



FERRIS STATE UNIVERSITY
COLLEGE OF HEALTH PROFESSIONS

Molecular Diagnostics Program
Student Handbook
2018

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I. Introduction

Welcome to the Molecular Diagnostics Program! You're beginning an interesting and rewarding career. More than 70% of the decisions made by doctors are based on the results of laboratory testing. You'll be doing important work, whether you are employed by a hospital laboratory, a blood donor center, a research laboratory, or in private biomedical industry.

In the Molecular Diagnostics program, you will learn how to perform and interpret the results of molecular-based medical tests, provide blood products for patients needing transfusion, identify which bacteria and other microorganisms are causing infection, identify genetic changes that cause cancer and influence medication decisions, and how to perform a broad set of molecular biology laboratory skills, including DNA sequencing. Your final semester will take place at a clinical affiliate for a 12-week internship in an actual laboratory.

Although you'll be assigned to one academic advisor when you enter the professional phase of the program, please feel free to ask any of the program faculty for help or information at any time. We want you to learn, prosper, and thrive at Ferris and in the clinical laboratory. This handbook provides some of the information you need to plan for and succeed in the program. Refer to it often. The handbook is updated every year.

A. Purpose of this handbook

The Molecular Diagnostics Student Handbook provides you with information about the policies of the Molecular Diagnostics program. The target audience is current and prospective students in the Molecular Diagnostics Program at Ferris State University.

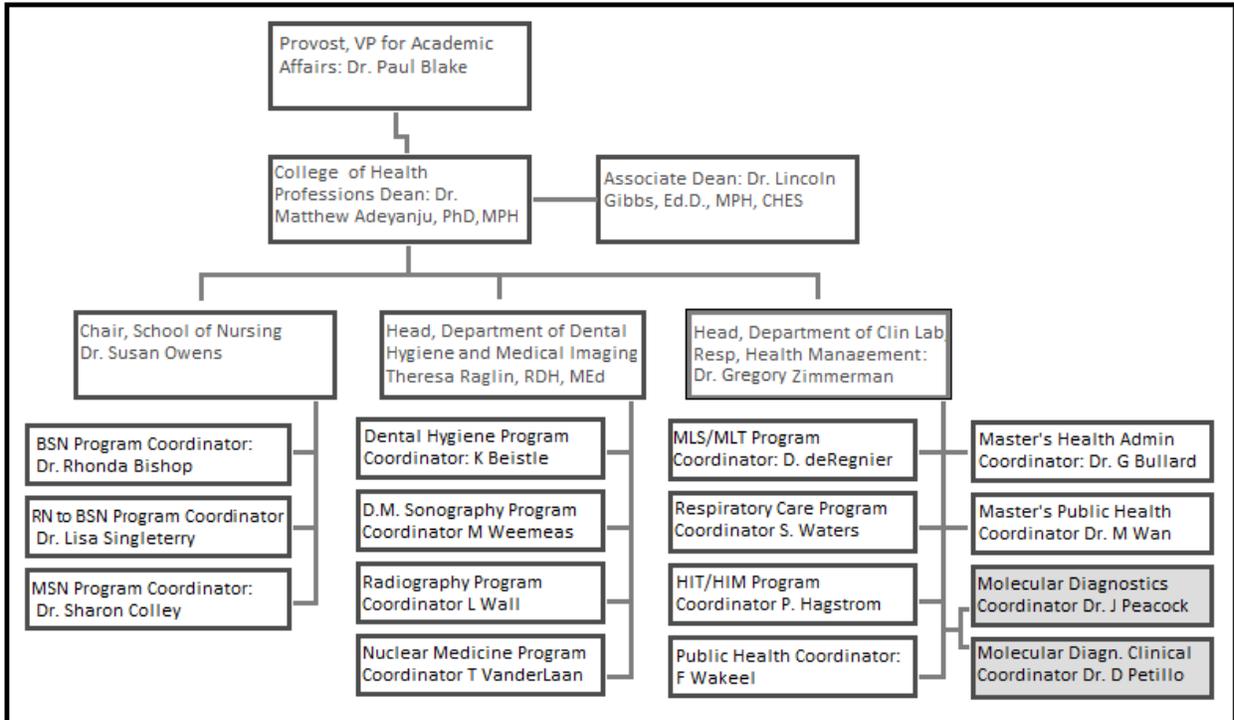
This handbook does not replace the Ferris Student Handbook. This book serves as an extra source of program-specific information. We recommend that you refer to the Ferris State University web site for the most current information throughout your course of study. You can find the online version of the University's [policies](#) at:

<http://www.ferris.edu/HTMLS/administration/studentaffairs/judicial/homepage.htm>

B. Organization

The Molecular Diagnostics program is in the College of Health Professions (CHP). The organizational chart below shows the organization of the College of Health Professions, so you can better understand the structure and programming of the College.

The Department of Clinical Laboratory, Respiratory Care, and Health Administration Programs houses an associate degree program in Medical Laboratory Technology, baccalaureate degrees in Molecular Diagnostics, and Medical Laboratory Science, the associate degree and baccalaureate program in Respiratory Care, the baccalaureate degree program in Health Services Administration, the associate degree in Health Information Technology, the baccalaureate degree in Health Information Management, and two academic minors—one in Lean Healthcare and another in Medical Informatics.



Most recently, the department has added a baccalaureate and master degree in Public Health and Master’s in Healthcare Administration. The Department Head is Dr. Gregory Zimmerman. Dr. Zimmerman is responsible for overall administration of all of these programs. His office is in VFS 402, telephone 231.591.2313. His e-mail address is GregZimmerman@ferris.edu. The college secretary is Ms. Linda Morris, located in VFS 400, 231-591-2259, or LindaMorris@ferris.edu.

C. Molecular Diagnostics Program Faculty

Jacqueline Peacock, PhD, MB(ASCP)^{cm} is the Molecular Diagnostics Program Coordinator. Dr. Peacock is responsible for many program activities including accreditation, and recruiting and retention of students. The Clinical Coordinator is David Petillo, PhD, MT(ASCP)MB^{cm}. Students should consult with him regarding their clinical experience (internship).

Fully staffed, there are two full time faculty, occasional part-time faculty who are experts working full-time in the field employed in the Molecular Diagnostics Program.

D. Program Accreditation Information

Ferris State University is accredited by the Higher Learning Commission (HLC). The Molecular Diagnostics program at Ferris State University is accredited as a Diagnostic Molecular Scientist training program by the National Accrediting Agency for Clinical Laboratory Sciences (NAACLS). NAACLS can be contacted at:

NAACLS
5600 N. River Road Suite 720
Rosemont, IL 60018 – 5119

info@naacls.org
http://www.naacls.org
847.929.3597
773.714.8886 (Fax)

E. Overview of the Program

The Molecular Diagnostics Program at Ferris State University is a 4-year baccalaureate degree program requiring 2 years of pre-professional study plus 2 years of professional phase classes. Courses in molecular diagnostics, biology, chemistry, mathematics, statistics, College of Health Professions core courses, and the general education courses are required for the Bachelor of Science degree.

Students can complete this program via two routes. Most students complete all prequalification courses on campus in Big Rapids and then finish the final two years of the program in the Molecular Diagnostics laboratory in Grand Rapids (concluding with a clinical experience/internship). Other students complete an associate degree or prequalification courses at community colleges with clinical laboratory science curricula and then enter the program to gain the advanced knowledge and skills for the baccalaureate degree in Grand Rapids (concluding with a clinical experience/internship).

1. Our Goals:

- a. To prepare graduates for entry level employment in a variety of careers.
- b. To define clearly what is expected of students at all levels of the program, to make these expectations clear to all students, and to help students fulfill those expectations.
- c. To incorporate appropriate liberal arts, science, and Health Professions core courses into the curriculum and to educate professionals who are aware of the needs and values of a changing world.
- d. To provide evaluation mechanisms which recognize individual competencies and allow for advanced placement where appropriate.
- e. To provide the opportunity for worthwhile clinical experiences for all qualified students.
- f. To offer appropriate continuing education opportunities to medical laboratory professionals.

