting(s) must complete a 150 hour field work experience, submit related reports and preliminary RLM portfolio. Prerequisites: RMLS 121, RMLS 180, Sophomore status and department approval. Typically Offered Spring, Summer</td>
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<td>Course Code</td>
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<td>RMLS316</td>
<td>Recreation Mgmt and Leisure St</td>
<td>3</td>
<td>Undergraduate</td>
<td>Testing, measurement and prescription principles are covered as they relate to the areas of fitness, exercise science, and recreational activity performance for all ages. Emphasis is placed on understanding health related fitness test protocols and interpretation of health related fitness assessments for exercise prescription for individual program design found in clinical and corporate fitness employee service settings. Prerequisites: BIOL 205 and Junior status or approval by instructor. Typically Offered Spring Only-Even Years</td>
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<tr>
<td>RMLS318</td>
<td>Recreation Mgmt and Leisure St</td>
<td>3</td>
<td>Undergraduate</td>
<td>The course is designed to teach students how to facilitate the high and low elements found on ropes/challenge courses. Training will include facilitation of participant’s learning experience, safety procedures on high and low elements, maintenance and administration of courses, and the learning theory behind this type of adventure educational experience. Prerequisites: Sophomore status or approval by instructor. Typically Offered Fall-Odd Years, Summer</td>
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<td>RMLS320</td>
<td>Recreation Mgmt and Leisure St</td>
<td>3</td>
<td>Undergraduate</td>
<td>Introduces the principles, problems, and practices of maintenance for leisure service facilities, areas, and equipment. Examines techniques and tools used by administrative and supervisory staff in the planning and organizing for an effective maintenance system. Emphasis on personnel management and specific leisure services maintenance practices, equipment, budgeting, year round scheduling, and preventative procedures. Prerequisites: RMLS 245 and Junior status or approval by instructor. Typically Offered Fall Only</td>
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<td>RMLS325</td>
<td>Recreation Mgmt and Leisure St</td>
<td>3</td>
<td>Undergraduate</td>
<td>Youth development models and theory is applied in a variety of leisure service agency’s program settings and offerings. These will be studied in the context of staff, youth community roles, and leadership capacity building through experiences within various organizations who service youth as part of their mission. Prerequisites: Junior status or approval by instructor. Typically offered Fall odd years, Summer even years.</td>
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<tr>
<td>RMLS342</td>
<td>Recreation Mgmt and Leisure St</td>
<td>3</td>
<td>Undergraduate</td>
<td>Students are introduced to programming models, philosophy, theories, and practices used in leisure service programming. Emphasis is on the use of a needs assessment and evaluation which planning, developing, implementing or revising leisure service programs for various ages and settings in which leisure activities occur. Prerequisites: RMLS 180 or approval by instructor. Typically offered Spring.</td>
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The student will have an understanding of organized youth afterschool, community day recreational, and traditional camping programs through a review of regulations, personnel selection, program activity planning and structural implementation while conducting field trips, day or residential experience. Students will participate in a hands-on experience using the processes for service learning experience with a local children’s afterschool, community day recreation or camping group. Prerequisites: RMLS 180 and Junior status or approval by instructor. Typically offered Spring, even years.

Students learn to manage risk within leisure and recreation organizations through an understanding of negligence, tort, liability, and legislative history. Students learn how to offer quality leisure experiences with protection for participants and adequate safeguards under the law for leaders, administrators, and the organizations providing services. Prerequisites: Junior status or approval by instructor. Typically Offered Fall Only

This course is designed for RLM major and other students wishing to gain a broad perspective about marketing leisure and recreation services. Topics covered will include the marketing mix, marketing environment, use of social media and the internet, and development of a marketing plan. Practical dimensions of marketing in leisure and recreation services will be implemented, including development of brochures, newsletters, press releases, and other free or inexpensive marketing techniques. Prerequisites: Junior status or instructors approval. Typically offered Spring.

The course will cover the planning and implementation logistics for festival, community and special events. Financing, risk management, security, economic and involved community based groups associated with these events will be explored and applied to assignments. Typically Offered Spring Even Years, Summer Odd Years.

Governmental agencies, non-profit and private organizations use a variety of planning and development models to acquire funding or donations; construct recreational facilities to meet programming needs in a community; protect natural areas and historical sites for parks, recreational and leisure use. These groups come together in partnership with innovative methods. The students will study these approaches and how they can be used in a community setting to address solutions. Junior status or approval by instructor. Typically offered Spring, Odd years.

The course will cover the development, design, and management of corporate health and fitness programs, facilities, and equipment for employee services and special populations. Special emphasis is placed on strategic program planning and development, facilities, staffing, management, and operations, budget and finance. Prerequisites: RMLS 231, RMLS 342, and Junior status or approval by instructor. Typically Offered Fall Only-Even Years
Students will apply various marketing techniques to sport business, athletics, and recreation organizations. Sports industry, techniques and procedures for developing and implementing a sport business marketing plan will be covered. This history, current operating practices and future trends within sport marketing business will be explored. Prerequisites: RMLS 250, RMLS 350, and Junior status or approval by instructor. Typically Offered Spring Only-Odd Years

This course is in-depth investigation of strategies for financing and management of leisure services to meet the needs of various markets. Special topics will include organizational management as it relates to financial efficiency, reduced spending (cutback) management, budgeting, and marketing impacts on budget decisions. Use of computer spreadsheet in developing budgets will be part of learning process. Prerequisites: ACCT 201, RMLS 342, and Senior status or approval by instructor. Typically Offered Spring Only

Leadership philosophy, theory and style as it relates specifically to outdoor pursuits will be covered, with special emphasis on trip planning considerations and risk management. Students will plan, participate in, and evaluate an adventure trip experience. Required 4-5 day trip. Prerequisites: RMLS 211 and Junior status or approval by instructor. Typically Offered Spring Only-Odd Years

The course when completed successfully will provide students with certification as a Wilderness First Responder. First aid techniques for remote environments will be covered. To receive certification a students must attend all sessions; achieve 80% on written exam and acceptable performance on practical skills listed. Students will be charged a fee by the national certification organization to participate. Typically Offered Spring and Summer

During a backcountry expedition, participants learn the basics of judgment and decision-making skills, leadership, and other essential components of the Wilderness Education Association (WEA) Curriculum. The course format exposes the participants an overview of the must-knows of outdoor backcountry camping skills and selected recreation activity techniques. Variable credits and course fee will be charged based on the trip length. Prerequisites: A fee for the trip is charged based on the trip length, Junior Status, RML majors receive registrations preference, and approval by instructor. Typically Offered Summer Only

Application and evaluation of business concepts, principles and techniques in the commercial recreation setting. Case studies are used to study examples of these applications. Emphasis on the development and management of a commercial recreation business while looking at the trends and factors affecting commercial recreation business potential. Prerequisites: RMLS 350 and Junior status or approval by instructor. Typically offered Fall odd years and Summer even years.
RMLS465  Recreation Mgmt and Leisure St  ED  Undergraduate  3
Introduction to the community and economic impacts of tourism development. Tourism is studied at the international, national, state, regional and local levels. The roles of leisure/recreational opportunities is explored in relationship to the planning, development, management, and organization of the tourism industry. Prerequisites: Junior status or approval by instructor. Typically Offered Spring Even Years and Summer Odd Years

RMLS468  Recreation Mgmt and Leisure St  ED  Undergraduate  3
The course is designed to introduce students to quantitative and qualitative research regarding leisure service and wellness research. Emphasis will be placed on theoretical framework, research design, data interpretation in professional practitioner work settings. The skills may vary from doing recreational marketing research to fitness analysis. The professional will have the ability to analyze other individual's research/studies for validity and application to their own leisure service setting. Prerequisites: RMLS 350 and Senior status or approval by instructor. Typically Offered Fall Only

RMLS491  Recreation Mgmt and Leisure St  ED  Undergraduate  6
The culmination of the RLM academic program is a 600 hour internship with a leisure agency working an average 40 hour per work week while having entry level supervisory professional work experience demonstrating ability to implement and manage programs or facilities, supervise other people, marketing, financial management and a minimum of one major project development responsibilities for the agency. Prerequisites: Complete all Professional-LS Mgmt Core/Concentration with 2.5 GPA and Department approval. Typically Offered Fall, Spring, Summer

RMLS499  Recreation Mgmt and Leisure St  ED  Undergraduate  3
The course content is designed to evaluate the senior student's work prior to completion of the final internship. Students will present their senior portfolio as evidence of course based on designated course completion up to the semester course is taken. In addition to the portfolio review, students will be introduced to the various certifications, graduate and continuing education options available to professionals. Students will receive preparation of professional experience for the job market search. Prerequisites: Completion of EMLS 294, Senior status and department approval. Typically Offered On Demand

RMLSS20  Recreation Mgmt and Leisure St  ED  Graduate  3
During this course students receive an introduction to the theory, philosophy, and methodologies of experiential education. Students analyze and examine the writings of theorists and practitioners and discuss applications of their work to experiential education. Topics include learning theory, human nature, aims of education, critical analysis, and evaluation techniques. Students analyze principles underlying curriculum development and strategies for implementing such models. Students also gain understanding about assessing individual needs, models of behavior change, and developmentally appropriate activities. Typically Offered Summer Only, Even Ye
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<td>RMLS691</td>
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<td>RUBR393</td>
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<td>RUBR499</td>
<td>Rubber</td>
<td>TE</td>
<td>Undergraduate</td>
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Experiential education takes place in natural, cultural, or social environments where students engage intellectually, emotionally, socially, politically, spiritually, and physically in their learning. Using this information, this course is designed to engage participants in the development of program materials for various ages/grade levels in public schools and in nature or outdoor centers. Students investigate concepts and principles of environmental and cultural interpretation. Lesson plans, articles for outdoor/environmental journals or newsletters, and field trips are part of this course. Typically Offered Summer Only, Odd Year.

Students learn about the application of the process of teaching, learning, and leading outdoor pursuits and adventure education/therapy. Program theory, instructional design, leadership techniques, and safety management principles are examined. The idea of using adventure as a means to human growth and development has become an accepted methodology in education, leadership training, counseling and corrections as well as in other human service fields. Typically Offered Summer Only, Odd Year.

The practicum is a supervised experience in an appropriate classroom, outdoor/nature center, or other appropriate location of special interest to the student. Students gain practical experience under the guidance of supervising teachers in planning for teaching and directing the learning activities of pupils. One credit hour of RMLS 691 equals 66 clock hours. A FSU practicum supervisor will be assigned to visit sites or communicate through the appropriate technology and discuss progress. Typically Offered Summer Only, Even Years.

The student will work on-the-job with one cooperating firm under the guidance of both the university and the firm personnel in a position that will broaden and reinforce knowledge of rubber materials, processing, production tooling, quality control, engineering, sales design and production supervision. This course meets General Education requirements: Writing Intensive Requirement and new Fall 2017 Comm Across the Curriculum. Pre-Requisites: Rubber or Plastics Engineering Technology students only. Typically Offered Fall, Summer.

