

The Bachelor of Science in Digital Media Software Engineering is designed as a degree focused on the processes, procedures, and technology involved with software development. The degree will focus on fundamental computer science topics as well as processes and procedures commonly used in the production of software. This approach will provide students with the ability to construct software as well as the knowledge and understanding of the concepts used in commercial software development. This approach will allow graduates to seamlessly transition into the workforce integrating their knowledge of the industry and successfully design, develop, and deliver quality software applications. Software engineers are needed to create innovative software for health care, bio-informatics, business, entertainment, education, military, automotive industries, and more.

Communication Competency Requirements

FSU Course	FSU Course Title	FSU Cr. Hrs.	NCMC Equiv.	NCMC Course Title	NCMC Cr. Hrs.
COMM 121	Fundamentals of Public Speaking	3	COM 111	Public Speaking	3
ENGL 150	English 1	3	ENG 111	English Composition	3
ENGL 250	English 2	3	ENG 112	English Composition 2	3
ENGL 311 or ENGL 321 or ENGL 325	Advanced Technical Writing or Advanced Composition or Advanced Business Writing	3	No Equivalent No Equivalent No Equivalent	No Equivalent No Equivalent No Equivalent	No Equivalent No Equivalent No Equivalent

Quantitative Literacy Requirements - 3 Credits Required and is satisfied in the program's Major.

Natural Sciences Competency Requirements – Two courses are required with a minimum of 6 credits: must have at least one lab course

FSU Course	FSU Course Title	FSU Cr. Hrs.	NCMC Equiv.	NCMC Course Title	NCMC Cr. Hrs.
PHYS 241	General Physics 1	5	PHY 210	General Physics 1	5
Varies	FSU General Education – Natural Sciences Elective	Varies	Varies	Varies	Varies

Culture Competency Requirements - Minimum 9 credits from 2 different disciplines – PHIL 216 Met in Major

FSU Course	FSU Course Title	FSU Cr. Hrs.	NCMC Equiv.	NCMC Course Title	NCMC Cr. Hrs.
Varies	FSU General Education - Culture Electives	6	Varies	Varies	6

Self and Society Competency Requirements – Minimum 9 credits from 2 different disciplines – ECON 201 or 202 Met in Major

FSU Course	FSU Course Title	FSU Cr. Hrs.	NCMC Equiv.	NCMC Course Title	NCMC Cr. Hrs.
Varies	FSU General Education – Self and Society Competency	6	Varies	Varies	6

Ferris State University General Education Program

Students are encouraged to work with an advisor to select appropriate general education courses

Diversity Competency – 2 Courses Required

If not met by courses taken for Culture, Self and Society, or MTA, a student must meet the following:

- 1 course with the Global Diversity attribute
- 1 course with the U.S. Diversity attribute

Major Requirements – 95 Credits Required

Software Development – 21 Credits Required

FSU Course	FSU Course Title	FSU Cr. Hrs.	NCMC Equiv.	NCMC Course Title	NCMC Cr. Hrs.
SENG 101	Computer Programming 1	3	No Equivalent	No Equivalent	No Equivalent
SENG 102	Computer Programming 2	3	No Equivalent	No Equivalent	No Equivalent
SENG 300	Software Data Structures & Algorithms	3	No Equivalent	No Equivalent	No Equivalent
SENG 301	Programming Languages	3	No Equivalent	No Equivalent	No Equivalent
SENG 315	Software Component Design	3	No Equivalent	No Equivalent	No Equivalent
SENG 400	Engineering Enterprise Software Applications	3	No Equivalent	No Equivalent	No Equivalent
SENG 430	Programming Graphical User Interfaces	3	No Equivalent	No Equivalent	No Equivalent

Foundation – 21 Credits Required

FSU Course	FSU Course Title	FSU Cr. Hrs.	NCMC Equiv.	NCMC Course Title	NCMC Cr. Hrs.
SENG 160	Software Engineering Methodologies & Processes	3	No Equivalent	No Equivalent	No Equivalent
SENG 170	Software Requirements Management	3	No Equivalent	No Equivalent	No Equivalent
SENG 210	Software Configuration Management	3	No Equivalent	No Equivalent	No Equivalent
SENG 250 or ISYS 327	Fundamentals of Operating Systems & Networking or Operating Systems & Network Essentials	3	No Equivalent or No Equivalent	No Equivalent or No Equivalent	No Equivalent or No Equivalent
SENG 302	Software Quality Assurance	3	No Equivalent	No Equivalent	No Equivalent
SENG 350	Software Design & Architecture	3	No Equivalent	No Equivalent	No Equivalent
SENG 355	Software Engineering Emerging Tools & Paradigms	3	No Equivalent	No Equivalent	No Equivalent

Engineering Fundamentals – 9 Credits Required

FSU Course	FSU Course Title	FSU Cr. Hrs.	NCMC Equiv.	NCMC Course Title	NCMC Cr. Hrs.
ISYS 200 or SENG 225 or ISYS 272	Database Design & Implementation or Introduction to Database Design or Fundamentals of Database Systems	3	CIS 150 or No Equivalent or CIS 215	Introduction to Database Administration or No Equivalent or Database Design and Management	3 or No Equivalent or 3
ECON 201 or ECON 202	Principles of Microeconomics or Principles of Macroeconomics	3	ECO 112 or ECO 111	Microeconomics or Macroeconomics	3
STQM 260	Introduction to Statistics	3	STAT 200	Statistics	3