Name _____

CWID _____

MOLECULAR DIAGNOSTICS – Bachelor of Science (BS) Degree

REQUIRED COURSES	COURSE TITLE (Pre-requisites)	CREDITS
GENERAL EDUCATION REQUIREMENTS		
http://www.ferris.edu/HTMLS/academics/gened/courses/GenEd-bachelor.pdf		
Communication Competence: 12 Credits Required		
English composition, choose 2:	ENGL 150 and either ENGL 250 or ENGL 211	6
Speech communication, choose 1:	COMM 105, 121, 221 or 251	3
Advanced English/ Speech requirement:	ENGL 311, 321 or 323	3
Scientific Understanding: 39 Credits Required		
CHEM 114 (or CHEM 121)	Intro to General Chemistry (CHEM 103 with a C- or better or a year of HS CHEM and MATH 110 with a C- or better or ACT 19 or SAT 460)	4
CHEM 214 (or CHEM 321)	Fundamentals of Organic Chemistry (CHEM 114 with a C- or better)	4
CHEM 324	Fundamentals of Biochemistry (CHEM 214 with a grade of C- or better)	3
BIOL 121	General Biology (CHEM 121 or CHEM 114)	4
BIOL 122	General Biology (BIOL 121 with a C- or better and CHEM 121 or CHEM 114 with a C- or better)	4
BIOL 205	Human Anatomy and Physiology (CHEM 114 or CHEM 121 with a C- or better)	5
BIOL 108 or 286	Medical (none) or General Microbiology (CHEM 122 with a C- or better)	3
BIOL 300	Pathophysiology (BIOL 205 or 321 with a C- or better and CHEM 124 or 214 or 321 with a C- or better)	3
BIOL 373	Cell Biology (BIOL 122 with a C- or better and CHEM 124 or 214 or 322 with a C- or better)	3
BIOL 375	Principles of Genetics (BIOL 122 with a C- or better)	3
BIOL 475	Bioinformatics	3
Quantitative Skills: 3 Credits or Proficiency Required		
<ul style="list-style-type: none"> See all proficiency options: http://www.ferris.edu/HTMLS/academics/gened/courses/GenEd-bachelor.pdf 		
MATH 115 or higher or ACT Math sub-score of 24	Intermediate Algebra (MATH 110 with a grade of C- or better, or 19 on ACT or 460 on SAT)	3
*Social Awareness: 9 Credits Required		
<ul style="list-style-type: none"> Choose three Social Awareness courses, in at least <u>two different</u> subject areas One of the Social Awareness courses must be a Foundations course One of the Social Awareness courses must be at the 200-level or higher 		
		3
		3
		3

*Cultural Enrichment: 9 Credits Required		
<ul style="list-style-type: none"> Choose three cultural enrichment courses No more than 5 credit hours in cultural enrichment activities courses may apply to this requirement 		
		3
		3
PHIL 220 OR PHIL 320	Ethics in Healthcare or Biomedical Ethics	3
<p>*Race-Ethnicity-Gender: one course. *Global Consciousness: one course.</p> <p>Please note that many Global Consciousness and Race/Ethnicity/Gender courses also meet Social Awareness or Cultural Enrichment requirements.</p>		
MOLECULAR DIAGNOSTICS MAJOR REQUIREMENTS		
Core Curriculum for Health Professions: 8 Credits Required		
COHP 100	Orientation to Medical Vocabulary	1
COHP 101	The U.S. Health Care Systems	3
COHP 102	Safety Issues in Health Care	1
COHP 350	Statistics in Health Care (MATH 110)	3
Professional Support Courses: 5 Credits Required		
DMOL 101 or CLLS 101	Clinical Laboratory Science Orientation	1
CLLS 231	Hematology (BIOL 205 and CHEM 214 with a C or better)	2
CLLS 252	Clinical Immunology (BIOL 205 with a C or better)	2
Molecular Diagnostics Courses: 35 Credits Required		
DMOL 110	Lab Techniques in Molecular Diagnostics	2
DMOL 210	Advanced Lab Techniques in Molecular Diagnostics (DMOL 110 with C or better)	2
DMOL 236	Diagnostic Microbiology (DMOL 110 with C or better, BIOL 108 or BIOL 286). May be substituted with CLLS 236.	2
DMOL 410	Principles of Molecular Diagnostics (DMOL 110 and DMOL 210 with C or better, Co-requisite DMOL 411)	2
DMOL 411	Principles of Molecular Diagnostics Lab (DMOL 110 and DMOL 210 with C or better, Co-requisite DMOL 410)	2
DMOL 420	Molecular Diagnosis of Infectious Disease (DMOL 410 with a C or better)	2
DMOL 421	Molecular Diagnosis of Infectious Disease Lab (Co-requisite DMOL 420)	1
DMOL 430	Molecular Hematology/Oncology (DMOL 410, DMOL 411 with a C or better)	2
DMOL 431	Molecular Hematology/Oncology (DMOL 410, DMOL 411 with a C or better; co-requisites DMOL 430)	1
DMOL 440	Molecular Genetics (DMOL 410, DMOL 411 with a C or better)	2
DMOL 441	Molecular Genetics Lab (DMOL 410 with a C or better; co-requisite DMOL 440)	1
DMOL 450	Molecular Forensics/Identity Based Testing (DMOL 410 with a C or better)	2
DMOL 451	Molecular Forensics/Identity Based Testing Lab (DMOL 410, DMOL 411 with a C or better; co-requisite DMOL 450)	1

DMOL 460	Management and Regulation in Molecular Diagnostics (DMOL 110 with a C or better)	2
DMOL 470	Molecular Diagnostics Research (DMOL 210 with a C or better)	4
DMOL 491	Molecular Diagnostics Internship (DMOL 410, DMOL 411, DMOL 420, DMOL 421, DMOL 430, DMOL 431, DMOL 440, DMOL 441, DMOL 450, DMOL 451 with a C or better)	6
DMOL 499	Molecular Diagnostics Seminar (DMOL 410, DMOL 411, DMOL 420, DMOL 421, DMOL 430, DMOL 431, DMOL 440, DMOL 441, DMOL 450, DMOL 451 with a C or better)	1
	Total Program Credits	120

OTHER PROGRAM INFORMATION: Progression / Graduation

Program Grade Requirements:

- Students must complete BIOL 300, BIOL 373, BIOL 375, BIOL 475, all DMOL courses, all CLLS courses, and all COHP courses with a grade of C or better.

Policy on Repeated Courses:

- If a student earns less than a C in any DMOL or CLLS course, he/she will be required to repeat that course when there is a seat available. Students in good academic standing have priority over a student who needs to repeat the course.
- A student may repeat a maximum of 3 credits of DMOL or CLLS courses. Earning less than a C in DMOL or CLLS courses totaling 4 or more credits will result in a student's being denied from progressing further in the DMOL program.

Program Progression Policy:

- A student may repeat a maximum of 3 credits of DMOL or CLLS courses. Earning less than a C in courses totaling 4 or more credits will result in a student's being denied from progressing further in the DMOL program.
- Failing to earn a C or better in any course after two (2) attempts will result in a student's being denied from progressing further in the DMOL program. An attempt is defined as enrollment in the course for one week or longer.
- Students in the DMOL program must complete the professional phase within 5 years of beginning. If a student cannot complete the program within the stipulated time, must reapply to the professional phase of the program.
- No student will be allowed to enter the clinical experience or graduate from the program with less than a 2.50 cumulative grade point average, or with a grade of less than a C in any of the required professional courses.

Policy on FSU Credit Requirement:

- A minimum of 40 credits must be earned at the upper division (300 or 400) level for the BS degree.
- Students must earn a minimum of 30 of the total BS degree credits from FSU.

FSU Sunset Policy:

- If a student returns to the university after an interrupted enrollment (not including summer semester), the requirements of the curriculum (including General Education) which are in force at the time of return must be met, not the requirements in effect at the time of original admission. In special circumstances, the academic department head/chair may permit the student to finish under the program requirements in force at the time of original admission to the program.

PROGRAM LEARNING OUTCOMES	ASSESSMENT METHODS
Graduates will be able to successfully carry out molecular clinical assays involving a polymerase chain reaction (PCR) amplification.	<ul style="list-style-type: none"> • Final lab practicum assessment • Internship Preceptor Evaluation • Employer Survey
Graduates will communicate effectively to acquire/develop/convey ideas and information to diverse populations.	<ul style="list-style-type: none"> • Internship Preceptor Evaluation • Employer Survey

Graduates of the DMOL program will demonstrate professional and ethical behaviors regarding conduct toward coworkers, conduct toward patients, and conduct toward patient specimens.