This course will consist of a series of presentations, designed to prepare the prospective rubber engineering technology graduate for entry into the rubber industry work force. Oral and written communications, interviewing and job search techniques, social interaction, industry structure, professional organizations, peer relationships and supervisor relations supported through discussion, role playing and case studies are examples of some of the subjects which are addressed. Pre-Requisites: Rubber or Plastic Engineering Tech students only & Senior status. Typically Offered Spring Only.
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<td>SCWK110</td>
<td>Social Work</td>
<td>AS</td>
<td>Undergraduate</td>
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<td>Professional roles and settings. Overview of professional values, knowledge, and skills. History of the social work profession. Beginning emphasizes on self-awareness, cultural diversity, and helping from a psychosocial perspective. Career exploration for students undecided about program choice. Typically Offered Fall, Spring</td>
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<tr>
<td>SCWK130</td>
<td>Social Work</td>
<td>AS</td>
<td>Undergraduate</td>
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<td>Introduction to types, purposes, and stages of interviewing. Basic empathy training. Skill development for observation, listening, non-verbal communication, rapport-building, information-giving, and information-gathering. Beginning training in recording and documentation. Emphasis on self-monitoring and working with culturally diverse, oppressed, or psychosocially maladaptive clients. Typically Offered Fall, Spring</td>
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<tr>
<td>SCWK170</td>
<td>Social Work</td>
<td>AS</td>
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<td>Orientation and preparation for introductory field experience. Introduction to use of supervision, supervisory evaluation, self-evaluation, and agency structure and function. Serves as a prerequisite for SCWK 191. Typically Offered Spring Only</td>
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<td>SCWK191</td>
<td>Social Work</td>
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<td>Human service agency placement of 120 clock hours provides the student with opportunity to observe social service roles, assist in service delivery under close supervision, and assess career interests and aptitude. Pre-Requisites: SCWK 110 &amp; SCWK 130 &amp; SCWK 170 &amp; overall GPA of 2.00. Typically Offered Summer Only</td>
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<tr>
<td>SCWK210</td>
<td>Social Work</td>
<td>AS</td>
<td>Undergraduate</td>
<td>3</td>
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<td>Historical development of social welfare in the Old and New Worlds. Description of existing income transfer and social service programs in the United States. Discussion of values underlying the existing system. Typically Offered Fall Only</td>
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<tr>
<td>SCWK220</td>
<td>Social Work</td>
<td>AS</td>
<td>Undergraduate</td>
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<td>First of two courses devoted to theories, methods, and values of social work practice. Primary focus on generalist and direct service roles of entry-level professionals. Selected theoretical models and social work generic method serve as instructional framework throughout two courses. Focus primarily on individuals and families. Environmental interventions stressed, as well as interventions aimed at client psychological processes. Special emphases on worker self-understanding, cultural diversity, rural populations, and client advocacy and empowerment. Pre-Requisites: PSYC 150 &amp; SOCY 121 &amp; SCWK 110, 130, 170, 191 and 210 and Corequisite: SCWK 240. Typically Offered Spring Only</td>
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<tr>
<td>SCWK240</td>
<td>Social Work</td>
<td>AS</td>
<td>Undergraduate</td>
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<td>Various theories of human behavior and social environment and how they relate to social work practice. Relationships among biological, social, psychological, and cultural systems as they affect the “person-in-environment” and as they constitute a pluralistic society. Understandings of behavior and society from perspective of the humanities as well as the sciences. Corequisite: SCWK 220 and SOCY 225. Pre-Requisites: BIOL 101 or 109 or 111; &amp; PSYC 226 or EDUC 251. Typically Offered Spring Only</td>
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Ferris State University
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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Program Level</th>
<th>Prerequisites</th>
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<tbody>
<tr>
<td>SCWK261</td>
<td>Social Work AS Undergraduate</td>
<td>2</td>
<td></td>
<td>Programs and services provided for children in their homes, foster homes,</td>
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<td>adoptive homes, and child care institutions are studied to provide student</td>
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<td>with knowledge for future work in child welfare settings or to prepare</td>
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<td>students for use of such services while employed in other settings.</td>
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<td>Typically Offered Fall Only</td>
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<tr>
<td>SCWK262</td>
<td>Social Work AS Undergraduate</td>
<td>3</td>
<td></td>
<td>Programs, services, and agencies that deal with the many facets of health</td>
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<td>care will be surveyed to provide students with an understanding of social</td>
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<td>services, both in institutional settings and within the community. Special</td>
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<td>emphasis on health services to the elderly.</td>
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<td>Typically Offered Fall Only</td>
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<tr>
<td>SCWK263</td>
<td>Social Work AS Undergraduate</td>
<td>2</td>
<td></td>
<td>Focuses on definition of the substance abuse problem: pathophysiology,</td>
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<td>incidence within the general population, theories of causation, behavior of</td>
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<td>the abuser, behavior of the abuser’s family, and substance abuse among special</td>
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<td>populations. Pre-Requisites: PSYC 150 or SOCY 121. Typically Offered Fall</td>
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<tr>
<td>SCWK264</td>
<td>Social Work AS Undergraduate</td>
<td>4</td>
<td></td>
<td>Assessment skills are reviewed and practiced. Philosophies of intervention</td>
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<td>are discussed, including those of abstinence and responsible-use. All major</td>
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<td>treatment approaches are investigated, including crisis intervention,</td>
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<td>individual counseling, group work, and family treatment. Beginning helping-</td>
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<td>professional intervention skills are practiced. Also reviews varieties of</td>
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<td>programming in substance abuse prevention, community education, and special</td>
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<td>treatment modalities. Pre-Requisites:SCWK 130 and 263. Typically Offered</td>
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<td>Spring Only</td>
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<tr>
<td>SCWK265</td>
<td>Social Work AS Undergraduate</td>
<td>3</td>
<td></td>
<td>Organization and function of corrections institutions in Michigan. Assessment</td>
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<td>and intervention methods specific to corrections, including special focus on</td>
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<td>substance abuse dimensions of assessment and intervention. Beginning helping-</td>
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<td>professional skills are practiced, including writing of assessments and</td>
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<td>service plans as well as simulations of helper/client interactions. Pre-</td>
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<td>Requisites: PSYC 150 or SOCY 121. Typically Offered Spring Only</td>
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<tr>
<td>SCWK310</td>
<td>Social Work AS Undergraduate</td>
<td>3</td>
<td></td>
<td>Frameworks for analyzing social and economic policies as they bear on social</td>
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<td>welfare. Preparation for roles not only as service providers within existing</td>
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<td>policy but also as participants in efforts to change policy. From SCWK 210,</td>
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<td>continued discussion of values underlying the social welfare system,</td>
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<td>particularly the principles of social and economic justice. Prerequisites: SCWK</td>
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<td>210 and SOCY 225. Typically offered: Fall, Spring.</td>
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<tr>
<td>SCWK320</td>
<td>Social Work AS Undergraduate</td>
<td>4</td>
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<td>Continuation of practice theory sequence initiated in SCWK 220. Focus</td>
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<td>primarily on the context of working on behalf of small groups, organizations,</td>
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<td>and communities. Pre-Requisites:Bachelor of Social Work Students only.</td>
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<td>Meets General Education requirements for Collaboration and Problem Solving.</td>
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<td>Typically Offered Fall, Summer</td>
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</table>
SCWK330  Social Work  AS  Undergraduate  4
Interviewing, including clarification, interpretation, confrontation, feedback, self-disclosure, immediacy, use of humor, systematic problem solving, and techniques utilized in various counseling theories. In-depth exploration of social work interviewing stages introduced in SCWK 130. Simulated and actual interviewing situations evaluated through the use of direct peer and instructor observation, as well as audio tape, video tape, and process recording. Pre-Requisites: Bachelor of Social Work Students only. Typically Offered Spring Only

SCWK350  Social Work  AS  Undergraduate  3
Social research design methodology, with emphasis on applied research in human service settings. Special emphasis on program evaluation, single subject designs, human service surveys, and ethical issues of research. Introduction to elementary statistics, including frequency distributions, measures of central tendency, and beginning bivariate analysis. Students are prepared for critical use of research, evaluation of their own practice, and making contributions to the professional knowledge base. Pre-requisite: Junior or Senior status. Typically offered: Fall, Spring, Summer

SCWK360  Social Work  AS  Undergraduate  4
This course will prepare social work students to effectively practice within the Children's Services arena, including child protective services, foster care, adoption and juvenile justice. Students will learn the history, legal aspects and best practices needed to work in these domains. Students will learn investigative practices and procedures, assessment data gathering and assessment writing, how to write court reports, case notes and quarterly case reports. Student will learn about family-centered services, prevention services and case management. A theoretical underpinning of this course is how trauma affects children and families. Prerequisites: SCWK 110 and SCWK 130 and SCWK 191. Typically offered Fall and Spring.

SCWK361  Social Work  AS  Undergraduate  3
Enables student to gain necessary working knowledge of the United States legal system as it relates to social work. Teaches skills for dealing with legal ramifications which affect professional social work practice. Pre-Requisites: Completion of SCWK 220 with a C or better. Bachelor of Social Work students only. Typically Offered On Demand

SCWK370  Social Work  AS  Undergraduate  1
Instructional guidance to students as they prepare for field instruction (SCWK 491, 492). Review of assessment and intervention theory, especially as discussed in SCWK 220; preview of assessment/intervention process in different agency settings. Students negotiate and document a plan for relating objectives of field instruction to proposed placement activities. Pre-Requisites: Bachelor of Social Work Students only. Typically Offered Spring, Summer.
SCWK380 Social Work AS Undergraduate 3
This 2 week study abroad course in Latin America enhances the preparation of competent social work practitioners in both domestic and international arenas of social welfare. Through service learning they will explore themes of social welfare development and human rights, demonstrating the relationships between social work, social justice, and civic/global responsibility. Students will develop a global perspective of social work practice, enrich their multicultural experiences and increase their awareness of the interconnectedness of international issues. Pre-requisites: SOCY 121 or SOCY 122 or ANTH 122 and Instructor Permission. Typically offered Summer.

SCWK381 Social Work AS Undergraduate 3
This course utilizes an African-Centered approach to facilitate a service learning experience in Haiti. It includes a 10-day, intensive international experience designed to deepen students' knowledge of the culture and social problems facing local communities in Haiti. It involves an examination of global, social, and economic issues and responses used to address health, education, medical and social issues affecting a developing country. Classroom discussions, community service projects, personal interactions, and recreational and cultural experiences are the instructional methods. It is an interdisciplinary, collaborative experience open to advanced level undergraduate students in the social sciences, education and health-related fields requiring permission of the instructor. There are three stages to the course: classroom sessions prior to departure, cultural immersion with local entities, and cultural excursions and activities. Typically Offered Summer.

SCWK450 Social Work AS Undergraduate 3
Students negotiate research topic and prepare a proposal for a research project. Continued discussion of data analysis from SCWK 350, including bivariate analysis and inferential statistics at all measurement levels. Guidance for student research reports. Pre-Requisites: SSCI 310 and MATH 115 or Higher. Typically Offered Fall Only

SCWK481 Social Work AS Undergraduate 2
A forum for discussing the field application of social work values, knowledge, and skills developed throughout the program. Instructional monitoring of student's progress in the field. Preparation for continued professional development following graduation. Co-Requisites:SCWK 491. Typically Offered Fall, Spring, Summer

SCWK482 Social Work AS Undergraduate 2
Continuation of SCWK 481. Completion of SCWK 482 must include (1) Achievement of "Acceptable" rating for the student's presentation under the Portfolio Review and Evaluation Process (PREP) and (2) achievement of a passing grade on the program's Comprehensive Social Work Examination. Co-Requisites:SCWK 492. Typically Offered Fall, Spring, Summer
<table>
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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Level</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SCWK491</td>
<td>Social Work</td>
<td>6</td>
<td>Undergraduate</td>
<td>6</td>
<td>An educationally directed, coordinated, and monitored field placement focused on the role of the generalist social worker. Student spends 240 clock hours per semester in placement agency, engaged primarily in supervised direct services to clients. Learning objectives and assignments are planned in advance (SCWK 370) and during the first three weeks of placement. Objectives and assignments entail application of the values, knowledge, and skills developed in all other professional courses. Prerequisites: SSCI 310 &amp; SCWK 320 &amp; 330 &amp; 370 &amp; 2.5 GPA in SCWK courses. Co-Requisites: SCWK 481. Meets General Education requirements for Collaboration and Problem Solving. Typically Offered Fall, Spring, Summer</td>
</tr>
<tr>
<td>SCWK492</td>
<td>Social Work</td>
<td>6</td>
<td>Undergraduate</td>
<td>6</td>
<td>Continuation of SCWK 491 for additional 240 clock hours in same agency. Includes implementation of research project proposed in SCWK 450. Corequisite: SCWK 482. Prerequisite: SCWK 491, 2.50 GPA in social work courses, &quot;C&quot; or better in all graded social work courses, and approval of faculty advisor. Pre-Requisites:SCWK 491 and 2.5 GPA in social work courses. Co-Requisites:SCWK 482. Meets General Education requirements for Collaboration and Problem Solving. Typically Offered Fall, Spring, Summer</td>
</tr>
<tr>
<td>SCWK510</td>
<td>Social Work</td>
<td>3</td>
<td>Graduate</td>
<td>3</td>
<td>This course is a foundation MSW course. The course emphasizes the history of social welfare policies and the role they play at the present time. Student will utilize frameworks for analyzing social and economic policies as they relate to social welfare. Preparation for roles not only as service providers within existing policies but also participants in efforts to change policy will be discussed. The class will also have an emphasis on values underlying the social welfare system, particularly the principles of social and economic justice. Typically offered Spring.</td>
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<tr>
<td>SCWK520</td>
<td>Practice with Groups and Organizations</td>
<td>3</td>
<td>Graduate</td>
<td>3</td>
<td>Practice with Groups and Organizations. This course is a foundation year MSW course. The course focus is on generalist practice with organizations and communities. Macro-practice skills through group work are emphasized, along with the interconnections between micro, mezzo and macro generalist practice. Macro intervention will be practiced. Prerequisites: Bachelor's Degree. Typically offered Spring, Summer.</td>
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<tr>
<td>SCWK530</td>
<td>Generalist Social Work Practice</td>
<td>4</td>
<td>Graduate</td>
<td>4</td>
<td>Generalist Social Work Practice. This course is a foundation year MSW course. The course focuses on theories, methods, and values of social work practices as well as beginning to advanced interviewing skills with an emphasis on Trauma-Informed Perspective and Intervention and various Evidenced Based Practices. Prerequisites: Bachelors Degree. Typically offered Fall.</td>
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</table>
SCWK540  Social Work  AS  Graduate  3
This course is a foundation year MSW course. This overview of theories of human behavior in the social environment in relation to advanced social work practice will focus on the relationships among biological, psychological, social and cultural systems as they affect the “person-in-environment” across the life span. Students will consider the importance of integrating multiple critical perspectives to solve complex human problems to influence wellbeing and empowerment. Typically offered Fall.

SCWK550  Social Work  AS  Graduate  3
SCWK 550 is the foundation Social Research course, the first in a two part advanced research sequence. Social Work research design methodology, with emphasis on applied advanced research in human services and public settings. Special emphases are placed on program evaluation within the field agency, with emphasis on advanced clinical practice to inform the research and with the intention of this becoming part of the capstone proposal in the advanced year. Development of a new knowledge base within the agency is expected. This course is an introduction to elementary statistical concepts, including frequency distributions, measures of central tendency, and beginning bivariate analysis and inferential statistics. Student in this course are prepared for critical use of research, and evaluation of their own and other professional knowledge base. Typically offered Fall.

SCWK560  Social Work  AS  Graduate  3
This course is a foundation year MSW course. Advanced training in the recognition of cultural patterning and histories of diverse social identity groups in the US and the differential impacts of past and present attitudes, beliefs, practices and policies on the lives of individuals, families, groups and communities. Analysis of stereotyping, distortions and myths of various ethnic groups are examined. The degree to which social structure and values may oppress, marginalize, alienate or enhance privilege and power are analyzed.
Prerequisites: Bachelor’s Degree. Typically offered Spring.

SCWK591  Social Work  AS  Graduate  4
This is the first part of the MSW foundation year practicum experience. Students are required to complete a 240 hour, hands on social work internship in an approved agency under the supervision of a professional social worker. Participation in the guided seminar class assists the student to assimilate course content with the community based learning. The seminar provides further integration of practice with the skills, knowledge, and values and ethics of the field. The seminar is an additional 10 hours. Illustration from the students’ work in the agency setting is included through various assignments. Typically offered: Fall, Spring, Summer
SCWK592  Social Work  AS  Graduate  4

This is the second part of the MSW foundation year practicum experience. Students are required to complete a 240 hour, hands on social work internship in an approved agency under the supervision of a professional social worker. Participation in the guided seminar class assists the student to assimilate course content with the community based learning. The seminar provides further integration of practice with the skills, knowledge, and values and ethics of the field. The seminar is an additional 10 hours. Illustration from the students' work in the agency setting is included through various assignments. Prerequisite: SCWK 591. Typically offered: Fall, Spring, Summer

SCWK600  Social Work  AS  Graduate  3

This is the first of three required courses for the school social work certificate through the Michigan Department of Education taken in the student’s advanced year of their MSW curriculum. The course defines and emphasizes the role of the school social work in the K-12 setting and clinical practice. The course includes child development theories, educational theories and the evaluation of special education eligibility. It also includes a working knowledge of the federal IDEA policies and state special education rules. Typically offered: Spring, Summer, Fall.