Mathematics – 14 Credits Required

FSU Course	FSU Course Title	FSU Cr. Hrs.	NCMC Equiv.	NCMC Course Title	NCMC Cr. Hrs.
MATH 220	Calculus with Analytical Geometry 1	4	MATH 150	Analytic Geometry and Calculus 1	5
MATH 230	Analytical Geometry – Calculus 2	4	MATH 200	Analytic Geometry and Calculus 2	5
MATH 322	Linear Algebra	3	MATH 235	Linear Algebra	3
MATH 328	Discrete Structures	3	No Equivalent	No Equivalent	No Equivalent

Business and Management – 9 Credits Required

FSU Course	FSU Course Title	FSU Cr. Hrs.	NCMC Equiv.	NCMC Course Title	NCMC Cr. Hrs.
PHIL 216	Introduction to Ethics	3	PHL 105	Introduction to Ethics	3
PROJ 320 or DAGD 315	Project Management Fundamentals or Digital Media Productions	3	No Equivalent or No Equivalent	No Equivalent or No Equivalent	No Equivalent or No Equivalent
BLAW 321	Contracts & Sales	3	B 291	Business Law 2	3

Professional Development – 9 Credits Required

FSU Course	FSU Course Title	FSU Cr. Hrs.	NCMC Equiv.	NCMC Course Title	NCMC Cr. Hrs.
SENG 420	Software Development Industry Certification	3	No Equivalent	No Equivalent	No Equivalent
SENG 491	Applied Internship	3	No Equivalent	No Equivalent	No Equivalent
SENG 499	Capstone in Software Engineering	3	No Equivalent	No Equivalent	No Equivalent

Application Domain Electives – 12 Credits Required– Choose one four-course sequence in an area of interest below. Sequences other than those listed must be approved by an advisor.

Game Design and Development

FSU Course	FSU Course Title	FSU Cr. Hrs.	NCMC Equiv.	NCMC Course Title	NCMC Cr. Hrs.
DAGD 100 or DAGD 150	3D Modeling Animation or Intro to Game Design & Development	3	No Equivalent or No Equivalent	No Equivalent or No Equivalent	No Equivalent or No Equivalent
DAGD 255	Game Design Programming 1	3	No Equivalent	No Equivalent	No Equivalent
DAGD 300	Game Design & Theory	3	No Equivalent	No Equivalent	No Equivalent
DAGD 355	Game Design Programming 2	3	No Equivalent	No Equivalent	No Equivalent

OR

Machine Learning Engineering

FSU Course	FSU Course Title	FSU Cr. Hrs.	NCMC Equiv.	NCMC Course Title	NCMC Cr. Hrs.
SENG 309	Introduction to Machine Learning (SENG 300)	3	No Equivalent	No Equivalent	No Equivalent
SENG 409	Applied Machine Learning in Software as a Service Environments	3	No Equivalent	No Equivalent	No Equivalent
SENG 410	Introduction to Big Data Concepts & Tools	3	No Equivalent	No Equivalent	No Equivalent
SENG 422	Introduction to Cloud Application Development	3	No Equivalent	No Equivalent	No Equivalent

Total Credits Required for Degree	125 - 126
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Program Delivery Locations and Contact Information:

Main Campus, Big Rapids

College of Education and Human Services

(231) 591-3646 | College of Education and Human Services Website

Ferris Statewide – Grand Rapids

(810) 762-0461 | Ferris Grand Rapids Website | Ferris Grand Rapids Email

Transfer Partnerships Website

Select courses may be delivered online and/or in a mixed delivery format (i.e. a mix of online and face-to-face instruction at the Ferris Main Campus or at an off-campus location).

General Admission Criteria

Transfer Students

- 2.0 cumulative GPA (on a 4.0 scale)
- Minimum of 12 credits

Advising Notes

It is recommended that potential applicants meet with an advisor to review the degree, course schedule, and have any questions answered prior to completing an application. Students who are completing the MTA may have different general education course requirements for the particular degree selected. Meeting with a Ferris advisor prior to the selection of general education or elective course work may reduce the chance of completing a course that will not apply toward the selected degree. Once admitted, students must continue to meet with an advisor as they work toward graduation.

Transfer Student Orientation

All new students to Ferris State University are required to complete an orientation.

Online Learning

Select courses delivered online and/or in a mixed delivery format (i.e. a mix of online and face-to-face instruction at the Ferris Main Campus or at an off-campus location). The "Online Readiness Tutorial" is required for students who register for an online *course* or are completing an online *degree*. Students must demonstrate competency in Blackboard skills. This may be done by taking a tutorial and quiz, or, for students who have already taken and passed online courses, they can submit a waiver request. Students should check with the department that offers the class to determine its particular needs and/or the Ferris advisor regarding registration for online course work.

Reverse Transfer Agreement

The Community College and Ferris have entered into a partnership in order to work collaboratively and creatively to increase student completion of associate and bachelor degrees. The partners work together to provide a seamless transfer experience and increase student retention and completion at both the community college and Ferris.

Michigan Transfer Agreement (MTA)

Ferris participates in the Michigan Transfer Agreement (MTA). This agreement will facilitate the transfer of general education requirements from one Michigan institution to another. Students may complete the MTA as part of a degree program or as a stand-alone package. The MTA consists of a minimum of 30 general education credit hours as identified by the college or university.

Students transferring to Ferris with the Michigan Transfer Agreement (MTA) and entering a degree program will have met a 30-hour block of lower-level general education courses. However, this does not exempt students from completing program specific prerequisites or higher-level general education course requirements. Students should contact their advisor regarding classes that meet the MTA.

Students must work with their Ferris advisor to declare a Minor or Concentration and for selection of Directed Electives.

Disclaimer

This is a guide for students who plan to transfer to Ferris State University. This guide is not intended to be a contract with Ferris. The information on this guide is subject to change. Students should contact their community college or Ferris to keep informed of changes. Final responsibility for verifying all transfer information lies with the student. Please refer to effective and/or revised date on the bottom of this guide.