- Faculty evaluation of affective behaviors in final labpracticum
- Internship evaluation by preceptor
- Employer Survey

II. General Program Policies

A. Admission Requirements

Students intending to enter the professional phase of the Molecular Diagnostics program will be admitted to the Pre-Molecular Diagnostics program. College students wishing to **transfer** into the pre-professional phase of the program must have at least a 2.50 GPA.

Students in the Pre-Molecular Diagnostics program must:

1) Qualify for admission to the professional phase of the program

To qualify, students must have a GPA of 2.50 or higher and must have completed BIOL 108 or 286, BIOL 121, BIOL 122, BIOL 205, CHEM 114, and CHEM 214. A grade of C or better after no more than 2 attempts is required in all qualifier courses.

2) Apply for the professional phase.

Applications for the professional phase of the program will be accepted in January of each year. The professional phase of the DMOL program begins in May of each year.

You can find information about Procedures for Admission to the Professional Phase and Applications for the Professional Sequence [here](#). Links from that site will lead you step-by-step through the qualification and application processes.

Due to scheduling, classroom and faculty limitations, enrollment in courses with DMOL prefixes is limited to 24 students per academic year.

B. Advanced Placement and Proficiency Exams

Ferris State University cooperates in both the Advanced Placement (AP) and College Level Examination Program (CLEP) offered by the College Board. We encourage you to write these examinations when you first enroll in the University.

Credit may also be granted for work completed through the United States Armed Forces Institute. Credit may also be earned by taking and passing (a) proficiency examination(s).

Proficiency examinations in specific Molecular Diagnostics courses will be made available by request.

C. Essential Requirements

This list of essential (non-academic) functions of the DMOL program is provided to prospective students so that you can assess your own health and your ability to complete the program successfully. You must be able to participate in course work on and off the university campus in ways that will not endanger yourself, other students, faculty, patients, or others. When you enter the professional phase of the program, you will be asked to sign a copy of this document as evidence that you can meet these essential requirements. This signed document will be maintained in your advising file.

Essential Requirements	Functions
Essential Observational Requirements	<p>Observe laboratory demonstrations in which body fluids and other biologicals are tested for their biochemical hematological, immunological, and microbiological characteristics.</p> <p>Characterize the color, odor, clarity, and viscosity of body fluids, reagents, or reaction products.</p> <p>Use a binocular microscope to discriminate among fine structural and color differences in microscopic specimens.</p> <p>Read and comprehend text, numbers, and graphs displayed in print, on instrument scales, or video monitors.</p> <p>Observe biological samples and their labeling to assess the acceptability of samples for analysis.</p> <p>Observe and describe colonial morphology of bacteria.</p> <p>Observe and quantitate the degree of agglutination or other antigen-antibody reaction.</p>
Essential Intellectual Requirements	<p>Read and comprehend technical and professional materials such as textbooks, professional journals, laboratory procedures, and instructional manuals.</p> <p>Apply these intellectual skills: comprehension, measurement, mathematical calculation, reasoning, integration, analysis, comparison, self-expression, and criticism.</p> <p>Exercise sufficient judgment to recognize and correct performance deviations. Apply knowledge of related sciences, including biology, chemistry, physics, and mathematics, to laboratory test procedures.</p> <p>Apply knowledge to the interpretation of laboratory test results, including correlation of results with diagnoses.</p>
Essential Communication Requirements	<p>Follow verbal and written instructions to perform assigned procedures correctly and independently.</p> <p>Effectively and sensitively communicate with patients and others identifying and valuing cultural and religious differences.</p> <p>Use appropriate terminology to instruct patients and others prior to specimen collections, adjusting communication style to meet the needs of the patient and situation.</p> <p>Respect patients' rights to privacy and confidentiality.</p> <p>Communicate effectively and clearly with faculty, students, staff, and other health care professionals verbally, in writing, and/or via graphical presentations.</p> <p>Use facility guidelines and legal requirements concerning methods of sending and receiving information, including test results and other patient information.</p> <p>Independently prepare papers and laboratory reports, and take paper, computerized, and practical examinations.</p>

Essential Requirements	Functions
Essential Behavioral Requirements	<p>Manage time in order to prioritize and complete professional and technical tasks efficiently and independently.</p> <p>Employ intellect and exercise professional judgment effectively, seeking clarification or assistance when needed.</p> <p>Be able to provide professional and technical services under the stressful conditions of the clinical laboratory, including (but not limited to): ambiguous test ordering, ambivalent interpretations, emergent demands, and a distracting environment.</p> <p>Identify and operate within the scope of professional practice.</p> <p>Be flexible and creative in adapting to professional and technical change.</p> <p>Recognize potentially unpleasant and/or hazardous materials, equipment, and situations, and proceed safely in order to minimize risk of injury to self and others.</p> <p>Support and promote the activities of fellow students, health care professionals, and health care organizations.</p> <p>Promote a team approach to learning, task completion, problem solving, and patient care.</p> <p>Perform honestly, compassionately, ethically, and responsibly, admitting errors and taking corrective action where appropriate.</p>

I have read the Essential Requirements for the Molecular Diagnostics program. To the best of my knowledge, I will be able to perform these requirements upon completion of the program.

To enable me to meet these Essential Requirements, I request the following accommodations:

Date: _____ Signature: _____

Name (print): _____

D. ADA Accommodations

Ferris State University maintains the Office of Disabilities Services to provide accommodations for students with special needs. Disabilities Services is the campus office responsible for determining and providing requested academic accommodations for students with disabilities. A variety of support services is provided to students with documented mobility limitations, learning disabilities, hearing and visual disabilities, attention deficit disorders, psychological disabilities, and other types of disabilities. Their mission statement is:

“The mission of Disabilities Services is to serve and advocate for students with disabilities, empowering them for self-reliance and independence while promoting equal access to educational opportunities and programs. Information, reasonable accommodation and counseling are offered to students. Professional development is offered to faculty and staff. “

[Disabilities Services](#) is located within the Department of [Educational Counseling and Disability Services](#). The ECDS is located on the 3rd floor of the Starr building, STR 313. Counselors in the ECDS are available by appointment or on a walk-in basis. Call 1-800-4-FERRIS (1-800-433-7747) and ask for ext. 3057, or call (231) 591-3057.

In order for Disabilities Services to determine a student's eligibility for services, all students must complete the Intake Interview Form with the Educational Counselor for Students with Disabilities and present appropriate documentation. Different disabilities require different forms of documentation.

Both the university and the DMOL program are eager to help all students succeed. For further information concerning Disabilities Services, contact their offices or web site.

E. Classroom Rights and Responsibilities

If as a student you fail to fulfill your classroom responsibilities, your grade may be affected or disciplinary action may result. If you believe the instructor has failed to fulfill her/his responsibility, please first discuss your concerns with your instructor. Then you may use the CHP Student Complaint Policy, which outlines procedures to get your concerns heard and problems resolved. You can find the policy on the [CHP website](#).

As a student at Ferris your rights include:	As a student at Ferris, your responsibilities include:
To be treated as an adult	To attend class on a regular basis according to the requirements set forth in the instructor's syllabus
Be treated with respect	To arrive on time and prepared for class
Know the instructor's expectations for you in the class	To wear appropriate clothing to class
Know the grading scale and basis	To use appropriate language in class
Receive a written syllabus	To take responsibility for your own learning
Know all class policies (attendance, etc.)	To observe all academic honesty policies
Know the instructor's office hours	To respect all points of view
Know all safety procedures	To respect others' rights and feelings

F. Policy on use of Molecular Diagnostics laboratory computers

There are several computers in the Molecular Diagnostics lab. The following policies have been adopted for computer use:

Molecular Diagnostics students who are not in scheduled classes may use available computers during hours when the laboratory is open, if their use does not conflict with other users.

Do not save files onto the Molecular Diagnostics computers unless instructed to do so. If we find files that we don't recognize, we will delete them without notice. Each student has storage space on the Novell network which you can use to store your work. Instructions on how to access this space is available from MyFSU.

Molecular Diagnostics printers and paper are not available for student use, except for printing work sheets and other information from assigned work/tests on Molecular Diagnostics equipment.