SCWK610  Social Work  AS  Graduate  3

This course is an Advanced Year MSW course designed to gain the knowledge, values and skills necessary for leadership and advanced policy advocacy. The course emphasizes the role of policy advocacy for social workers in clinical practice, evaluation of social policy and methods for policy change, and development of effective policy with emphasis on political processes. Students will also identify their individual leadership styles and gain knowledge and skills for effective leadership. Typically offered: Fall, Spring, Summer.

SCWK611  Social Work  AS  Graduate  3

This is one of three required courses for the school social work certificate through the Michigan Department of Education taken in the student’s advanced year of their MSW curriculum. The course builds on the knowledge and skills from SCWK 510, Social Welfare Policy Analysis. The course emphasizes the role of policy advocacy for social workers in school settings and clinical practice. It includes the evaluation of social policy, knowledge of legal and ethical standards, federal and state special education law and methods for policy change, and the development of effective social policy with an emphasis on political processes as it relates to school social work. Typically offered Fall, Spring, Summer.
SCWK620 Social Work AS Graduate 3
This course focuses on intervention and individual change groups, with particular attention to the recruitment and composition of group members, leadership structure of small groups, phases of group development, and group processes such as decision making, tension reduction, conflict resolution, goal setting, contracting and evaluation. A variety of group strategies and techniques will be explored. Theories and methods consistent with the achievement of social justice and individual change through group work will be explored. The course will also consider how gender, ethnicity, race, social class, sexual orientation and different abilities impact various aspects of group functioning. Group facilitation will be practiced as a critical component of the course. Due to the nature of this course, the course will be limited to 12 students. Typically offered Fall, Summer.

SCWK630 Social Work AS Graduate 4
Advanced Clinical Practice with Individuals and Families. This course is an advanced year MSW course. The course focus is on clinical practice with individuals and families. Micro and mezzo practice skills through individual and family counseling are emphasized, with specific focus related to obtaining competency associated with interventions for children, adolescents and adults while incorporating issues of diversity as it relates to the global community, trauma and empowerment. Typically offered Summer, Fall.

SCWK631 Social Work AS Graduate 1
This course is an elective advanced year MSW course. The course focuses on the specifics of the evidence based practice of Cognitive Behavioral Therapy (CBT). The focus of the course is specific to the key components and practice techniques of Cognitive Behavioral Therapy with introduction to Trauma Focused CBT and Dialectical Behavioral Therapy. 1 credit hour. Typically offered Summer.

SCWK632 Social Work AS Graduate 3
This course is an Advanced Year MSW course designed to gain the knowledge, values and skills necessary for advanced clinical skills and supervision in a clinical setting. Students will learn advanced clinical skills and supervisory models through simulation and role-play. This course focuses on the core practice theories, conceptual frameworks and intervention skills necessary for social work practice. Pre-requisite: SCWK 630. Typically offered: Fall, Spring, Summer.

SCWK633 Social Work AS Graduate 3
This is one of three required courses for the school social work certificate through the Michigan Department of Education taken in the student’s advanced year of their MSW curriculum. It builds on the skills from SCWK 630, Advanced Micro Practice. The course is specific to clinical assessment, diagnosis and intervention as a school social worker. The course emphasizes crisis prevention and intervention, the development of positive behavior supports and behavior intervention plans, clinical assessment and evaluation and evidence-based prevention and intervention methods. Typically Offered Fall, Spring, Summer.
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<th>Course Code</th>
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<tr>
<td>SCWK650</td>
<td>Social Work AS Graduate 3</td>
<td>This course builds on the research methods course SCWK 550. In this course students will deepen knowledge and skills necessary to complete quantitative and qualitative research. Students will learn how to critically think about and apply research to social work practice. Specifically, Students will learn how to design and implement Single Subject Design research, design and implement program evaluation research and learn how to evaluate existing research for its usefulness to social work practice. Prerequisite: Advanced Standing. Typically offered Fall, Spring, Summer.</td>
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<tr>
<td>SCWK660</td>
<td>Social Work AS Graduate 3</td>
<td>This course is designed as an intensive survey of the spectrum of the biopsychosocial diagnoses. It examines concepts from the social work perspective of the person-in-environment to explore psychosocial disorders from different cultural perspectives, including gender, age, and minority status. It will provide students with advanced exposure to issues in the area of child and adult diagnosis utilizing the DSM system of classification with a focus on the impact of trauma on diagnoses and how to complete assessments within this system. Prerequisites: Advanced standing. Typically offered Fall, Spring.</td>
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<td>SCWK691</td>
<td>Social Work AS Graduate 4</td>
<td>This is the first Advanced MSW practicum experience. Students are required to complete a 240 hour, hands on social work internship in an approved agency under the supervision of a professional social worker. Students also attend a concurrent seminar 10 hours per semester. Participation in the guided integrative seminar class assists the student to assimilate course content with the community based learning. This seminar provides further integration of practice with the skills, knowledge, and values and ethics of the field. Illustration from the students' work in the agency setting is included through various assignments. Prerequisites: Advanced standing. Typically offered: Fall, Spring, Summer</td>
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<tr>
<td>SCWK692</td>
<td>Social Work AS Graduate 4</td>
<td>This is the second part of the MSW Advanced practicum experience. Students are required to complete a 240 hour, hands on social work internship in an approved agency under the supervision of a professional social worker. Participation in the guided integrative seminar class assists the student to assimilate course content with the community based learning. This seminar provides further integration of practice with the skills, knowledge, and values and ethics of the field. The seminar is an additional 10 hours per week. Illustration from the students' work in the agency setting is included through various assignments. Prerequisite: SCWK 691. Typically offered: Fall, Spring, Summer</td>
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<td>Course</td>
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<tr>
<td>SCWK693</td>
<td>Social Work AS Graduate 4</td>
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<td>SCWK699</td>
<td>Social Work AS Graduate 4</td>
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<tr>
<td>SENG100</td>
<td>Software Engineering BU Undergraduate 3</td>
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<td>SENG101</td>
<td>Software Engineering BU Undergraduate 3</td>
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<td>SENG102</td>
<td>Software Engineering BU Undergraduate 3</td>
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This is the final part of the MSW Advanced Practicum experience. Students are required to complete a 240 hour, hands on social work internship, in an approved agency, under the supervision of a professional social worker, as well as 10 hours of participation in the guided integrative seminar class to assist the student to assimilate course content with the community based learning. This seminar provides further integration of practice with the skills, knowledge, and values and ethics of the field. Illustration from the students’ work in the agency setting is included through various assignments.

Prerequisites: SCWK 691 and SCWK 692. Typically offered: Fall, Spring, Summer

This course is an Advanced MSW Course, the final capstone course of the curriculum. The course is an extension of the Applied Social Work Research (SCWK 650) course in which students have written a proposal for research, program development, clinical development or outcome research. The course is taught as a Learner Centered Teaching course, in which students have written a proposal and identified a faculty mentor to assist in conducting some type of research or program development and an implementation plan. Students will develop individual learning outcomes, assessment of outcomes and implementation plan as a part of the learner centered course. The end product will be an article ready for publication, a grant for program development or something the faculty mentor has approved.

Prerequisites: Advanced Standing and SCWK 650 and SCWK 691 and SCWK 692. Typically offered Spring, Fall, Summer.

This course teaches fundamentals of computer programming. Students learn how to write, test and debug small programs. Basic coding concepts and best practices are discussed and explained. Functions, data types, logical constructs required to produce software solutions will be the basis for this exploration. Covers popular methodologies being used in the real world and examines the merits of each. Students are introduced to Software Development Life-Cycles. Typically Offered Fall and Spring.

This course teaches fundamentals of computer programming. Students learn how to write test and debug small programs. Basic coding concepts and best practices are discussed and explained. Functions, data types, logical constructs required to produce software solutions will be the basis for this exploration. Typically Offered Fall only.

This course is designed to complement Computer Programming 1 and begin to explore more sophisticated programming concepts. Students will begin to learn advanced coding techniques and structures such as Classes, Inheritance, and Polymorphism. Prerequisites: SENG 101. Typically Offered Spring only.
This course covers the processes and procedures practiced by software engineering organizations. Methodologies and processes are presented within the framework of the software development lifecycle. Covers popular methodologies being used in the real world and examines the merits of each. Students learn theory and process as well as examine the effects through case study and applied scenarios. Typically Offered Fall only.

This course covers the tools and methods involved in capturing and tracing end user requirements through the software development process. Examines dynamics and scenarios that organizations deal with in identifying requirements and processes used in defining software needs. Prerequisites: SENG 160 Typically Offered Spring only.

This course explains software configuration management approaches for maintaining large and small scale software projects. From the time the first line of code gets written to the time the software package is released to the public, Configuration Management plays an integral role in ensuring all software components are included in the package. Additionally strategies for managing code lines and employing automated process and tools will be examined. Prerequisites: SENG 160 Typically Offered Spring only.

This course explains database fundamental concepts and database management systems. It examines approaches for maintaining database for large and small scale software projects. It includes designing DB schemas and query languages. Modern DB systems like the NoSQL class of systems are examined. Students will practice utilizing DBMS components in applications that require high performance. Prerequisites: SENG 102. Typically offered Spring Only.

This course explains computer operating systems fundamental concepts and introduces networking essentials from the point of view of software engineers. It examines OS structure and components. It examines process management, memory management, and storage management. It examines practical ways to improve the system performance through tweaks to tasks performed by OS components. Comparative case studies of the common OS options are introduced. Prerequisites: SENG 102. Typically offered Spring only.

This course explores advanced and abstract data structures. Students will be able to learn how to identify and correctly apply these structures to solve more complex programming problems. Topics include Sorting, Trees, Graphs, and Hash tables. Prerequisites: SENG 102. Typically Offered Fall only.
This course will introduce students to the concepts of programming languages and different programming paradigms. Students will be able to identify common concepts and data structures as implemented by various programming languages. This class is intended to facilitate the student’s ability to quickly learn and utilize a new programming language based on industry commonalities. Prerequisites: SENG 300. Typically Offered Fall only.

This course introduces the concepts of software quality assurance. Students learn processes involved in quality management. Topics include designing test cases, improving software quality, testing methods and tools. Prerequisites: SENG 160. Typically Offered Spring.

In algorithm design, we start with a rule that we have already discovered then we build a program to apply it to the data to get the desired solution. Sometimes, this is not easy. Sometimes the data we have is too large, diverse or cannot be investigated by a human expert to extract a rule. The rule might be hidden somewhere in the details. Machine learning offers an alternative, where you let the machine discover the rules automatically through inspecting the data that you have. This course introduces major ML concepts (including supervised, unsupervised and reinforcement learning, in addition to practical real life problems to utilize them. Prerequisites: SENG 300. Typically offered Spring only.

This course deals with the design and implementation of software subsystems. The concept of design patterns is introduced and common patterns are applied to the development of software components. Laboratory projects provide an opportunity for teams of students to implement components and to integrate them into complete systems. Prerequisites: SENG 300 with a C grade or better. Typically Offered Fall only.

This course examines the process and design techniques employed by software architects to design enterprise scale software. Students will be introduced to design tools as well as diagramming techniques and other methods for communicating software designs. Prerequisites: SENG 160 and SENG 300. Typically Offered Fall only.