Students must abide by the computer use policies and procedures if they choose to use these facilities. Unauthorized and/or inappropriate use of computers is prohibited. Such use includes, but is not limited to:

- Damaging or altering records or programs.
- Furnishing false information or invading the privacy of another user by using files, programs, or data without permission.
- Engaging in disruptive and annoying behavior.
- Engaging in any unauthorized use of, or access to computer hardware, software, accounts or passwords.
- Downloading music or other MP3 files onto Molecular Diagnostics computers, or using these computers to download files illegally.
- Students needing computers for in-class assignments during scheduled classes have first priority, including students needing access to the laboratory information system.

G. Safety Policies

All Molecular Diagnostics students must complete a safety training module prior to working in the laboratory. The Program Coordinator will maintain these safety training records. Training must be repeated every 2 years. You may also be required to repeat training if safety violations occur.

1. General Laboratory Safety

Safety is a critical part of laboratory training and professional laboratory work. You will be provided extensive safety training and required to practice safe techniques throughout the curriculum. The Molecular Diagnostics program maintains a safety manual in the laboratory and faculty office. If you have specific questions about safe practices, refer to this manual or ask your instructor. General policies are below.

- Do not smoke, eat, drink, chew gum, or apply cosmetics in the laboratory.
- Do not put fingers, pencils, or other objects in your mouth.
- Do not store food in the laboratory, or in laboratory refrigerators or freezers.

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- Wash your hands with soap and water after handling patient specimens or cultures, and before leaving the laboratory.
- Never pipette by mouth. Use a mechanical pipette, or a glass pipette and rubber bulb.
- If you are working with particularly hazardous specimens, work in the biological safety cabinet.
- Use a chemical fume hood when working with volatile, caustic or toxic chemicals. If your work is likely to splash or spray, wear safety glasses, rubber gloves, and a laboratory coat.
- Learn how to dispose of specimens, contaminated waste, glassware, and sharp objects. If you need to dispose of an environmentally-damaging chemical, consult the Chemical Safety Policy or ask an instructor what to do. To dispose of biologic hazards, consult the Medical Waste Management Policy. Both policies are on the FSU Intranet and in the Molecular Diagnostics Safety Manual.
- If you spill or drop anything, it must be cleaned immediately. If you are at all unsure about appropriate procedures, consult your instructor for guidance.
- You are responsible for the proper handling, storage, and disposal of the samples and cultures you are assigned to work on. Do not abandon your microbiological cultures.
- Label all reagents and samples with the date, your initials, and contents. Unlabeled tubes will be discarded. If something is going to be out of your sight long enough for an instructor to wonder whose it is, **label it or it will be discarded**.
- When you are finished with reagents and equipment, return them to where you found them, unless instructed otherwise.
- Wash all glassware before exiting the laboratory. Use lab tape to label glassware or reusable plastic equipment rather than writing directly on the glass.
- If you are handling hot glassware or other warm materials, use thermal gloves or hand protectors.
- Don't take any biological or chemical materials or laboratory equipment out of the laboratory without permission of your instructor.
- Personal electronic equipment is not allowed in the laboratory.
- Avoid sitting on any laboratory bench, or sitting with your feet propped up on the bench.
- Be careful with the laboratory chairs; they have wheels and can slip out from under you.
- Put your coat, hat, backpack, cell phone and other materials that you don't need in your locker. Bring only what you need for your laboratory session. This avoids crowding, and prevents contamination of your belongings.
- Keep drawers, cupboards, and pipette tip boxes closed as much as possible.
- Clean the bench top where you are working before and after each laboratory session. Using spray disinfectant, allow the solution to sit for 1 minute, then wipe with paper towels.
- Report any accident or injury to an instructor, no matter how minor.
- Note the location of the fire extinguishers, eye wash stations, safety showers, fire blankets, first aid kits, and telephones in the lab.
- Learn the procedures to follow in case of fire alarm, tornado warning, or other emergencies. These are posted near the main door of each laboratory.

2. Dress Code

A full-length, fastened, fluid-impermeable laboratory coat must be worn in the laboratory. Students enrolled in the professional phase of the Molecular Diagnostics program must buy a laboratory coat. If your coat becomes torn, badly stained, or otherwise damaged, we will dispose of the coat and you will be required to purchase another. Store your lab coat on an assigned hook in the Molecular Diagnostics laboratory entry-way. Your name should be written on your coat.

Students must also wear protective full-length pants and closed-toed, closed-heeled shoes in the laboratory. Pants with holes or shoes that expose the top of your feet are not protective. Hair or jewelry must not interfere with work or dangle into specimens. Hats that are not religious headgear are not allowed in the laboratory. Fingernails or jewelry that interfere with nitrile gloves are not acceptable. Please be aware that some affiliates have dress codes that restrict almost all jewelry and cosmetics.

3. Blood-borne Pathogens

Procedures for safe handling of potentially infectious materials are taught early in the first laboratory courses and are reviewed in later courses. The Molecular Diagnostics program is proud of our safety record, and will not allow you to compromise your own safety or the safety of others using the laboratories.

4. Hepatitis B Vaccination and Other Immunization Requirements

To participate in the laboratory and internship experiences in the Molecular Diagnostics Program, you must provide proof of Hepatitis B vaccination or antibody titer. Paying for the vaccine is your responsibility. It is available at the University's Health Center, a private physician's office, or the health department. You may receive the vaccine from any source so long as proof of having received the vaccine is provided to the College of Health Professions. If you decline the vaccine you must sign a waiver acknowledging that you have been informed of the vaccine, the risks associated with not having the vaccine, and that you understand that you may change your decision and receive the vaccine.

Immunization for Hepatitis B is a very common requirement of clinical affiliates. If you fail to obtain the required immunization, we may be unable to place you at a clinical site. This may delay or even prevent your graduation. Some clinical affiliates require proof of immunity to rubella, rubeola, varicella, influenza and other contagious diseases. You'll be informed of these requirements if they apply to you.

5. Chemical Hygiene

According to Michigan law, everyone has the right to know of any hazardous materials with which they may come in contact. Material Safety Data Sheets, with information on all chemicals with which Molecular Diagnostics students may come in contact are located in the Molecular Diagnostics laboratory. Procedures for safe handling of laboratory chemicals are reviewed in courses. Most MSDS sheets should also be accessible online via the "Quick Links" on the FSU home page. **If you are uncertain how to handle or dispose of any chemical, refer to the MSDS or ask an instructor.**

6. Fire Safety

Each laboratory is equipped with a class BC fire extinguisher, fire blanket, and safety shower.

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Every hallway and room in the Ferris and GRCC ATC buildings are equipped with fire alarms that include a loud, audible alarm and flashing lights. Exit the ATC building main entrance and meet others across Fountain Street if possible.

If you find a fire, you should sound the alarm, and then proceed to the nearest exit via the safest route. DO NOT USE THE ELEVATOR. If time permits, turn off the equipment you were using, turn off the room lights, and close the door. If you are wearing gloves, you should remove and discard them as you exit. If you cannot dispose of them correctly, fold them with the contaminated sides INSIDE and put them in your lab coat pocket. Then dispose of them correctly later.

If you pull a fire alarm in the VFS or GRCC ATC buildings, the Big Rapids or Grand Rapids Fire Departments are summoned automatically. You can be arrested for falsely setting off a fire alarm.

7. Tornado/Severe Weather Safety and Emergency Communications

In the event of tornado or other severe weather, the alarm will be sounded from atop the campus buildings. In the VFS and GRCC ATC buildings, proceed immediately to the nearest hallway away from any windows. If you are the last person to leave a classroom or laboratory, turn off the lights and close the door. Remain calm, and you will receive further information.

The university has implemented a number of ways to communicate in case of emergency. You can sign up for City Watch, a free text messaging service that communicates with you in case of terrorist attack, weather emergency or other incident. At the Big Rapids campus, there is an outdoor broadcasting system that sends voice messages (LOUDLY) over the entire campus.

H. Incidental Program Expenses

We try to keep your expenses as low as possible. You will need to purchase at least one lab coat, a black indelible marker, and a scientific calculator. It may be helpful to have one that can calculate descriptive statistics, such as mean and standard deviation.

Criminal background checks are required by clinical internship sites. For most clinical sites, this will be performed at your own expense. In recent years, the cost has been about \$35.