This course provides an introduction to industry accepted software engineering tools and practices used to develop quality software applications. Students will learn modeling and design using the Unified Modeling Language (UML), Code generation, Application Revision Control, Code Analysis, Unit Testing, Code Coverage, Coding Best Practices, Continuous Integration, revision management, and Code Performance/Profiling. Prerequisites: SENG 160 with a C grade or better. Typically Offered Spring only.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Level</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>SENG400</td>
<td>Software Engineering</td>
<td>BU Undergraduate</td>
<td>3</td>
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<tr>
<td></td>
<td>This course discusses the concepts involved in designing large scale applications. Architectural concerns are examined along with issues stemming from multiple concurrent users. Students will also gain an understanding of the importance of performance when implementing applications that have high volume usage. Prerequisites: SENG 350. Typically offered Fall only.</td>
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<tr>
<td>SENG409</td>
<td>Software Engineering</td>
<td>BU Graduate</td>
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<td></td>
<td>Machine learning offers an alternative to classical rule-based development. This helped software engineers achieve incredible results in various fields. This course discusses practical use cases of applying machine learning technique to real life applications and the building ML based software as a service. In addition, students design and execute solutions using specialized hardware (GPUs). Prerequisites: SENG 300 and SENG 309. Typically offered Spring only.</td>
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<tr>
<td>SENG410</td>
<td>Software Engineering</td>
<td>BU Undergraduate</td>
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<td></td>
<td>The amount of data being exchanged over the network globally will increase nearly threefold over the next 5 years, and will have increased 127-fold from 2005 to 2021. This scale of data being exchanged means that traditional database and general data handling methodology are efficient any more. New technologies and software engineering tools are emerging to cope with this phenomenon and perform pre process. Extraction, storage, querying and structuring the data at the expected level. This course discusses the defining concepts of Big data and gives an opportunity to master the skills required of a big data engineer. Prerequisites: SENG 300 and SENG 325. Typically offered Spring only.</td>
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<tr>
<td>SENG420</td>
<td>Software Engineering</td>
<td>BU Undergraduate</td>
<td>3</td>
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<td></td>
<td>This course allows students the ability to prepare for a highly regarded industry certification program. Students will go through the recommended training materials and course work and prepare to take the certification exam. On course completion the exam is taken and certification earned. Certification is not guaranteed and dependent on student's ability to pass exam. Extra exam fee applicable. Prerequisites: SENG 350 and SENG 355 with a grade of C or better. Typically offered Fall only.</td>
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<tr>
<td>SENG422</td>
<td>Software Engineering</td>
<td>BU Undergraduate</td>
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<td>Cloud computing is moving rapidly to become the standard infrastructure technology. More than 90% of large organizations in the United States are largely in-the-Cloud. This course gives students an overview of the emerging field of Cloud Computing, its enabling technologies and main building blocks. Hands-on implementation of a software application on public Cloud environment will be covered. Major cloud architectures will be discussed and challenges from the Cloud provider point of view will be tackled. Prerequisites: SENG 300 and SENG 325. Typically offered Spring only.</td>
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<tr>
<td>Course Code</td>
<td>Course Title</td>
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<tr>
<td>SENG430</td>
<td>Software Engineering</td>
<td>BU</td>
<td>Undergraduate</td>
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<td></td>
<td>This course focuses on the techniques and technologies employed in creating software user interfaces (UI). Students learn the importance of clean user interface design along with gaining an appreciation for programming techniques used to enhance the human user experience. UI methodologies and frameworks are explored. Prerequisites: SENG 350 Typically offered Spring only.</td>
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<td>This course is intended to be completed between the junior and senior year. The internship shall be setup and approved by means of an internship contract, including approval by the University and employer in a related Software Engineering field. Prerequisites: SENG 301, SENG 302, and Seng 315 all with a grade of C or better. Typically offered Summer only.</td>
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<td>This course will focus on helping each student prepare for a career creating commercially viable software. Topics include career choices, software development ethics, and what organizations expect. Students will explore employment opportunities including seeking a posted position, working freelance, and establishing a business. Prerequisites: SENG 491 with a grade of C or better. Meets General Education requirements for Collaboration. Typically offered Spring only.</td>
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<tr>
<td>SENG491</td>
<td>Software Engineering</td>
<td>BU</td>
<td>Undergraduate</td>
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<tr>
<td></td>
<td>Social Awareness, Race/Ethnicity/Gender Issues Social Foundations and new Fall 2017 Self and Society and U.S. Diversity. Typically Offered Fall, Spring, Summer</td>
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<tr>
<td>SENG499</td>
<td>Software Engineering</td>
<td>BU</td>
<td>Undergraduate</td>
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<td>The study of the nature, causes, and possible strategies for confronting selected social problems in contemporary society. Attention will be focused on such problems as war, population, drug and alcohol abuse, poverty, environment and resources, race and ethnic relations, gender and age inequalities, sexual orientation, and crime. This course meets General Education requirements: Social Awareness, Race/Ethnicity/Gender Issues Social Foundations and new Fall 2017 Self and Society and U.S. Diversity. Typically Offered Fall, Spring</td>
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<tr>
<td>SOCY121</td>
<td>Sociology</td>
<td>AS</td>
<td>Undergraduate</td>
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<td></td>
<td>Sociological theories and research are used to analyze a variety of communities, including communes, villages, neighborhoods, and metropolitan areas focusing on the American &quot;experiment&quot; in creating a multi-cultural demographic society, and the challenges conflicts and successes of this &quot;experiment.&quot; Students will use surveys, interviews, and participant observation in selected west Michigan communities and nearby urban centers, such as Chicago. Meets General Education requirements for Self and Society. Typically Offered Fall and Spring.</td>
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<tr>
<td>SOCY122</td>
<td>Sociology</td>
<td>AS</td>
<td>Undergraduate</td>
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<td>The study of the nature, causes, and possible strategies for confronting selected social problems in contemporary society. Attention will be focused on such problems as war, population, drug and alcohol abuse, poverty, environment and resources, race and ethnic relations, gender and age inequalities, sexual orientation, and crime. This course meets General Education requirements: Social Awareness, Race/Ethnicity/Gender Issues Social Foundations and new Fall 2017 Self and Society and U.S. Diversity. Typically Offered Fall, Spring</td>
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<tr>
<td>SOCY141</td>
<td>Sociology</td>
<td>AS</td>
<td>Undergraduate</td>
</tr>
<tr>
<td></td>
<td>Sociological theories and research are used to analyze a variety of communities, including communes, villages, neighborhoods, and metropolitan areas focusing on the American &quot;experiment&quot; in creating a multi-cultural demographic society, and the challenges conflicts and successes of this &quot;experiment.&quot; Students will use surveys, interviews, and participant observation in selected west Michigan communities and nearby urban centers, such as Chicago. Meets General Education requirements for Self and Society. Typically Offered Fall and Spring.</td>
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</tbody>
</table>
The history of the family and its contemporary structure and functioning are covered. Topics include love, dating, mate selection, finances, and children. Changing gender roles are examined, as is the family in other cultures. This course meets General Education requirements: Social Awareness, Global Consciousness; Race/Ethnicity/Gender Issues, and new Fall 2017 Global Diversity, US Diversity, Collaboration, Problem Solving. Pre-Requisites: SOCY 121 or 122 or ANTH 122. Typically Offered Fall, Spring

The study of male and female behavioral patterns in society. Emphasis is on the description and explanation of the male and female experiences in various institutional contexts, and on gender role changes in society. Focuses on gender roles in the United States. Cross-national variations are considered for points of comparison. This course meets General Education requirements: Social Awareness, Race/Ethnicity/Gender Issues, and new Fall 2017 Self and Society, US Diversity. Pre-Requisites: SOCY 121 or 122 or ANTH 122. Typically Offered Fall Only

Study of the definition, nature, and patterns of interaction surrounding so-called “deviant” behavior, as well as social and institutional attempts to prevent and control it. A critical examination of sociological theories of deviant, delinquent, and criminal behavior, and application of these theories to selected forms of deviance. This course meets General Education requirements: Social Awareness, Race/Ethnicity/Gender Issues, and new Fall 2017 Self and Society, US Diversity. Pre-Requisites: SOCY 121 or 122 or ANTH 122. Typically Offered Fall, Spring

This course grounds students in the general application of sociological theory as an analytical framework for scientific empirical observation. Builds on general theoretical framework introduced in SOCY 121 or SOCY 122. This course moves students to use sociological theory as a tool for organizing knowledge. Students are challenged to make use of their knowledge of theory to do sociology. The concentrations of race, ethnicity, gender and community are also linked to the theoretical frameworks considered. Prerequisites: SOCY 121 or SOCY 122. Typically Offered Fall only.

This course introduces research methods generally and then focus on qualitative methods of inquiry. These include: ethnographies, case studies, focus groups, interviews, participant observations and others. Students will apply at least one method of inquiry to an actual case study in the generalist concentration, or in race, ethnicity and gender, or community studies. Students will be expected to incorporate an understanding of social theory derived in the analysis of the case study. New Fall 2017 Self and Society. Prerequisites: SOCY 121 or SOCY 122. Typically Offered Spring only.
SOCY340 Sociology AS Undergraduate 3
Traces the history of several minority groups in the United States, and analyzes their current demographic, economic, and social situations. Minority/dominant relations are examined. Emphasis is placed on the study of prejudice and discrimination. This course meets General Education requirements: Race/Ethnicity/Gender Issues and Social Awareness and Collaboration and Problem Solving. Pre-Requisites: SOCY 121 or 122 or ANTH 122. Typically Offered Fall, Spring, Summer

SOCY341 Sociology AS Undergraduate 3
Sociological theories and research are used to analyze a variety of communities, including communes, prisons, villages, neighborhoods, and metropolitan areas. Students will use surveys, interviews, and participant observation in selected west Michigan communities. This course meets General Education requirements: Social Awareness, Race/Ethnicity/Gender Issues and new Fall 2017 US Diversity and Self and Society. Pre-Requisites: SOCY 121 or 122 or ANTH 122. Typically Offered Fall Only

SOCY344 Sociology AS Undergraduate 3
Ecological and functional organization of urban life in cities around the world. Demographic, economic, and sociological aspects of world urban development including both historical and current issues related to urban planning and redevelopment. This course meets General Education requirements: Social Awareness, Global Consciousness; Race/Ethnicity/Gender Issues and new Fall 2017 Global Diversity, US Diversity and Self and Society. Pre-Requisites: SOCY 121 or 122 or ANTH 122. Typically Offered Spring Only

SOCY345 Sociology AS Undergraduate 3
Consideration of the changing position of older people from pre-industrial to modern societies and potential changes in the future. Sociological, psychological, biological, and economic aspects of the aging processes and the later years of life are discussed. Alternative living opportunities in retirement, and community support services, present and emerging are explored. Other contemporary issues in the field of social gerontology are also explored. This course meets General Education requirements: Social Awareness and Race/Ethnicity/Gender Issues and new Fall 2017 US Diversity and Self and Society. Pre-Requisites: SOCY 121 or 122 or ANTH 122. Typically Offered Fall, Spring

SOCY347 Sociology AS Undergraduate 3
The course will present a sociological approach to a variety of both natural and man-made disasters or emergency situations. After a basic sociological framework of analysis has been established, specific types of disasters or emergency situations will be examined in terms of their nature, consequences, and overall sociological significance. The future policy implications of these events and the various societal responses to those events also will be explored. This course meets General Education requirements: Social Awareness and new Fall 2017 Self and Society. Pre-requisites: SOCY 121 or SOCY 122 or ANTH 122. Typically Offered Spring only.
### SOCY350 Sociology AS Undergraduate 3
This course uses the artifacts in the FSU Jim Crow museum (JCM) and essays on the JCM’s website to teach students to analyze race and race relations as reflected in popular culture. Students will analyze the origins, social consequences, and public policy implications of traditional racial caricatures and contemporary caricatures. Special attention is devoted to the ways that racial images both shape and reflect a nation's attitudes and beliefs about race and race relations. Pre-Requisites: SOCY 121 or SOCY 122 or ANTH 122. Typically Offered Summer Only

### SOCY361 Sociology AS Undergraduate 3
Understanding leisure and recreation from the standpoint of various macro- and micro-level sociological theories and by using both quantitative and qualitative social science research methods. Existential, developmental, social identity, interactionist, exchange, institutional, conflict, and voluntaristic-positivistic theories will be examined; survey, observation, case study, and experimental research techniques will be utilized. Students will apply these theories and techniques to selected issues in recreation and leisure studies through individual and group projects. Pre-Requisites: SOCY 121 or 122 or ANTH 122. Typically Offered Spring Only

### SOCY371 Sociology AS Undergraduate 3
Introduces the use of descriptive and inferential statistics in social scientific analysis: measures of central tendency, variability, probability, correlation and regression. Students utilize SPSS and other statistical software to properly produce and interpret data outcomes. Students apply statistical analysis in their curriculum concentrations as generalists or in race, ethnicity and gender, or community studies. Connections are made with previous considerations of social inquiry using qualitative methods. Prerequisites: SOCY 270 and SOCY 271. Typically Offered Spring only.

### SOCY373 Sociology AS Undergraduate 3
Health and Illness as a social concern. Studies major actors in the health care system, issues facing health care systems, and cross-cultural perspectives on health and illness. This course meets General Education requirements: Race/Ethnicity/Gender Issues and Social Awareness and new Fall 2017 U.S. Diversity and Self and Society. Pre-Requisites: SOCY 121 or 122 or ANTH 122. Typically Offered Spring Only

### SOCY411 Sociology AS Undergraduate 4
This is a service-learning course. Students conduct research and produce a final research report for and in partnership with a community based organization in West Michigan. The course builds on students' prior research methods courses so that produce professional research on an issue of interest to the community partner. Students use the latest technology in social science research. Prerequisites: SOCY 271 or permission. Typically Offered Spring only
### SOCY443 Sociology AS Undergraduate 3
Distribution of scarce resources within human societies and the consequences of inequality. Opportunities and life chances are analyzed for various segments of the population, including race and gender. Primary emphasis will be on the United States. This course meets General Education requirements: Social Awareness and Race/Ethnicity/Gender Issues and new Fall 2017 Self and Society, and U.S. Diversity. Pre-Requisites: SOCY 121 or 122 or ANTH 122; & 1 other social awareness course. Typically Offered Spring Only

### SOCY450 Sociology AS Undergraduate 3
Historical foundations and current themes in the field of criminology. The people and events behind the ideas that continue to influence our current thinking about crime, public policies, and systems of criminal justice. A critical assessment of the major theories of crime causation, and application of these theories to selected types of criminal behavior. This course meets General Education requirements: Race/Ethnicity/Gender Issues and Social Awareness and new Fall 2017 U.S. Diversity and Self and Society. Pre-Requisites: SOCY 121 or 122 or ANTH 122 & 1 other Social Awareness course. Typically Offered Spring Only

### SOCY480 Sociology AS Undergraduate 3
This “course” serves to provide students the opportunity to experience research in sociology hands on. Specifically, students are supervised while working on all aspects of a research project, including its initial development (e.g., literature review), data collection (e.g., running/supervising interviews), data analysis, and the reporting of the research. Prerequisites: SOCY 270 and either SOCY 271 or SCWK 350 and junior status. Typically offered: Spring, Summer, Fall.

### SOCY491 Sociology AS Undergraduate 1 TO 6
Work experience with cooperating employer organizations in business, industry, government, and education. The work experience is designed to be relevant to the student’s academic pursuits, personal development, and professional preparation. The work experience must last a minimum of 12 weeks with total hours worked approved by the program coordinator. May be repeated for a maximum of 9 credits. Pre-Requisites: Sociology Students only & Junior Status & Departmental Approval. Typically Offered Fall, Spring, Summer

### SONO100 Diagnostic Medical Sonography HP Undergraduate 1
Basic information about the field of Diagnostic Medical Sonography, including the different modalities; equipment overview; duties and responsibilities of sonographers; employment opportunities; registry testing, credentialing, and related topics. Prerequisites: Admission to the Diagnostic Medical Sonography Professional Sequence. Typically Offered Fall Only

### SONO102 Diagnostic Medical Sonography HP Undergraduate 1
This course will introduce basic body systems, ultrasonic anatomical landmarks, sonographic scan planes, and theory of image production and acquisition. Prerequisites: Must be admitted into professional sequence of the DMS program. Typically Offered Fall Semester.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
<th>Department</th>
<th>Credits</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SONO104</td>
<td>Diagnostic Medical Sonography</td>
<td>HP</td>
<td>3</td>
<td>Undergraduate</td>
<td>Principles of ultrasound interactions with matter, sound properties, beam formation, image storage and display, artifacts and quality assurance. Prerequisites: SONO 100 and SONO 102. Typically Offered Spring Semester.</td>
</tr>
<tr>
<td>SONO105</td>
<td>Diagnostic Medical Sonography</td>
<td>HP</td>
<td>1</td>
<td>Undergraduate</td>
<td>Physical application of ultrasound interactions with matter, safe use of ultrasound technology, and artifact and image acquisition. Prerequisites: SONO 100 and SONO 102. Typically Offered Spring semester.</td>
</tr>
<tr>
<td>SONO111</td>
<td>Diagnostic Medical Sonography</td>
<td>HP</td>
<td>4</td>
<td>Undergraduate</td>
<td>Principles of abdominal sonography with emphasis on function, embryology, and pathology. Prerequisites: SONO 112 and SONO 115. Typically Offered Spring only.</td>
</tr>
<tr>
<td>SONO112</td>
<td>Diagnostic Medical Sonography</td>
<td>HP</td>
<td>1</td>
<td>Undergraduate</td>
<td>Laboratory to demonstrate normal scanning protocols and anatomical landmarks for abdominal imaging studies. Prerequisites: Admission to the professional sequence. Typically Offered Fall.</td>
</tr>
<tr>
<td>SONO115</td>
<td>Diagnostic Medical Sonography</td>
<td>HP</td>
<td>1</td>
<td>Undergraduate</td>
<td>A basic course in cross sectional anatomy as visualized on standard sonographic exam protocols. This will assist students in the ability to develop the spatial ability to identify transverse body planes and positional relationships of different organs. Correlation with other diagnostic modalities, i.e. CT, MRI and SPECT imaging, will also be utilized. Prerequisites: Admission to the professional sequence. Typically Offered Fall.</td>
</tr>
<tr>
<td>SONO117</td>
<td>Diagnostic Medical Sonography</td>
<td>HP</td>
<td>2</td>
<td>Undergraduate</td>
<td>This course will incorporate lab values, patient assessment, patient signs and symptoms to formulate a preliminary diagnosis. This course will teach preliminary report writing, critical thinking and a case study approach to interpreting ultrasound images. Prerequisites: SONO 111 and SONO 112 and SONO 115. Typically Offered Summer.</td>
</tr>
<tr>
<td>SONO118</td>
<td>Diagnostic Medical Sonography</td>
<td>HP</td>
<td>1</td>
<td>Undergraduate</td>
<td>GYN Imaging emphasizes gynecological sonographic anatomy and physiology with emphasis on adnexa, endometrium, cervix, cul-de-sacs. Prerequisite is entrance to the professional sequence of the DMS program. Typically offered: Fall</td>
</tr>
<tr>
<td>SONO119</td>
<td>Diagnostic Medical Sonography</td>
<td>HP</td>
<td>1</td>
<td>Undergraduate</td>
<td>GYN Imaging Lab is a one credit ultrasound imaging lab with emphasis on gynecological structures including adnexa, uterus, endometrium, cervix and cul-de-sac. Prerequisite is entrance to the DMS program. Typically offered: Fall</td>
</tr>
<tr>
<td>SONO121</td>
<td>Diagnostic Medical Sonography</td>
<td>HP</td>
<td>2</td>
<td>Undergraduate</td>
<td>Principles of obstetric and gynecological sonography with emphasis on structure of the female pelvis and reproductive system, sonographic appearance of normal and abnormal maternal, embryonic, and fetal anatomic structures during 1st, 2nd, and 3rd trimesters of pregnancy. Prerequisites: SONO 111 and SONO 112 and SONO 115. Typically Offered Summer only.</td>
</tr>
<tr>
<td>SONO122</td>
<td>Diagnostic Medical Sonography</td>
<td>HP</td>
<td>1</td>
<td>Undergraduate</td>
<td>Laboratory demonstrates normal female reproductive system anatomy, 1st, 2nd, and 3rd trimester pregnancy anatomy, landmarks, and full scanning protocols with measurements. Prerequisites: SONO 111 and SONO 112 and SONO 115. Typically Offered Summer only.</td>
</tr>
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Ferris State University

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<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Degree</th>
<th>Credits</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SONO131</td>
<td>Diagnostic Medical Sonography HP</td>
<td>Undergraduate</td>
<td>1</td>
<td>Principles of blood hemodynamics and doppler principles are explored in conjunction to normal abdominal and extremity imaging and abnormal disease states. Hemodynamic evaluation of grafts, stents, bypass, spinal and cerebrovascular vessels are also evaluated. Prerequisites: SONO 111 and SONO 112 and SONO 115. Typically Offered Summer.</td>
</tr>
<tr>
<td>SONO132</td>
<td>Diagnostic Medical Sonography HP</td>
<td>Undergraduate</td>
<td>1</td>
<td>Laboratory will demonstrate complete diagnostic abdominal and extremity imaging protocols including normal doppler evaluation. Competency in gallbladder, pancreas, kidney, liver and great vessel ultrasound scans including doppler evaluation must be demonstrated in a prescribed time period. Prerequisites: SONO 111 and SONO 112 and SONO 115. Typically Offered Summer.</td>
</tr>
<tr>
<td>SONO280</td>
<td>Diagnostic Medical Sonography HP</td>
<td>Undergraduate</td>
<td>8</td>
<td>During the 15 week internship the student will demonstrate body mechanics, safe use of ultrasound equipment and infectious disease control procedures. The student will demonstrate mastery skill level in five abdominal organ studies and one obstetric ultrasound study while displaying professionalism. Prerequisites: SONO 121, SONO 122, SONO 131 and SONO 132. Typically Offered Fall only.</td>
</tr>
<tr>
<td>SONO281</td>
<td>Diagnostic Medical Sonography HP</td>
<td>Undergraduate</td>
<td>4</td>
<td>This course will teach the ultrasound protocols, procedures, normal anatomy, pathologies, and limitations of imaging breast, thyroid, scrotum, and prostate imaging. This course will also discuss the ultrasound guided interventional procedures associated with these structures. Prerequisites: SONO 121, SONO 122, SONO 131 and SONO 132. Typically Offered Fall semester.</td>
</tr>
<tr>
<td>SONO282</td>
<td>Diagnostic Medical Sonography HP</td>
<td>Undergraduate</td>
<td>8</td>
<td>The second of three internships. The student will demonstrate diagnostic full abdomen and complete obstetric ultrasounds independently, display professionalism, demonstrate appropriate infection control procedures and safe use of ultrasound equipment. Prerequisites: SONO 280 and SONO 281. Typically Offered Spring only.</td>
</tr>
<tr>
<td>SONO283</td>
<td>Diagnostic Medical Sonography HP</td>
<td>Undergraduate</td>
<td>3</td>
<td>Obstetrical and Gynecological Imaging II will discuss the interventional procedures of Obstetrical and Gynecological imaging, advanced maternal age imaging, and the neonatal imaging ultrasound scans including protocols, pathologies and limitations. Prerequisites: SONO 280 and SONO 281. Typically Offered Spring only.</td>
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<tr>
<td>SONO284</td>
<td>Diagnostic Medical Sonography HP</td>
<td>Undergraduate</td>
<td>5</td>
<td>The third of three internships. The student will show mastery level scanning in all abdomen, small parts and OB/GYN ultrasound studies in a prescribed time parameter. The student will demonstrate professionalism, appropriate infection control procedures and the effective use of ultrasound equipment using the “ALARA” standards. Prerequisites: SONO 282 and 283. Typically Offered Summer only.</td>
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<tr>
<td>Course Code</td>
<td>Course Title</td>
<td>Degree</td>
<td>Level</td>
<td>Units</td>
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<tr>
<td>SONO285</td>
<td>Diagnostic Medical Sonography</td>
<td>HP</td>
<td>Undergraduate</td>
<td>3</td>
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<td>A capstone course in the Diagnostic Medical Sonography Program. The student will demonstrate critical thinking skills in determining ultrasound diagnosis using patient scenarios. The student will correlate patient signs, symptoms, lab values, other imaging modalities and ultrasound study images. Weekly case study presentation reports will be written in addition to an extensive case study presentation to a panel of experts. Prerequisites: SONO 282 and 283. Typically Offered Summer only.</td>
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<tr>
<td>SONO287</td>
<td>Diagnostic Medical Sonography</td>
<td>HP</td>
<td>Undergraduate</td>
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<td>SONO 287 is a management course that focuses on statistical design, medical laws, billing and coding of ultrasound procedures and lab management strategies. Prerequisite: SONO 280. Typically Offered Spring.</td>
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<tr>
<td>SONO300</td>
<td>Diagnostic Medical Sonography</td>
<td>HP</td>
<td>Undergraduate</td>
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<td>This course will teach students diagnostic ultrasound testing methods for upper and lower extremity venous exams. Venous anatomy and hemodynamics will also be covered with an emphasis on color Doppler Imaging, and photopleysmography. Pre-requisite: SONO 131 with grade of C or better. Typically offered: Fall.</td>
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<tr>
<td>SONO301</td>
<td>Diagnostic Medical Sonography</td>
<td>HP</td>
<td>Undergraduate</td>
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<td>This course will focus on normal and abnormal cerebrovascular anatomy and hemodynamics. A focus on abnormal perfusion and physiology will be covered as well as Interpretation, risk factors, and clinical protocols for carotid Doppler and transcranial Doppler exams and guidelines. Pre-requisite: SONO 131 with a grade of C or better. Typically offered: Spring.</td>
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<tr>
<td>SONO302</td>
<td>Diagnostic Medical Sonography</td>
<td>HP</td>
<td>Undergraduate</td>
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<td>This course teaches diagnostic ultrasound testing methods for upper and lower peripheral arterial exams. Testing methods include segmental pressures, PVR, Color Doppler Imaging and duplex sonography. Students will learn current standard and guidelines for arterial testing. Pre-requisite: SONO 131 with a C or better. Typically offered: Summer.</td>
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<tr>
<td>SPAN100</td>
<td>Spanish</td>
<td>AS</td>
<td>Undergraduate</td>
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<td>Spanish 100 stresses basic language survival skills for a potential business associate/tourist. A comparative study of cultural differences between the United States and Spain, focusing specifically on situations commonly encountered by U.S. travelers in Spain. Some attention will be paid to historical influences that have shaped the two. This course is not a substitute for Spanish 101 and does not count toward the foreign language requirement for the B.A. degree. This course meets General Education requirements: Cultural Enrichment and Global Consciousness and new Fall 2017 Culture and Global Diversity. Typically Offered Spring Only</td>
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<td>SPAN101</td>
<td>Spanish</td>
<td>AS</td>
<td>Undergraduate</td>
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<td>Emphasis on pronunciation, vocabulary, and basic grammar. Individual oral exercises. Instruction in the cultural and historical development of the Hispanic world. This course meets General Education requirements: Global Consciousness; Cultural Enrichment and new Fall 2017 Global Diversity and Culture. Typically Offered Fall, Spring, Summer</td>
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<td>Code</td>
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<td>Prerequisites</td>
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<td>SPAN102</td>
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<td>SPAN121</td>
<td>Spanish AS Undergraduate 3</td>
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<td>SPAN201</td>
<td>Spanish AS Undergraduate 4</td>
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<td>SPAN202</td>
<td>Spanish AS Undergraduate 4</td>
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<td>SPAN224</td>
<td>Spanish AS Undergraduate 3</td>
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<tr>
<td>SPAN301</td>
<td>Spanish AS Undergraduate 4</td>
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<tr>
<td>SPAN302</td>
<td>Spanish AS Undergraduate 4</td>
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This course introduces advanced undergraduate students to Spain's most representative writings and writers from the Middle Ages to present times. Readings are complemented with the necessary historical background for better comprehension. Readings cover diverse literary genres such as: fiction, drama, poetry, and essays. Emphasis on contemporary readings and authors. Taught in Spanish. Meets General Education requirements for Culture and Global Diversity. Prerequisites: SPAN 202 with a grade of C or better or instructor approval. Typically Offered Fall, even years.

Readings and studies in the history and culture of contemporary Spain. Taught in Spanish. This course meets General Education requirements: Global Consciousness; Cultural Enrichment and new Fall 2017 Culture and Global Diversity. Prerequisite: SPAN 202 with a grade of C or better or instructor approval. Typically Offered Spring, even years.

Outlines of history and geography precede the introduction to the culture and society of Hispanic America, especially Mexico. Lectures, films, and works of fiction and nonfiction give a general overview of daily life in Hispanic countries. Taught in Spanish. This course meets General Education requirements: Global Consciousness; Cultural Enrichment and new Fall 2017 Culture, Global Diversity, Problem Solving and Collaboration Prerequisite: SPAN 202 with a grade of C or better or instructor approval. Typically Offered Spring, odd years.

This course improves students' cultural and linguistic competency through the analysis and discussion of select films produced in the Spanish speaking world. Students actively participate in daily discussions, video presentations, as well as reading and writing assignments. Develops students' critical thinking skills regarding the culture, history, politics and social problems depicted in film. Taught in Spanish. This course meets General Education requirements Cultural Enrichment and Global Consciousness and new Fall 2017 Culture and Global Diversity. Prerequisites: SPAN 202 with a grade of C or better or instructor approval. Typically Offered Fall, odd years.
SPAN350 Spanish AS Undergraduate 3

This course is designed to enhance Spanish communication skills and cultural knowledge for use in professional settings. This course covers a broad spectrum of career areas and will be beneficial to all professionals who want to communicate with the Spanish-Speaking community, both in the United States and abroad. It stresses cultural components used among Spanish speakers in the U.S. and abroad, formal and informal contexts of communication, and other unique linguistic features in Spanish dialects; such as Spanglish and code-switching. Students are also introduced to the concepts and practice of translation and interpretation. This course is the foundation for the more career-specific courses of SPAN 430, SPAN 431, and SPAN 432. This course meets General Education requirements Cultural Enrichment and Global Consciousness and Problem Solving and Collaboration. Prerequisites: SPAN 202 with a grade of C or better with instructor approval. Typically offered Fall.

SPAN425 Spanish AS Undergraduate 4

Provides a basic methodological guide to students minoring in Spanish and interested in teaching the language as a secondary area to their specialized and secondary-school teaching. The focus is fundamental methodology and ancillary considerations peculiar to foreign-language classrooms. Students will follow a topical outline of methodology. They will also demonstrate teaching in a classroom environment, prepare course outlines and syllabi. Pre-requisites: SPAN 302. Typically Offered Spring Only

SPAN430 Spanish AS Undergraduate 3

This course provides students with a working knowledge of business-related Spanish vocabulary, cultural practices, and cultural competencies to effectively navigate the Spanish-speaking business world. Students will write business documents and carry out day-to-day professional interactions in the target language through translation activities and role-plays. In addition to the various regions in Spanish-speaking countries studied throughout the course, the U.S. Latino market, the corresponding trade agreements in Brazil, the Americas and Europe will also be addressed, along with pertinent information regarding cultural differences and economic activity. Various sources of information will be utilized throughout the course, including books, videos, magazines, online newspapers, and guest speakers familiar with the domestic and/or international Spanish-speaking marketplace. This course meets General Education requirements Cultural Enrichment and Global Consciousness and new Fall 2017 Culture and Global Diversity. Prerequisites: SPAN 350 with a passing grade of "C" or higher. Typically offered Spring.
This course is designed for students in the medical field (nursing program, dental hygiene, optometry, pharmacy, etc.) who want to develop language-specific skills in this area. The main objective of the course is to provide healthcare providers with the necessary language skills to communicate more effectively with Spanish-speaking patients and to help them to provide better services to this community. In order to achieve these objectives, students will memorize dialogs and perform skits related to specific medical areas (e.g., assessing medical history and health risks, doctor-patient exams, etc.).