III. Academic Policies

The Molecular Diagnostics program requires a combination of core curriculum and general education requirements. Courses in the core curriculum must be passed with a C or higher in all cases. Students may not repeat courses in the core curriculum more than one time, and once in the professional phase of the program, students may only repeat one core curriculum course, one time, before being dismissed from the program.

A. College of Health Professions Core Courses

The CHP requires that every student earning a baccalaureate degree complete some of the CHP core curriculum courses in order to graduate. The core curriculum courses required of all Molecular Diagnostics students are:

COHP 100: Orientation to Medical Vocabulary	(1 cr)
COHP 101: The U.S. Health Care System	(3 cr)
COHP 102: Safety Issues in Health Care	(1 cr)

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*COHP 350: Healthcare Statistics (3 cr)

*Check with your advisor if you have taken an alternate statistics course.

B. Molecular Diagnostics Core Courses

DMOL 101	DMOL 440/441	CLLS 231
DMOL 110	DMOL 450/451	BIOL 300
DMOL 210	DMOL 460	BIOL 373
DMOL 236	DMOL 390 or 470	BIOL 375
DMOL 410/411	DMOL 491	BIOL 475
DMOL 420/421	DMOL 499	CHEM 324
DMOL 430/431	CLLS 252	

C. Other Courses

Other courses required for the completion of the Molecular Diagnostics program:

ENGL 321 or 323

COMM 105, 121, or 221,

MATH through MATH 115 or 117

Computer competency. Most students are well prepared and do not need to satisfy computer competency with coursework. A summary of required competencies follows.

1. Word processing/introductory desktop publishing (Word, OpenOffice):
 - Enter and edit text
 - Copy and move blocks of text
 - Change text format and style, set margins, line spacing and tabs
 - Check spelling, grammar, and word usage
 - Create a header and footer
 - Insert date, time, and page number
 - Add columns and tables to a document
 - Print a document
 - Name, save, and retrieve a document
2. Spreadsheet/graphing (Excel, GraphPad)
 - Enter data into an existing spreadsheet
 - Create a spreadsheet with rows, columns and headings
 - Create/copy formulas and functions to perform calculations
 - Create a graph or chart from spreadsheet data
 - Insert a spreadsheet into a word processing document
 - Print a document
 - Name, save, and retrieve a document
3. Database (such as Access or RedCap)
 - Sort a database by specific fields, add and delete records

- Create a database with multiple fields and records
- Create custom layouts including columnar reports
- Insert database fields
- Print document
- Name, save, and retrieve a document

4. Networking

- Connect/log on to a file server, retrieve a program or document, save a document to a specified location
- Share files with others on a network
- Connect to the internet or an online service
- Use electronic mail (compose a message, send it, retrieve a message, read and respond to a message)
- Assess and use resources on the Internet

D. General Education Requirements for Graduation

Ferris State University requires additional courses, in specific categories, towards the completion of a Bachelor's Degree in Science. Current General Education requirements and a link (top left) to tables detailing courses that meet specific categories of General Education can be found here:

<http://www.ferris.edu/HTMLS/academics/gened/courses/GenEd-bachelor.pdf>

1. Communication

ENGL 150, ENGL 250 or 211, ENGL 311 or 321 or 323, and COMM 105, 121, 221 or 251 are required for Molecular Diagnostics majors.

2. Quantitative Skills

MATH 115 or equivalent and/or an ACT Math sub score of 24. The Molecular Diagnostics degree also requires COHP 350 or an equivalent Statistics course.

3. Scientific Understanding

The Molecular Diagnostics degree requires more than the University minimum for Scientific Understanding. Met automatically.

4. Cultural Enrichment/Culture

At least 3 courses must be taken, with one at the 300-level or higher. Molecular Diagnostics students must take Biomedical Ethics (PHIL 320), which fulfills this requirement in part.

5. Social Awareness/Society

At least 3 foundation courses in social awareness must be completed in at least two subject areas. One must address race, ethnicity, or gender, and one must be 200-level or higher. Many Anthropology, Psychology, and Sociology courses meet this requirement.

6. Global Consciousness, Race Ethnicity and Gender/Diversity

One course addressing Global Consciousness is required. Note that many of these courses also satisfy categories 4 and/or 5 above. Foreign languages also satisfy this requirement.

7. Critical Thinking and Problem Solving

These objectives apply to students beginning in the 2017/2018 academic year. These objectives are met by required courses in the major.

Your advisor will help you to be sure that you choose courses that meet the various requirements for graduation. **It is your responsibility to meet all degree requirements.** MyDegree is a very useful tool for monitoring your progress so you should become familiar with its use. Courses that meet the above requirements may change; refer to the official list: <http://www.ferris.edu/HTMLS/academics/gened/courses/>

E. Academic Advising

You must meet with your advisor at least once per semester, before you can register for the next semester. Bring any questions or concerns that you have when you meet with your advisor. If you can't meet with your advisor during his/her office hours, work with them to schedule an alternative time. When you meet, your advisor will review your progress toward graduation and help you choose a schedule that will meet your needs. If you need to make scheduling changes during a semester, please contact your advisor. Dropping a course can postpone your graduation and impact your financial aid.

1. Pre-professional students

Pre-Molecular Diagnostics students will be assigned a College of Health Professions (VFS 210) advisor until they are admitted to the Molecular Diagnostics Program. The pre-advisors schedule at least two advising sessions for pre-professional students each term when you can get questions answered, have advising holds removed, and sign up for the science classes you need the following term.

2. Professional Sequence students

Once in the professional sequence, you will be assigned an advisor from amongst the program faculty.

F. Progression in the Molecular Diagnostics Program

1. Grading Scale

All courses with the CLLS and DMOL prefix use the standard grading scale. Each course syllabus will include information about exactly how your grade for that course will be earned (what % comes from exams, what % from each assignment, etc.) If you have any questions, see your instructor.

Grade	% score	Grade points
A	93+	4.0
A-	90.00-92.99	3.7
B+	87.00-89.99	3.3
B	83.00-86.99	3.0
B-	80.00-82.99	2.7
C+	77.00-79.99	2.3
C	73.00-76.99	2.0
C-	70.00-72.99	1.7
D+	67.00-69.99	1.3
D	63.00-66.99	1.0
D-	60.00-62.99	0.7
F	<60.00	0.0

2. Progression Policy

In recognition of the need to maintain acceptable standards for professional curriculum performance, as well as academic achievement, the following academic progression requirements shall apply to all students enrolled in the Molecular Diagnostics program.

- a. Students must complete all Core curriculum courses with a C or better after no more than 2

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attempts. **A student in good academic standing has priority over a student who must repeat the course.**

- b. A minimum GPA of 2.50 must be maintained at all times
- c. The professional phase of the program must be completed in 5 years
- d. No student will be allowed to begin an internship or graduate from the program with a less than 2.50 GPA or less than C grade in any Core course.

G. Graduation Audit

When you visit your advisor to discuss registration for your last semester on campus, you will need to ensure you have met all the requirements for graduation. This is easily done by using MyDegree to monitor your academic progress. You will also be required to complete an on-line application for graduation. May *and* August graduates apply early in the spring semester.

H. Attendance Policies

Each instructor will include in the course syllabus information about his or her attendance policy. DMOL faculty do not allow students to make up labs that they miss for any reason. You **MUST** come to lab, and you must be on time, and ready to go with the materials and supplies you need. If you miss a lab, you lose the points for that session.

1. The College of Health Professions attendance policy:

Class attendance in the College of Health Professions is a privilege and is expected. The right to attend class is gained through programmatic admission after successful completion of a selective admissions process. Through attendance, students acquire knowledge and skills related to profession-specific procedures, are introduced and socialized into the professional environment in which they will function, and develop into individuals who understand and model the professional behaviors that will be expected of them in the workplace. Because of the complex and critical nature of professional education provided by the faculty of the College, students are not at liberty to choose whether to attend class meetings. In the event a student is unable to attend a lecture, laboratory, or clinical experience, the student is expected to notify the instructor (the clinical instructor should also be notified in clinical courses) in as timely a fashion as possible as specified by the instructor. At the next scheduled class meeting, the student is expected to provide written documentation of the reason for the absence. If the student does not provide adequate documentation in a timely manner, the instructor reserves the right to apply the appropriate actions.

These actions can range from receiving no grade for missed assignments to stopping the progression of a student through the program. The actions applied will be class specific and applied equitably and diligently by the instructor to all enrolled in the course. The actions imposed will also be consistent with the respective programmatic attendance policies that will be included in the course syllabi and reviewed at the beginning of the course.

I. Cancellation of Classes

Molecular Diagnostics (DMOL) classes will generally only be canceled in cases of University closure. Ferris State has a very efficient system for alerting students of emergency situations, including closures. See <http://www.ferris.edu/alert/>. It is strongly recommended that you participate. Any other class schedule changes (e.g., field trips) will be communicated to you via Blackboard and/or email by your instructor.

J. Affective Objectives

In addition to knowledge and skills, the labs that will employ you will expect you to demonstrate a professional attitude in your work. As part of your education on campus and in the clinical experience, you will be evaluated on your professional attitude. During each semester of your laboratory courses, and again during your clinical experience, you will be evaluated using the DMOL program's Affective Objectives or Attitude Evaluation Form. A copy of the objectives and form are appended to the end of this handbook.

K. Disruptive Behavior Policy

The College of Health Professions updated its Disruptive Student Behavior Policy in June 2009. Here is the updated policy:

The College of Health Professions strives to maintain a positive learning environment and educational opportunity for all students. Consequently, patterns of behavior which obstruct or disrupt the learning environment of the classroom or other educational facilities will be addressed.

1. The instructor is in charge of the course. This includes assignments, due dates, methods and standards or grading, and policies regarding attendance, tardiness, late assignments, outside conferences, etc.
2. The instructor is in charge of the classroom. This includes the times and extent to which they allow questions or discussion, the level of respect with which they and other students are to be treated, and the specific behaviors they will allow within their classes. Open discussion of an honest opinion about the subject of a course is encouraged, but the manner in which the class is conducted is a decision of the instructor.
3. An instructor is entitled to maintain order in his/her class and has an obligation to other students to do so. Toward that end, an instructor is authorized and expected to inform a student that his/her behavior is disrupting a class and to instruct the student to stop that behavior. If the student persists, the instructor is authorized to direct the student to leave the class. If the student fails to comply with a directive to leave the class, the instructor may call Public Safety to assist with the student's removal.
4. If a student persists in a pattern or recurrent disruptive behavior, then the student may be subject to administrative action up to and including an involuntary withdrawal from the course, following administrative review by the College of Health Professions Dean's Office and/or University disciplinary proceedings. (University disciplinary procedures are delineated in the "Code of Student Community Standards." Available at <http://www.ferris.edu/HTMLS/colleges/alliedhe/faq/CHP-2016-Student-Handbook.pdf>)
5. Disruptive behavior cannot be sanctioned by a lowered course grade (e.g., from a B to a C) except insofar as quality of classroom participation has been incorporated into the instructor's grading policy for all students. (Note: Academic misconduct, which is covered by other regulations, can be a legitimate basis for lowering a grade or failing the student.)
6. Students as well as employees are bound by the University's policy against harassment, in any form. Harassment will not be tolerated.
<http://www.ferris.edu/htmls/administration/adminandfinance/Human/forms/HRPPs/EmployeeDignity.pdf>

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7. The office of the student's dean will be notified of any serious pattern or instance of disruptive behavior.

L. University Academic Honesty Policy

The University encourages a mature attitude toward learning and sound academic morale, and discourages illegitimate aids in examinations, laboratory work and homework assignments. Cheating, plagiarism and other forms of academic dishonesty including the acquisition, without permission, of tests and other academic material belonging to a member of the University community, and the sale and/or distribution of such material are in violation of University policy and subject to disciplinary action.

"Cheating" includes, but is not limited to: (1) use of any unauthorized assistance in taking quizzes, tests, or examinations; (2) dependence upon the aid of sources beyond those authorized by the instructor in writing papers, preparing reports, solving problems, or carrying out other assignments; or (3) the acquisition, without permission, of tests or other academic material belonging to a member of the University faculty or staff.

"Plagiarism" includes, but is not limited to, the use by paraphrase or direct quotation, of the published or unpublished work of another person without full and clear acknowledgment. It also includes the unacknowledged use of materials prepared by another person or agency engaged in the selling of term papers or other academic materials.

A student who has been found to be in violation of academic misconduct may receive a failing grade in the course and any of the disciplinary sanctions outlined in the Board of Trustees policy of student responsibilities, including suspension or dismissal from the University.

1. College of Health Professions' Academic Honesty Policy

Cheating is defined as using or attempting to use, giving or attempting to give, obtaining or attempting to obtain products or prepared materials, information about a quiz or examination, or copies of work that a student is assigned to do alone and not in collaboration with others. Plagiarism (copying) of written work is also considered an infraction of this policy.

Students are required to present their own work except under circumstances where the instructor has requested or approved the joint efforts of a group of students.

The penalty for a first offense of willful cheating will be a grade of zero for the assignment. Cheating on a quiz or examination may mean failure of the course. The student may appeal any decision to the Program Director or Department Head.

2. Grade Change Appeal Procedure

The assignment of grades is a faculty responsibility. If a student disagrees with an assigned grade there is an appeal process. The student should first contact the instructor of the course. If there is still disagreement the student should contact the department head that offered the course. Final appeal rests with the dean's office that offered the course.

3. Ferris State Policy on Student Complaints

When a student has an issue with a grade, internship or other student/faculty issue, it is the responsibility of the student to use a progressive procedure to resolve the issue:

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http://ferris.edu/HTMLS/administration/academicaffairs/Forms_Policies/Documents/Policy_Letters/AA-Student-Complaints.pdf

4. CHP Tobacco Use Policy

In response to student and faculty concerns, CHP adopted a policy on tobacco use in April 2010. The policy states:

To promote the health and comfort of faculty, staff, students and visitors in the College of Health Professions, the use of tobacco-related products is strictly prohibited. This policy pertains to the use of chewing tobacco, spitting containers, cigarettes, cigars, and all other tobacco or non-tobacco smoking paraphernalia including non-tobacco cigarettes and other non-tobacco smoking inhalation delivery systems.

It is the responsibility of the CHP faculty, staff, students and visitors to adhere to this policy.

IV. Clinical Experience

A. Affiliates

The Molecular Diagnostics program sends students to a number of affiliated molecular laboratories. Experienced laboratorians work with students on the following cognitive, psychomotor, and affective objectives:

1. Cognitive Domain

1. Draft a strategy to minimize error during error-prone tasks
2. Distinguish intern from employee expectations
3. Evaluate changes in personal productivity and efficiency over time
4. Evaluate sample quality results to determine if samples/specimens are appropriate for testing
5. Troubleshoot/reject specimens or samples as appropriate
6. Evaluate your behavior relative to professionalism expectations at your internship site
7. Propose a workflow or procedural change that would improve laboratory efficiency

2. Psychomotor Domain

1. Draft a strategy to minimize error during error-prone tasks
2. Distinguish intern from employee expectations
3. Evaluate changes in personal productivity and efficiency over time
4. Evaluate sample quality results to determine if samples/specimens are appropriate for testing
5. Troubleshoot/reject specimens or samples as appropriate
6. Evaluate your behavior relative to professionalism expectations at your internship site
7. Propose a workflow or procedural change that would improve laboratory efficiency
8. Participate in enriching activities and/or gain skills specific to the internship site

3. Affective Domain

1. Comply with internship site attendance policies by attending work punctually, and prepared to begin work
2. Professionally communicate absences and coordinate remediation
3. Complete preparatory work prior to the day's scheduled events and manage time wisely
4. Discuss contemporary issues in laboratory medicine in a respectful and constructive manner

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5. Demonstrate enthusiasm for learning by willingness to accept constructive feedback from instructors

The CHP has current agreements with the laboratories listed below:

SITE		CONTACT
American Proficiency Institute	Traverse City, MI	Daniel C. Edson, President
Arctic Medical Laboratories	Grand Rapids, MI	Anna VanAgtmael, Laboratory Manager
Grand Valley State University	Allendale, MI	Sok Kean Khoo, PhD, Distinguished Associate Professor of Molecular Genomics
Michigan Blood HLA Laboratory	Grand Rapids, MI	Cindy Raven, Director of Laboratories and Component Preparation
Michigan Medicine	Ann Arbor, MI	Kathryn Gliner, MB(ASCP), Medical Laboratory Science Internship Program Coordinator
NxGEN MDx	Grand Rapids, MI	Scott Pritchard, Laboratory Manager
PathGroup, Inc	Nashville, TN	Vickie Clinard, Molecular Diagnostics Operations Director
Progenity	Ann Arbor, MI	Kelli Clay, Laboratory and Operations Director for Molecular Diagnostics
South Bend Medical Foundation	South Bend, IN	Christine Saitz, Education Manager
Spectrum Health - Molecular Laboratory	Grand Rapids, MI	Kim Collison, Director of Laboratory Services
St. John Providence\Ascension	Grosse Pointe Woods, MI	Dawn Taylor, Manager, Laboratory Education
ThermoFisher Scientific	Kalamazoo, MI	Jared Isaac, Research and Development Manager
Van Andel Institute	Grand Rapids, MI	Julie Turner, PhD, Associate Dean of VAIGS

The Molecular Diagnostics program has written agreements only with the facilities listed above and cannot send a student to a facility with which it is not affiliated. The laboratories have the right to accept or reject any student. Every eligible student will be placed in a clinical site once all other coursework has been completed. Students are welcome to suggest additional laboratories to the Clinical Coordinator as affiliates, but should be aware that completing a new affiliation agreement takes about one year and is not possible in all cases.

B. Assignment to Clinical Experience

1. Eligibility

To be eligible for clinical experience, you must first satisfactorily complete all prerequisites including earning a C or better in the courses with a CLLS and DMOL prefix other than the internship. You should have a minimum 2.50 GPA. Please note that some internship sites require higher GPAs. Criminal history may make you ineligible for placement due to affiliate policies; discuss this with the Clinical Coordinator

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prior to starting the professional sequence. **All students are guaranteed a placement at a clinical site.** If you fail or are dismissed from your internship due to your behavior, you will not be re-placed. Our Clinical Coordinator will re-place you in other circumstances to ensure all students in good standing complete the clinical requirement.

2. Interview and selection process

December (or earlier)

1. Research and review affiliate laboratories. Laboratory tours will be coordinated in conjunction with coursework by the clinical coordinator when possible.
2. Prepare a draft cover letter and resume.

January

Activity	Due Date
Submit <u>draft cover letter and resume</u> (as editable .docx files) to the Clinical Coordinator. If you are interested in a more research or business-focused internship site, you should draft distinct cover letters for these versus clinical sites.	Due on 5pm Friday of the 1 st week of the semester
Submit a <u>ranked list of your top 3 affiliates</u> to the Clinical Coordinator. If many students select the same internship site, the Clinical Coordinator may request a 4 th and 5 th choice ranking.	Due on 5pm Friday of the 1 st week of the semester
Receive feedback from the Clinical Coordinator	By 5pm Friday of the 2 nd week of the semester
Revise your cover letter(s) and resume(s) based on feedback from the Clinical Coordinator if necessary and return to the Clinical Coordinator	Within 3 business days of receipt of feedback
The Clinical Coordinator will submit a final draft of each students' application packets (resume, cover letter, and unofficial transcript) to each affiliate in their top 3 list.	January 15 th -30 th

January 15th- March 31st

Activity	Due Date
Affiliates will invite students to schedule interviews. Interviews are an excusable absence from DMOL classes. Coordinate with your instructor at least 1 week in advance to rescheduled exams, lab practicals, etc. Also note that sites may request an additional, follow-up interview.	Complete by the first Friday in March
Students submit any changes to the order of their top 3 choices to the Clinical Coordinator	Complete by the first Friday in March
Affiliates return a ranked list of possible student interns to the Clinical Coordinator	Complete by the first Friday in March
Clinical Coordinator matches students based on both affiliates' and students' ranked lists and options.	2 business days after all lists are received

All students should be matched to an affiliate for an internship by April 15th. Some affiliates require a fall semester internship. These and any other extenuating circumstances will be discussed with all student(s) as they occur and as early as possible to facilitate both the student and our affiliated internship site.

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After you are assigned to a site, you will get more specific information from them including a start date, hours when you are expected to be at the laboratory, where to park, dress code, and other workplace policies specific to that internship site.

C. Clinical Experience Requirements

1. Criminal Background Check

Before each student can attend an affiliated laboratory it will be necessary to undergo a criminal background check, sometimes **at the student's expense**. If there is something in your background that might make a clinical laboratory refuse to accept you for internship, then you should consider enrolling in another educational program. Details concerning the process for undergoing a criminal background check change regularly. If you have questions about this process, contact the Clinical Coordinator.

2. TB Test

The clinical affiliates require documentation of a negative test for tuberculosis within the past calendar year. If you have received BCG vaccine, or if you have a positive screening test for TB, you will need to submit a report from a chest X-ray or other documentation that you do not have active tuberculosis. TB testing can be performed at the Birkam Health Center, at the Mecosta County Health Department, or at your physician's office. The local health department is slightly cheaper than the Birkam Health Center.

3. Hepatitis B vaccination

In order to participate in clinical experience, you will need to provide either proof of hepatitis vaccination or demonstrate a titer of anti-HBs. You probably got the vaccination as a child. However, you can get the vaccine for protection from hepatitis B at the Birkam Health Center. The charge there is generally less than you would pay at your doctor's office. But you can get the vaccine from anywhere, as long as you can provide written proof of having received it. It's up to you to pay for the vaccine.

If you decline the vaccine, you will be required to sign a waiver acknowledging having been informed about the vaccine, the risks associated with NOT being vaccinated, and that you understand that you can change your decision at any time and be vaccinated. If you do not get the vaccine, we may require you to re-sign the waiver form each year you are in the program.

Our affiliated clinical laboratories want you to be vaccinated against hepatitis B, or to show proof of antibody titer before you begin your clinical experience. If you sign the waiver declining the vaccination, you may risk your eligibility for a site assignment.

4. Health Insurance

You should provide your own health insurance during the clinical experience, at your own expense. If you are injured during your clinical experience, the site will provide emergency care if needed, at your expense. Ferris State University provides liability insurance for students during the clinical experience.

5. Other requirements

A few affiliates require proof of other immunity, such as to rubella, influenza, and/or varicella. Your clinical coordinator will let you know when you are assigned to your site if there are any additional requirements that you need to meet.

D. Clinical Experience Policies

1. Attendance

Your clinical experience will consist of a 480 hours total. Usually this means 8 hour days and 40 hours/week for one 12 week term. Please be aware that internships should be completed during the Summer semester and a delayed start may require registration in the fall and added expense to the student. Do not plan to take vacation or other time off between your final on-campus semester and your internship. Exact times of starting and ending your shift will vary among the affiliates, and may even vary between laboratory sections. You will always be working under the supervision of a qualified instructor.

We expect you to have no absences. You may be absent due to illness. In this case, you MUST conform to the laboratory's procedures for reporting your absence. A death in your family or severe weather that closes roads are other valid reasons for absence. Again, you must follow the lab's procedures for reporting your absence. You should not expect time off for job interviews or for medical or dental appointments other than true emergencies.

2. Service Work Policy

During the clinical experience you will not be substituted for regular laboratory staff. You may be scheduled to perform procedures, run instruments, or man a work station after you have successfully completed all the objectives for that area. However, you will still be working under the supervision of a clinical instructor.

If you are employed by the clinical site in addition to your official "internship hours", you must be compensated for your work, and you must follow the normal employment policies of the institution. While you are working, you are NOT covered by Ferris State University liability insurance.

3. Outside employment policy

In addition to the 40 hours/week you will spend at your internship site, you will still need to review theory and will have formal homework assignments to complete. Any outside employment must not prevent you from completing your assigned work. If you perform below expectations for any reason, you may be removed from the clinical site. Please note that internship sites are NOT obligated to offer or provide employment for you after your internship with them has been completed. This would depend solely upon their current workload needs, their relationship with you, as well as other factors. That being said, many internship sites do hire our recently graduated interns.

4. Client Rights policy

Your clinical experience may be the first time that you come into contact at a professional level with actual patients and clients of the laboratory. The population that you will be serving is likely to be more diverse than the students at Ferris State University or the population of your hometown.

We expect you to remember that each person with whom you interact as part of your responsibilities has inherent worth as a human being. You are expected to honor each person's dignity, and to respect their rights to privacy and their rights to their own religious and political beliefs. Each patient or client also has the right to be informed about what is being done to him or her, and the right to expect his or her laboratory test results will remain confidential.