Another important component of the course is the cultural readings that highlight Hispanic customs and traditions relevant to health care, as well as information on medical conditions and concerns affecting Latinos in the United States. This course meets General Education requirements Cultural Enrichment and Global Consciousness and new Fall 2017 Culture and Global Diversity. Typically offered Fall, Spring.

This course reinforces students’ Spanish-language skills required when working with the Latino community through social services professions and outreach (social work, school teachers and counselors, lawyers, police officers, ministries, etc.). The course will cover a broad mix of social services contexts, while building the students' written and oral communication skills. In addition, emphasis will be placed on cultural issues that may affect successful interaction with Spanish-speaking individuals and families faced with matters concerning various policies and laws. Students will give oral and written reports dealing with social services issues and engage in field experiences with local Hispanic organizations providing social services to Spanish-speakers. This course meets General Education requirements Cultural Enrichment and Global Consciousness and new Fall 2017 Culture and Global Diversity. Prerequisites: SPAN 350 with a grade of C or better. Typically offered Spring.

The Internship in Spanish provides students the opportunity to develop hands-on experience in occupational fluency and intercultural competencies in their non-Spanish primary or secondary area(s). Students will be required to meet with a faculty mentor who will approve and monitor the internship in a Spanish-speaking country. In some instances, students will be allowed to work in an organization or community that works closely with Spanish-speaking community in the U.S, in lieu of travelling abroad. In either case, the student will create a set of personal outcomes, and present a final portfolio that highlights the gained intercultural competencies and occupational fluency in the language. The Internship in Spanish is required for the completion of the B.S. degree in Spanish for the Professions. Prerequisites: SPAN 350 with a grade of “C” or better and approval from the Spanish Internship Coordinator. Typically offered Fall, Spring, Summer.
The Senior Capstone in Spanish is a required course for the fulfillment of the B.S. degree in Spanish for the Professions and is designed to highlight the students' achievement and application of the Spanish language and intercultural competencies in his/her primary or secondary area(s). In addition to the main course goals of demonstrating intercultural competencies and language proficiency in the professions, each student will create a set of personal outcomes to their specific career interests, and present the final portfolio to a committee of Spanish faculty. The goal of the Senior Capstone is to demonstrate how the courses, internship, and residency in a Spanish-speaking country abroad or with the Latino community in the U.S. helped to develop these intercultural competencies and occupational fluency in the language. Prerequisites: SPAN 302 and SPAN 491 and SPAN 430 or SPAN 431 or SPAN 432 with a passing grade of "C" or better or special permission by instructor. Typically offered Spring.

An interdisciplinary course covering some of the anthropological, biological, ethical, psychological, and sociological aspects of human sexuality. Students will receive one credit hour of biology and one credit hour of social science. This course meets General Education requirements for Social Awareness (1 credit) and Scientific Understanding (1 credit) and new Fall 2017 Self and Society and Natural Sciences. Typically Offered Fall, Spring

An interdisciplinary, social science approach to the analysis of prominent public policy issues (e.g., the environment, Native American self-determination, education policy, international issues, etc.). Diverse and opposing views will be considered, as well as the process of democratic deliberation among citizens to reach consensus. Electronic technology will be used to conduct research and to communicate with involved parties. Gathering evidence, proposing and testing hypotheses, and reporting results by way of oral and written presentation will be emphasized. This course meets general education requirements: Social Awareness and new Fall 2017 Self and Society. Pre-Requisites: Senior Status and Education students only. Typically Offered Spring Only

Capstone course for the Multicultural Relations in the United States minor. Advanced training in the recognition of cultural patterning of behavior in social and occupational settings. Skills development in interpersonal communication including observation, listening, reflection, interpretation, information-sharing, information-gathering, rapport-building, and intervention techniques. This course meets General Education requirements: Social Awareness and Race/Ethnicity/Gender Issues and new Fall 2017 Self and Society, and U.S. Diversity. Pre-Requisites: Junior or Senior status. Typically Offered Spring Only
STQM260 Statistics and Quantitative Methods BU Undergraduate 3

Introduce and explore practical aspects of sampling, data presentation, measures of central tendency and dispersion, basic probability theory, the normal probability distribution, the sampling distribution of sample means and sample proportions, confidence intervals and hypothesis tests for one-sample designs, simple linear regression, and correlation. Pre-Requisites: MATH 114, 115, 116, 120, 126, 130, 132, or 135 with a grade of C- or better or 24 on ACT or 560 on pre 2016 SAT or 580 post 2016 SAT. Typically Offered Fall, Spring, Summer.

STQM270 Statistics and Quantitative Methods BU Undergraduate 3

Define data mining and explore various real-world applications. Explore data mining processes and data mining strategies. Prepare appropriately the data for a data mining session. Create models within each of the data mining strategies using appropriate data mining techniques such as decision trees, k-means, apriori algorithm, and/or neural network. Using a data mining software, create models appropriate to the problem, interpret and evaluate the results, and compare to obtain the best model. Prerequisites: STQM 260 or COHP 350 or MATH 251 or MFGE 341 or PSYC 210 or SOCY 371, all with C- or higher. Typically Offered Fall, Spring and Summer.

STQM285 Statistics and Quantitative Methods BU Undergraduate 3

Introduce and explore quantitative principles, concepts, and tools foundational to data analytics. This course includes variation, modeling, probability, optimization, approximation, estimation, and prediction. The focus is on the applications and underlying quantitative structures. Prerequisites: MATH 114 or 115 with C- or higher or ACT 24 or pre 2016 SAT 560 or post 2016 SAT 580. Typically Offered Spring only.

STQM311 Statistics and Quantitative Methods BU Undergraduate 3

Basic statistical tools are necessary for the successful implementation of a Total Quality Management (TQM) system. Topics include continuous improvement; process improvement tools; group and team tools; and other topics distinctive to TQM, including organizational mission and vision statements, HOSHIN planning, quality function deployment, P-D-C-A cycle, and benchmarking. Also, practical applications in team settings on real problems in manufacturing, health engineering, and education. Pre-Requisites: Sophomore status or Instructor approval. Typically Offered Spring, Summer.

STQM322 Statistics and Quantitative Methods BU Undergraduate 3

Introduce and explore the application of statistical procedures to business decision making including hypothesis testing and confidence interval construction for one and two sample designs, one and two-way analysis of variance, simple regression, Chi-square tests and the use of statistical software. Pre-Requisites: STQM 260 with a C- or better. Typically Offered Fall, Spring, Summer.
STQM341 Statistics and Quantitative Methods  BU  Undergraduate  3  Covers various concepts and techniques in quantitative approaches to decision making. Topics covered in-depth include the graphical and computer solution to linear programming, transportation and assignment problems, network models, project management using PERT/CPM, inventory models, waiting for line models and forecasting. Students completing this course are expected to identify and apply appropriate quantitative models and techniques to business situations. Prerequisites: STQM 260 with a C- or better. Typically Offered Fall, Spring, Summer.

STQM342 Statistics and Quantitative Methods  BU  Undergraduate  3  Principles and tools are used to extract information and create knowledge from large databases through a software application. Tools include attributes dimension reduction, multiple linear regression, logistic regression, Bayes classifier, k-nearest neighbors, and others. Prerequisites: STQM 270 with a C or higher. Typically Offered: Fall, Spring, Summer.

STQM351 Statistics and Quantitative Methods  BU  Undergraduate  3  An introduction to modern quality control techniques, with emphasis on Juran, Deming, and Japanese enhancements. In-depth coverage of quality costs, basic statistical tools, control charts, and process capability, with the use of quality control software. Pre-Requisites: STQM 260 with a C- or better. Typically Offered On-Demand.

STQM360 Statistics and Quantitative Methods  BU  Undergraduate  3  Introduce and explore risk analysis, strategic approaches, principles, practices, frameworks, methodologies, controls, risk determination, and risk response. Apply risk analysis tools and techniques for protecting the confidentiality, integrity, and availability of information systems and data. Utilize case studies for industry-specific domains (e.g. medical, financial, business, information security) and projects. Prerequisites: STQM 260 with C- or better or permission of instructor. Typically Offered Fall, Spring, and Summer.

STQM375 Statistics and Quantitative Methods  BU  Undergraduate  3  Introduce and explore the application of basic programming principles, methods, and tools for data analytics including data input, data merging, data sub-setting, data transformation, data analysis, and output results. Emphasis will be given to principles of structured programming, code development and testing, standard and custom functions, and reusable code modules. Use of a relevant programming language such as Python, R, and/or SAS. Prerequisites: STQM 260 with C or higher. Typically Offered Fall, Spring, and Summer.

STQM421 Statistics and Quantitative Methods  BU  Undergraduate  3  Explore linear statistical models including analysis of variance (ANOVA) and regression. Emphasis will be given to model formation, fitting data, statistical tests, and follow-up procedures as well as assumption testing. Examine ANOVA and regression models as special cases of a general linear statistical model. Examine selected non-parametric models. Prerequisites: STQM 322 with C or higher. Typically Offered Fall, Spring, and Summer.
STQM427 Statistics and Quantitative Methods BU Undergraduate 3

The course covers statistical and data mining strategies to inform healthcare marketing plans in areas such as customer classification and segmentation; customer acquisition, retention, and recapture; customer (lifetime) value analysis; customer relationship management; market basket analysis; targeting, cross-selling, up-selling and sales forecasting. The course includes hands-on experience with knowledge-discovery value chain from business/marketing questions to data acquisition and preparation to analytics to information and knowledge. Related software applications required. Prerequisites: STQM 260 and MKTG 321. Typically offered Spring, odd years.

STQM450 Statistics and Quantitative Methods BU Undergraduate 3

Explore concepts, principles, and methods of a data warehouse, database, and data structure and design as well as database queries in support of data analytics. Emphasis will be given to the structure and design of data, databases, data warehouses, data query, and intelligence. Software applications. Prerequisites: ISIN 325. Typically Offered Fall, Spring, and Summer.

STQM465 Statistics and Quantitative Methods BU Undergraduate 3

Introduce and explore the essential techniques for mining and analyzing text data (unstructured data) to discover interesting patterns, extract useful knowledge, and support decision-making. This course will discuss standard techniques and will devote considerable attention to the data preparation and handling methods that are required to transform unstructured text into a form in which it can be mined. Prerequisites: STQM 342 w/C or higher. Typically Offered Fall, Spring, and Summer.

STQM491 Statistics and Quantitative Methods BU Undergraduate 1 TO 9

Work experience with cooperating employer organizations in program specific/related industry. The work experience is designed to be relevant to the student’s academic program, personal development, and professional preparation. The work experience must last a minimum of 10 weeks with a total number of weeks of and hours approved by the department head. Prerequisites: Junior or Senior status and Department Approval. Typically offered Fall, Spring, Summer.

STQM498 Statistics and Quantitative Methods BU Undergraduate 3

The B.S. Business Data Analytics program culminates in a capstone experience course. This course represents the integration of previous coursework and practical experience with a focus on outlined program outcomes. This course is designed to provide an opportunity for students to collaboratively integrate data analytics knowledge, principles, and tools to highlight what they have learned by solving significant real-world problems. Written reports and oral presentations are typically part of this course. Pre-requisites: STQM 342, 421, and 465, all w/C or higher. Typically offered: Fall, Spring, Summer.

Ferris State University

2020-2021 FSU Catalog
### STQM645 Statistics and Quantitative Methods  
**BU Graduate 3**  
This course is designed as an empirical approach to the emerging field of analytics, an inductive approach to gaining insights on big data, thus informing decision-making. It covers various fundamental techniques rooted in management and decision sciences to solve problems and make decisions in various functional areas, such as: management, marketing, and processing. In this course, students will learn various analytical tools and demonstrate their ability to understand, present and discuss the results, thus building a strong foundation in supporting decision-making in a variety of scenarios. Major topics include the applications of hypotheses testing; regression; decision trees; association rules; data visualization and manipulation; and what-if analysis. Pre-requisites: Statistics Foundation Competencies and BUS Graduate Student. Typically offered: Fall, Spring, Summer

### SURE100 Surveying Engineering  
**TE Undergraduate 1**  
Developing strategies for managing the changes that impact first-year students in order to enhance their opportunity for college success. Includes discussions on how to network and build relationships, manage time and money, use support services including academic advising, FSU program offerings and the library. Also deals with issues of diversity, wellness and personal responsibility and how to improve basic study habits. Introduction to the world of Surveying Engineering including short history of Surveying and Mapping along with a brief description of such topics as legal aspects of Surveying, Photogrammetry, Remote Sensing, and Geodesy. Typically offered fall semester.

### SURE110 Surveying Engineering  
**TE Undergraduate 4**  
Orientation and introduction in proper field surveying theory and techniques. Subject areas include taping, tape corrections, leveling, angle measurements, traversing, traverse adjustments, contouring, fundamentals of mapping, and proper use and care of surveying instruments. Co-Requisites: MATH 120. Typically Offered Fall, Spring.

### SURE115 Surveying Engineering  
**TE Undergraduate 2**  
This course is an introduction to Computer Aided Drafting (CAD) as applied to Surveying Engineering and Computer Aided Mapping (CAM). The emphasis of this course is on "hands on" exercises in CAD and CAD integrated surveying software. Typically Offered Fall.

### SURE215 Surveying Engineering  
**TE Undergraduate 3**  
A study of principles and methods of surveying computation related to Cartesian coordinate systems, coordinate geometry including a four-parameter similarity transformation and an introduction to spherical coordinate systems as applied to spherical astronomy and the use of mathematical software with programming features. Pre-requisites: SURE 110 and SURE 115. Typically Offered Fall.
SURE230 Surveying Engineering TE Undergraduate 3
An advanced study of the methods and instrumentation used in the surveying profession. The theory and application of electronic distance measuring devices, use of total stations and digital levels, GPS principles and applications, introduction to practical astronomy and the application of state plane coordinates. Pre-Requisites: SURE 110 and SURE 115. Typically Offered Spring.

SURE272 Surveying Engineering TE Undergraduate 2
Exploring fundamental concepts of visual programming to solve surveying and mapping related problems. Topics covered include: object oriented syntax for looping and if statements, input/output statements, arrays, user-defined functions and procedures, reading and writing text and binary files, and introduction to database programming and graphics. Programming projects may include: angular units conversion; transformation of coordinates from polar to rectangular and rectangular to polar; traverse computation, adjustment and plotting. Pre-Requisites: MATH 130 or a minimum score of 26 on ACT or 590 on pre 2016 SAT or 610 post 2016 SAT; and SURE 215. Typically Offered Spring Only

SURE331 Surveying Engineering TE Undergraduate 3
Discusses the codes of ethics which have been adopted by many engineering societies. Explain meaning and attributes of professionalism along with the ethical, moral, and social responsibilities of technologists and engineers. Also standards, law, safety, risks, obligations of loyalty to employer, professional client relationship, global awareness, bribery, contracts, and intellectual property are discussed. This course meets General Education requirements: Cultural Enrichment and new Fall 2017 Culture. Pre-Requisites: ENGL 150. Typically Offered Fall and Spring.

SURE340 Surveying Engineering TE Undergraduate 3
An introductory course in photogrammetry covering, in part, the history of photogrammetry, aerial cameras and camera calibration, geometry of the aerial photograph, stereoscopy and stereoscopes, parallax, and the theory and techniques of orientation. Students will perform basic mapping tasks in the stereoplotter. Pre-Requisites: SURE 110. Typically Offered Spring Only

SURE365 Surveying Engineering TE Undergraduate 3
An introductory study of the subdivision of public lands, theory of original survey, resurvey, subdivision survey, and methods describing real property. The more important statute laws affecting the surveyor are studied. This course meets General Education requirement: Writing Intensive and new Fall 2017 Comm Across the Curriculum. Pre-Requisites: ENGL 250. Co-Requisites: SURE 215. Typically Offered Fall Only

SURE366 Surveying Engineering TE Undergraduate 3
A study of the rules of evidence and their application in conducting boundary surveys. It includes an introduction to littoral and riparian rights and major environmental considerations and their applications to survey projects. The course focuses on federal and state statutory law and case studies, melding the theoretical with the practical. Pre-Requisites: SURE 365. Typically Offered Fall.
This is the first of the two sequential courses on adjustment computations. Topics to be covered include: use of vectors, set theory, partial differentiation, matrix differentiation, statistical inference and hypothesis testing, an introduction to differential equations, propagation of random errors, and the relationships between variance covariance, weight and cofactor matrices as applied to least squares adjustment. Pre-Requisites: SURE 230 and MATH 230 and SURE 272 and MATH 322. Typically Offered Fall Only

Topics covered include: review of error propagation, development and application of least squares, horizontal and vertical control network designs; adjustment of indirect of observations, adjustment of observations and parameters combined. Student adjustment projects include: level network, traversing, triangulation, trilateration, and GPS network. Pre-Requisites: SURE 372. Typically Offered Spring Only

A study of business practices as they apply to the organization offering professional engineering and/or surveying practices. This course meets General Education requirements: Writing Intensive Requirement and new Fall 2017 Comm Across the Curriculum. Pre-Requisites: SURE 365 and ENGL 250. Typically Offered Spring.

This course acquaints the student to advanced photogrammetric concepts that are normally encountered in photogrammetric practice. Topics include an introduction to analytical photogrammetric principles, concepts of the bundle adjustment, principles of advanced sensors, and principles of digital photogrammetry. Pre-Requisites: SURE 340 and SURE 373. Typically Offered Fall Only

This is the first of the two sequential courses in geodesy. Topics covered include: ellipsoidal geometry, direct and inverse solution of geodetic line, geodetic datum, coordinate systems, deflections of vertical, celestial sphere, solution of spherical triangles, time systems, astronomical azimuth and Laplace's equation, developable surfaces, basic properties and characteristics of most common map projections with stronger emphasis on the projections used in State Plane Coordinates such as Lambert conformal, transverse Mercator and UTM. Pre-Requisites: SURE 230 and SURE 372. Typically Offered Spring Only

This course is a continuation of SURE 452, Geodesy 1. Topics covered include: introduction to physical geodesy, gravity observations and reduction, Stoke's integral, Bruns formula, basic concepts of positioning by observing satellites, satellite geodesy, Global Positioning System (GPS) including both theoretical and practical aspects, VLBI, lunar and satellite laser ranging, satellite altimetry, and inertial positioning system. Pre-Requisites: SURE 373 and SURE 452. Meets General Education Requirements for Collaboration and Problem Solving. Typically Offered Fall Only
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<td>TE</td>
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<td>BU</td>
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</table>

**SURE465 Surveying Engineering**
A study of the total body of law as it applies to the practice of Land Surveying. Both Statute Law and Common Law are covered. A number of court cases are studied for the purpose of defining the Land Surveyor's role in the judicial process and the use of legal precedent in answering related questions of law and fact. Practical description writing and interpretation is an essential portion of this course. This course meets General Education requirements: Writing Intensive Requirement and new Fall 2017 Comm Across the Curriculum. Prerequisites: SURE 365 and ENGL 250. Typically offered Spring.

**TDMP110 TV & Digital Media Production**
This survey course introduces the history, current structure, and technological development trends of various digital media and their relation to contemporary society and the mass audience. Topics of study include media such as Radio, Television, Internet, Social Media, Mobile Devices, Movies, and Video games as well as their impact on society, industry, government, and culture. Typically offered Fall, Spring, Summer.

**TDMP132 TV & Digital Media Production**
Digital Media Art and Technology combines art, design, aesthetics and digital media technology to include a solid foundation of graphics, digital video, and photographs from an art perspective. This course serves as an introductory course and digital primer for foundational concepts of techniques in digital media. While applying elements of design to media, students will explore the fundamentals of contemporary storytelling and messaging. Prerequisites: TDMP Major or by Permission. Typically offered Fall, Spring, Summer.

**TDMP136 TV & Digital Media Production**
This course covers the basics of audio production as it relates to visual media: Sound basics and theory, microphone selection and placement, gain staging, recording techniques and equipment, cables and connectors, digital audio editing and mixing, audio effects, and audio production techniques for visual media such as location sound recording and gathering sound effects. Typically offering Fall, Spring, Summer.

**TDMP240 TV & Digital Media Production**
Entertainment Arts and Production offers students many different facets of the entertainment world as they appear in diverse cultures and international cities. Students produce a digital journal of images and shoot video "cinema-verite" style providing a broader perspective of shooting on location to document the reality of the cultural experience. Traditions of the culture will be experienced through visitations to art galleries, museums and television, film and entertainment venues of the country visited. Prerequisites: TDMP Major or by Permission. Typically offered Summer.
Field Production introduces you to the set-up and operation of cameras, camera techniques, and composition. You will produce and direct multiple projects that demonstrate quality sound, lighting and exposure, composition, and storytelling. The course will also cover professional terminology, shot lists, production planning and organization, three-point lighting techniques, field audio recording, voice-overs and natural sound capture, video editing and transcoding/exporting. Prerequisites: TDMP Major or by Permission. Typically offered: Fall, Spring, Summer.

Motion Graphics provides you with an understanding of the concepts of compositing and motion graphics including the history of the art and the technical implementation of the craft. Through hands-on, applied learning, you will utilize industry standard software to composite and animate various elements. Topics include chroma-keying, keyframing, compositing, 2D and 3D animation, motion tracking, parenting, and using effects. Prerequisites: TDMP 132. Typically offered Fall, Spring, Summer.

This course explores the aesthetics and techniques of lighting for film and video production. Using contemporary lighting instruments, students will develop their creativity and skill in the area of lighting for characters and scenes in narrative and documentary productions. Prerequisites: TDMP 243. Typically offered Summer.

This course offers practical experience in all aspects of live production. Students will work together to produce and direct multi-camera productions in the field at sporting and other live events. Students will rotate through a variety of crew positions while operating various pieces of video and audio equipment in real-life production conditions. Prerequisites: TDMP 243 or by Permission. Typically offered Fall, Spring, Summer.

This course is designed to provide hands-on television and digital media production experience working in a supervised production setting at Ferris State University. Student will work with clients that are established between the instructor and the student. Working in teams and working to meet client expectations are key components of this course. Prerequisites: TDMP 243 or by Permission. Typically offered Fall, Spring, Summer.

This is a writing intensive course designed to familiarize the student with a variety of writing styles and formats to both commercial (broadcast) and short story / film mediums. The course also integrates group activities and discussion to further investigate the ever-changing world of script writing. Along with covering the staples of television writing like PSAs, commercials, television dramas and news, this course will also look at short format drama currently in circulation and on the internet (mobisodes). Course meeting General Education requirements for Writing Intensive. Prerequisites: ENGL 211 or ENGL 250 or by Permission. Typically offered Fall, Spring, Summer.
Producing online and navigating social space and current trends of video sharing and digital media content. This course will cover emerging technologies to enhance skills needed to create content in a digital media workflow for a variety of platforms. Social storytelling and creation of online communities through digital strategies and interaction on the internet is part of a new narrative in digital space. Online discussions will include guided web communication through online video sharing and building social media communities. Create and cultivate your own personal professional online brand, organize your digital footprint and a social media profile through immersive portfolio design. Prerequisites: TDMP 132. Meets General Education Requirements for Collaboration and Problem Solving. Typically offered Fall, Spring, Summer.

This course builds upon prior coursework to provide students with more advanced knowledge and experience in cinematic story production. Students will explore and expand their creativity in the areas of producing, directing, writing, cinematography, sound, and editing giving them the tools needed to develop visually compelling and technically sound cinematic stories. Prerequisites: TDMP 243 or by Permission. Typically offered Fall, Spring, Summer.

Advanced Compositing for Video will expand on the knowledge gained in TDMP 255 (Compositing Video) by challenging students with more advanced techniques. Through project work including "Building a Better Key" and "Extending Your Set," Advanced Compositing for Video will provide students with a more in-depth skill set for use in the motion graphics work environment. Prerequisites: TDMP 255 or by permission. Typically offered Fall, Spring, Summer.

Television Operations focuses on the development and refinement of skills needed for television production activities in the technical area including television lighting equipment, studio television cameras, waveform monitors and vectorscopes, broadcast production switchers, and broadcast graphics. Prerequisites: TDMP 243.

Color Grading provides an overview of contemporary post-production color processing concepts and techniques for cinematic applications within the Digital Media industry including primary and secondary color correction, gammacurves, and compression formats. Prerequisites: TDMP 243 and TDMP 255. Typically offered Spring.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Semester Offered</th>
<th>Prerequisites</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>TDMP376</td>
<td>TV &amp; Digital Media Production</td>
<td>Fall, Spring, Summer</td>
<td>TDMP 243 or by Permission</td>
<td>In assigned groups, students will produce a short digital film production for a theatrical audience. Production planning, casting, rehearsing, blocking, continuity, shooting for the edit and the post production activities involved with editing, including sound editing, music and effects, will be covered. All crew positions will be chosen and/or assigned within the class. Talent may be cast from outside of the class. Prerequisites: TDMP 243 or by Permission. Meets General Education Requirements for Problem Solving. Typically offered Fall, Spring, Summer.</td>
</tr>
<tr>
<td>TDMP385</td>
<td>TV &amp; Digital Media Production</td>
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<td></td>
<td>Television Studio Production introduces you to basic studio production techniques including lighting, audio, studio camera operation, floor managing, video switcher operation and directing. You will participate weekly in the creation of studio-based productions, which will demonstrate your understanding of each component of a studio production. Prerequisites: TDMP 359 or by Permission.</td>
</tr>
<tr>
<td>TDMP464</td>
<td>TV &amp; Digital Media Production</td>
<td></td>
<td></td>
<td>This course provides students career focus and internship preparation and planning through discussion, career portfolio development and networking resources. Students will write effective industry targeted resumes, cover letters and design a career portfolio including a video demo-reel. In addition, the course helps prepare students for their internship assignments with in depth discussions on internship requirements, responsibilities and opportunities. Development of professional network resources, participation in job/career fairs and career promotion technologies will be emphasized. Prerequisites: TDMP 385 and Co-requisites: TDMP 499 and TDMP 466.</td>
</tr>
<tr>
<td>TDMP466</td>
<td>TV &amp; Digital Media Production</td>
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<td></td>
<td>This course provides students career focus and internship preparation and planning through discussion, career portfolio development and networking resources. Students will write effective industry targeted resumes, cover letters and design a career portfolio including a video demo-reel. In addition, the course helps prepare students for their internship assignments with in depth discussions on internship requirements, responsibilities and opportunities. Development of professional network resources, participation in job/career fairs and career promotion technologies will be emphasized. Prerequisites: TDMP 385 and Co-Requisite: TDMP 499 and TDMP 464.Meets General Education Requirements for Collaboration.</td>
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</tbody>
</table>
Upon completion of the senior sequence of courses (TDMP 464, 466, 499) within the TDMP program, students will complete an 18 credit, 40 hour per week internship at an approved internship location. The internship experience will be designed to provide a real world, applied learning experience across the core competencies required for a career in this field. Students will enroll in TDMP 493 for 6 credits in the summer, either preceding taking 12 credits in the fall semester, or following the completion of 12 credits in the spring semester. Prerequisites: TDMP 499 and TDMP 464 and TDMP 466. Typically offered Fall, Spring, Summer.

Advanced Producing and Directing will provide you with practical experience in all aspects of television production and direction. Each week you will work collaboratively with your classmates to produce a half-hour studio program and a half-hour magazine-style program. These programs will allow you to develop and demonstrate your knowledge of pre-production planning, scripting, organizational abilities, production skills, and post-production editing. Samples from your portfolio of work will be showcased in a resume reel that you will create. Co-requisites: TDMP 464 and TDMP 466.

An appreciation of the theatre arts: the role of the audience; play structure and genres; theatre artists; and the fundamentals of play production. The students will read representative plays, view selected films, and attend live theatre. This course meets General Education requirements: Cultural Enrichment and new Fall 2017 Culture. Typically offered Fall, Spring.

This course will explore the contextual and historical areas of theatrical design and technical production. Areas include scenic design, costume design and lighting design and stage management. The course will also provide practical experience in one of the areas of the student’s choice. This course meets General Education requirements: Cultural Enrichment, and new Fall 2017 Culture. Typically offered Fall, Spring.

The basic physical and vocal skills required in acting on the stage are explored and developed through exercises, improvisation, and scenes. Includes acting theory, stage acting terminology, script and role analysis. This course meets General Education requirements: Cultural Enrichment, and new Fall 2017 Culture. Typically Offered Fall Only.

Laboratory course in dramatic production. Students may receive credit in several areas of play production. Each credit hour requires a minimum of 45 hours of time during rehearsals and performances, as an assistant director, or technical theatre time. This course meets General Education requirements: Cultural Enrichment, and new Fall 2017 Cultural Activity. Typically offered Fall, Spring.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Level</th>
<th>Type</th>
<th>Credits</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>THTR255</td>
<td>Theater AS Undergraduate 3</td>
<td>Theater</td>
<td>Undergraduate</td>
<td>3</td>
<td>Theory and practice of selection, organization, directing, acting, and production of plays for children. Students will learn techniques and tools for traditional as well as recreational and educational theatre. The final project will be the creation and production of a play for children. Typically Offered Fall Only-Even Years</td>
</tr>
<tr>
<td>THTR322</td>
<td>Theater AS Undergraduate 3</td>
<td>Theater</td>
<td>Undergraduate</td>
<td>3</td>
<td>Students will further develop vocal, physical and emotional factors as they effect stage performance with historical perspective. Different periods, genres and styles will be explored through script reading and scene work. Class work/assignments will consist of many exercises, ‘practice’ scenes, polished scenes and on final presentation. This course meets General Education requirements: Cultural Enrichment and new Fall 2017 Culture. Pre-Requisites: THTR 222. Typically Offered Spring Only, Even Years</td>
</tr>
<tr>
<td>THTR331</td>
<td>Theater AS Undergraduate 3</td>
<td>Theater</td>
<td>Undergraduate</td>
<td>3</td>
<td>Theatre History to Mid-19th Century. A survey of the major developments in the physical theatre and drama from 5th century BC Greece to mid-19th century Europe including the origins of Eastern Theatre. This course meets General Education requirements: Cultural Enrichment and new Fall 2017 Culture. Pre-Requisites: ENGL 250. Typically Offered Spring Only, Odd Years. This class will consider the development of theatre from the mid-19th century to the present, both western and non-western styles. The physical stage, theatre movements, and representative plays are studied. This course meets General Education requirements: Cultural Enrichment and new Fall 2017 Culture. Pre-Requisites: ENGL 250. Typically Offered Spring Only, Even Year</td>
</tr>
<tr>
<td>THTR332</td>
<td>Theater AS Undergraduate 3</td>
<td>Theater</td>
<td>Undergraduate</td>
<td>3</td>
<td>The class covers basic theoretical and practical aspects of directing for the stage and visual communication. Students will explore direction techniques as they apply to different venues. Includes directing a scene or one-act play. This course meets General Education requirements: Cultural Enrichment and new Fall 2017 Culture. Pre-Requisites: THTR 222 or THTR 255 or THTR 319. Typically Offered Fall Only, Odd Years</td>
</tr>
<tr>
<td>THTR423</td>
<td>Theater AS Undergraduate 3</td>
<td>Theater</td>
<td>Undergraduate</td>
<td>3</td>
<td>Research and lab based course in dramatic production. Students will receive credit for advanced work in several areas of play production. Areas include Design, Stage Management and Directing. The final project, supporting paperwork and analysis of the process will be critiqued by the Theatre Faculty. This course can be repeated to a maximum 4 credits. This course meets General Education requirements: Cultural Enrichment Activity and and new Fall 2017 Culture Activity. Pre-Requisites: THTR 224 or THTR 319 or THTR 423. Typically Offered Fall, Spring</td>
</tr>
<tr>
<td>THTR424</td>
<td>Theater AS Undergraduate 2</td>
<td>Theater</td>
<td>Undergraduate</td>
<td>2</td>
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<tr>
<td>Course Code</td>
<td>Course Title</td>
<td>Degree</td>
<td>Credit Hours</td>
<td>Description</td>
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<tr>
<td>UNIV101</td>
<td>University Courses</td>
<td>Undergraduate</td>
<td>2</td>
<td>This college methods course will assist students in the development and use of effective and efficient study strategies that can be utilized in college courses. Students will learn about goal-setting and self-monitoring, learning styles, test preparation and test-taking, lecture and textbook note taking, time management and concentration, and general strategies for more efficient learning. Through an assessment process, students will be able to identify study skill challenges and will develop strategies designed to help improve study skills. Students will be required to implement the study methods and provide evidence of application of these study methods to other courses. Typically Offered Fall, Spring</td>
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<tr>
<td>WELD111</td>
<td>Welding</td>
<td>Undergraduate</td>
<td>3</td>
<td>Initial lecture environment for students enrolled in associate degree program in Welding Technology. Theory and techniques pertaining to shielded metal arc welding, oxy-fuel welding/cutting, brazing and soldering methods and applications are discussed. Equipment and consumable requirements for specific welding processes and applications. Requirements for use of industrial welding codes to develop Welding Procedures and Welder Qualifications are discussed. Introduction to gas metal welding process. Pre-Requisites:Welding students only. Co-Requisites:WELD 113. Typically Offered Fall Only</td>
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<tr>
<td>WELD112</td>
<td>Welding</td>
<td>Undergraduate</td>
<td>3</td>
<td>An introductory course designed to give the Welding Technology student experience in print reading and drafting of common welded products. Course work will include generating multiview drawings, interpreting welding drawings, calculating weld and part weights and an introduction to welding symbols. Also, the student will develop templates for optically guided cutting equipment, calculate plate utilization, and calculate bend allowance. Pre-Requisites:Welding students only. Typically Offered On Demand</td>
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<tr>
<td>WELD113</td>
<td>Welding</td>
<td>Undergraduate</td>
<td>4</td>
<td>Practical experience in the use and application of shielded metal arc welding on various joint configurations in all positions on plate. Oxyacetylene welding, brazing and cutting applications. Introduction to the process of gas metal arc welding in the flat and horizontal positions. Destructive testing methods of weldments to develop Welding Procedure Qualification and Welder Qualification records. Co-Requisites:WELD 111. Typically Offered Fall Only</td>
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</tr>
<tr>
<td>WELD121</td>
<td>Welding</td>
<td>Undergraduate</td>
<td>3</td>
<td>Theory and techniques of advanced shielded metal arc welding (out-of-Position). Theory and techniques of gas tungsten arc welding of ferrous and non-ferrous alloys and material identification. Theory and techniques of gas metal arc welding and flux cored arc welding processes and applications. Continued emphasis on development of procedures and qualifications of the above processes. Equipment and consumable requirements for specific welding processes and applications. Pre-Requisites:WELD 111, WELD 112 and WELD 113. Co-Requisites:WELD 123. Typically Offered On Demand</td>
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</table>
WELD123 Welding TE Undergraduate 4
Practical experience in the use and application of out-of-position shielded metal arc welding. Practical experience in the use and application of gas metal arc welding in all positions. Practical experience in gas tungsten arc welding of ferrous and non-ferrous alloys and flux cored arc welding. Continuation of destructive testing methods of weldments to develop Welding Procedure Qualification and Welder Qualification records. Pre-Requisites: WELD 111, WELD 112 and WELD 113. Co-Requisites: WELD 121. Typically Offered Spring Only

WELD150 Welding TE Undergraduate 2
A welding theory and practice course offered as an elective to anyone interested in welding. Manipulative skills are emphasized for the gas metal arc, shielded metal arc and oxy-fuel and braze welding processes. An introduction to plasma arc cutting, gas tungsten arc, resistance spot welding, stud welding and plastic welding is included. Appropriate reading assignments are included. Typically Offered Spring only.

WELD211 Welding TE Undergraduate 5
Non-traditional or advanced welding and processing procedures. Resistance welding, plasma arc welding and cutting, submerged arc welding, automated shape cutting, and stud welding. Design of a weldment, cost estimating of the design, material processing, welding procedure development, and fabrication of the design. Customer repairs with cost analysis. Pre-Requisites: WELD 121 and WELD 123. Typically Offered On Demand

WELD212 Welding TE Undergraduate 4
Non-destructive testing methods: magnetic particle (wet, dry, and fluorescent), dye penetrant, eddy current, radiographic, and ultrasonic testing in compliance with the following codes: A.W.S., D.1-1-91, A.P.I. 1104, and ASEM Section #X. Much of the information necessary to satisfactorily complete the American Welding Society’s certified welding inspectors’ test. Pre-Requisites: WELD 121 and WELD 123. Typically Offered On Demand

WELD221 Welding TE Undergraduate 4
The capstone course in the two year Associate in Applied Science degree, assorted construction projects dealing with process selection, joint design, cost estimating, and design of welded projects. Students will also complete a research paper dealing with various forms of welding and joining. Students will be required to complete two written semester projects which will be entered in a national welding contest. Pre-Requisites: WELD 211 and 212 and ENGL 250. Typically Offered On Demand

WELD222 Welding TE Undergraduate 3
Introduction to welding automation used in manufacturing. Review of common justifications procedures and feasibility studies on basic weldments. Includes variations in joint design and filler materials, selection of optimum welding process and equipment. Laboratory will include the set-up and operation of basic automatic welding system with a study of the effects of welding parameters on weld outcomes. Pre-Requisites: WELD 211 and 212. Typically Offered On Demand
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Degree</th>
<th>Credits</th>
</tr>
</thead>
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<tr>
<td>WELD311</td>
<td>Welding TE</td>
<td>Undergraduate</td>
<td>4</td>
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<tr>
<td>WELD312</td>
<td>Welding TE</td>
<td>Undergraduate</td>
<td>3</td>
</tr>
<tr>
<td>WELD321</td>
<td>Welding TE</td>
<td>Undergraduate</td>
<td>4</td>
</tr>
<tr>
<td>WELD322</td>
<td>Welding TE</td>
<td>Undergraduate</td>
<td>3</td>
</tr>
<tr>
<td>WELD393</td>
<td>Welding TE</td>
<td>Undergraduate</td>
<td>4</td>
</tr>
<tr>
<td>WELD411</td>
<td>Welding TE</td>
<td>Undergraduate</td>
<td>3</td>
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</tbody>
</table>

**WELD311 Welding TE Undergraduate 4**

Advanced welding theory and practical applications. Emphasizes the economics, feasibility, and fundamentals of welding automation. Fixturing, positioning, safety, and adaptive control devices will be applied to various fixed, flexible, and programmable automated welding processes. Students will be required to program, perform, and analyze various automated welds.

**Pre-Requisites:** Welding students only. Typically Offered On Demand

**WELD312 Welding TE Undergraduate 3**

The design, drawing, manufacturing engineering, and cost considerations of creating weldments. Includes engineering graphics review, weld joint types and welding symbols, an introduction to estimating welding costs, production considerations needed in designing and fabricating weldments, the use of tolerance dimensioning, geometric tolerancing, mechanical and section properties of materials, an introduction to load and stress analysis and code requirement for welding.

**Pre-Requisites:** Welding students only. Typically Offered On Demand

**WELD321 Welding TE Undergraduate 4**

Continuation of Weld 311 advanced theory and laboratory welding automation course. Emphasizes laser, plasma, robotic and fixed automated welding and cutting applications. Technical and economic feasibility studies are performed. Students will be required to set-up, program, operate, and apply various welding automation hardware and software systems.

**Pre-Requisites:** Weld 311 and Weld 312. Typically Offered Spring Only

**WELD322 Welding TE Undergraduate 3**

An engineering technology course in resistance welding. Information on set-up and operation of resistance welding systems typically found in automotive, appliance, and other sheet metal manufacturing industries. Written laboratory reports will be a course requirement.

**Pre-Requisites:** Weld 311 and Weld 312. Meets General Education Requirements for Collaboration and Problem Solving. Typically Offered On Demand

**WELD393 Welding TE Undergraduate 4**

The student is placed in an industrial setting (for a minimum of 400 hours over a ten-week period) to face the realities of the working world. The unique experience that the student will receive is combined effort of the training site, university and student. Students will be involved in the industrial projects and daily activities of a product designer for their employer.

**Pre-Requisites:** Weld 321 and Weld 322. Typically Offered On Demand

**WELD411 Welding TE Undergraduate 3**

Welding processes, techniques, and methods for joining materials not previously covered. Mechanical and chemical energy joining systems, high energy electrical joining processes, adhesive bonding, and mechanical fasteners. How to and why select a process for a specific application.

**Pre-Requisites:** Weld 412 and Weld 422. Typically Offered Spring.
Application of computer aided drafting, material selection, and finite element analysis software and hardware to facilitate the process of designing weldments. Mechanical and shape properties of materials utilized to determine and analyze weldment design functionality. Design approach methods and programs are addressed. Engineering economic methods are applied to weldment design and processes selection. Students will be required to solve several weldment design problems. Pre-Requisites: WELD 393. Typically Offered Fall Only.

A theory and demonstration course for engineering technology students. Exposure to the typical production welding and joining processes found in today's manufacturing environment, including process selection, design considerations, and the economics of each. Pre-Requisites: Manufacturing Engineering Technology students only. Typically Offered On Demand

This is a lecture and laboratory course designed to give the student exposure to the chemical composition, metallurgical aspects, applications, weldability, and specific requirements for welding various metal alloys. The metallurgical response to heating and cooling during the welding cycle will be emphasized, along with proper welding techniques and requirements. Ferrous and nonferrous alloys will be addressed. Pre-Requisites: WELD 393. Typically Offered Fall.

The capstone course for the welding engineering technology program. Designing, engineering, manufacturing, and managing a welding project. Design of welded structures and machine elements in terms of allowable stresses, joint configuration, material and process selection, welding procedures, equipment specification and purchasing, production forecasting, project supervision, and resource management techniques. Pre-Requisites: WELD 412 and WELD 422. Typically Offered Spring.

The course focuses on the experiences of women and the significance of gender in society in an international context. Readings, literature, film, and art will be used to study such issues as the social construction of gender, women and work, race and class, the family, women in media and popular culture, domestic violence, and women's spirituality. This course meets General Education requirements: Cultural Enrichment and Race/Ethnicity/Gender and new Fall 2017 Culture and U.S. Diversity. Typically Offered Fall Only.