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Each laboratory will have a policy that covers client rights, and your responsibilities to protect those rights. We encourage you to become familiar with and to observe these policies.

E. How you will be evaluated at the Clinical Site

1. Your skills

You will be evaluated by assigned instructors at the clinical site. Ferris State University provides specific objectives and check sheets for each laboratory area. These outline the specific tasks you should achieve, with estimated levels of competence for a successful student. You'll be able to access a copy of these via Ferris Connect, so you can track your progress. You will be able to monitor your progress every time you log on to Ferris Connect.

2. Your knowledge

During your internship, you will be registered for DMOL 491 and 499. These courses coincide with your internship experience and will test and measure both your theoretical and practical knowledge of Molecular Diagnostics.

Some affiliated labs will also give you an exam or quizzes, covering the same objectives. Their questions are likely to be directed toward THEIR instrumentation and THEIR procedures. It's a good idea to ask at the beginning of each clinical rotation whether the instructor will be giving you quizzes or exams beyond those from Ferris State University.

Many labs also will assign "homework," which is designed to help you review your theoretical knowledge. Nobody remembers everything. If the clinical instructors want you to hand in this material, you will be expected to do so on time, just as you would on campus. You may or may not have time during your laboratory shift to work on these assignments.

3. Your professional behaviors

At least once during your time at the affiliate, the instructors will evaluate you on your professional behaviors and attitudes, using the form on pages 35-37.

4. Policy concerning National Certification Examinations

When you complete your Ferris State University program in Molecular Diagnostics you will become eligible for the national certification examination administered by the Board of Certification of the American Society for Clinical Pathology (ASCP). Successfully completing this national certification examination will demonstrate to current and future employers that you have the knowledge required to function successfully as a molecular biology scientist (MB) and you will earn the MB(ASCP)^{CM} credential.

Although you are not required to take a national certification examination as part of graduation requirements or as part of any course in the Molecular Diagnostics program, you are encouraged to take and pass this exam at your earliest possible convenience. There is evidence that students who wait more than one year to take the exam perform more poorly than those who take it soon after graduation. Many recent Molecular Diagnostics graduates have passed the exam and reported professional advantages from achieving the certification.

Information about this examination, including eligibility requirements and application procedures, is found at the BOC Website: <http://www.ascp.org/BOC>

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The Clinical Coordinator of the Molecular Diagnostics program will discuss applying for the national certification examination with you as part of your preparation for clinical experience. It is your responsibility to acquire the current application forms from the ASCP BOC, to complete them, and once admitted, schedule your examination with PearsonVue testing.

If you get married or if your name changes for any other reason during the program or after graduation, please let the Program Coordinator know. The Program Coordinator must recognize your name to approve your application for certification with the ASCP. Also, you will need 2 separate, non-expired pieces of identification (one must be a driver's license or state ID, PLUS either a signed social security card or passport) to take your exam, and the name on your application materials and identification must match exactly.

The certification process requires that you submit an official transcript stating that you have completed your educational program. It is your responsibility to apply to have an official transcript sent from Ferris State University. You must send a transcript that indicates that you have completed all requirements for your degree. See MyFSU for procedures concerning applying for transcripts, as well as charges assessed.

F. Who does what at the Clinical Site?

1. Student Responsibilities at the Clinical Site

Do your best to learn all you can while you're there. Here's a partial list of what you need to do to succeed:

- a. *Adhere to the policies and regulations of the hospital and clinical laboratory.*
- b. *Adhere to the attendance policy.*
- c. *Adhere to the dress code of the clinical affiliate.*
- d. *Arrive prepared to begin your clinical responsibilities on or before the time required by the affiliate.*
- e. *Acquaint yourself with where reference materials, reagents, and supplies are located in each area of the laboratory.*
- f. *Review material from on-campus courses while in each corresponding clinical rotation.*
- g. *Complete all assignments (including assigned homework) in time specified by the clinical instructors.*
- h. *Read and follow all procedure manuals and policies of the organization.*
- i. *Ask appropriate questions.*
- j. *Conduct yourself in a professional manner.*
- k. *Follow the appropriate organizational structure if a problem arises, as outlined in the DMOL Student Handbook.*
- l. *Read and take the responsibility for completing the objectives for each clinical course.*

2. Clinical Instructors' Activities

Here's what you may reasonably expect the clinical instructors to do while you're there:

- a. *Orient you to that laboratory section(s).*
- b. *Explain policies.*
- c. *Show where manuals, supplies, and reagents are kept.*

- d. *Explain recording and reporting of test procedures.*
- e. *Orient you to the laboratory information system.*
- f. *Develop a daily rotation schedule.*
- g. *Evaluate you in the cognitive, psychomotor, and affective domains.*
- h. *Answer appropriate questions. Direct you to possible sources of information if a question cannot be answered.*
- i. *Give you basic instructions until you can do the procedures on your own under supervision.*
- j. *Assist you in developing a professional attitude.*
- k. *Instruct you at the bench in regard to quality assurance, routine maintenance and troubleshooting, and correlation of laboratory data.*
- l. *Communicate any problems, no matter how minor they may be, to the appropriate individual.*

3. Clinical Education Coordinator/ Clinical Liason

One person at each site is designated as the clinical liason. He or she will maintain records of your performance, resolve problems if and when they arise, and generally provide guidance while you're at the clinical site. Here's what you can reasonably expect that individual to do:

- a. *Interview students.*
- b. *Schedule physicals, orientation, and/or other necessary arrangements for beginning clinical experience.*
- c. *Oversee clinical experience - meet with instructors and students regularly.*
- d. *Keep files of student assessments and communicate aggregate assessment data to the Clinical Coordinator or instructor of DMOL 491 at the conclusion of the internship.*
- e. *Contact appropriate on-campus faculty (instructor of DMOL 491) concerning all problems, no matter how minor.*
- f. *Establish policies for handling problems with students.*
- g. *Establish absentee policy with FSU approval.*
- h. *Attend clinical adjunct faculty meetings.*
- i. *Assure adherence to the service work policy.*

G. Communication with Ferris State University

We don't forget you while you're on your clinical experience! You're paying tuition to Ferris State University, and you're getting academic credit for the work you do. We're interested in how you're doing!

The Molecular Diagnostics Clinical Coordinator or the faculty member teaching DMOL 491 will call or send e-mail about once a week. Before you leave for your internship, provide the Clinical Coordinator with a permanent email address. We need this to communicate with you after graduation, especially to distribute alumni surveys important to continuous improvement (and accreditation) of the program. We promise not to share it! Blackboard will also be used for assignments, on-line chatting and announcements. On the telephone, we try to communicate with the Clinical Liason, the instructor you're working with, and with you. This way, we get ideas of how you're doing from several perspectives.

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We will also visit each student at least once during your clinical experience, ideally toward the middle of the time that you are at the laboratory. While we're there, we like to see what's new at each site, talk to the Clinical Liason, as many instructors as possible, and you! Usually these are enjoyable trips.

If necessary, we will visit on an emergency basis. If we have to remove you from your clinical experience, we will need to meet with everyone involved, including you. Your rights will be protected. Please be aware that this occurs most often due to performance or behavioral issues on the part of the student.

Don't worry; if you behave yourself and make a good effort, your clinical experience will be a great capstone to your Ferris State University education. Many clinical sites will be eager to hire students who do a good job while they're there. Your clinical instructors may also become valuable references for future job applications. We all want you to succeed, and we'll do what we can to get you to be a great FSU graduate and Molecular Diagnostics Scientist.

H. Affective Objectives

Students will receive explicit feedback on these objectives using affective surveys in DMOL 110 and DMOL 411, as well as written feedback in any instance where professionalism points are reduced. You are expected to meet these standards at all times, in all courses.

	Objectives:	Examples of observable failure to meet the objective:
1	Attend classes regularly, punctually, and prepared to begin work	Late arrival, lack of laboratory attire, lack of paper or writing utensil
2	Professionally communicate absences and coordinate remediation	Failure to notify instructor at least 1 hour prior to missing a class or laboratory session
3	Prepared for the day's scheduled events and use time wisely	Lack of previous protocols, notes, or required texts. Excessive socializing or playing with electronics during free time such as longer incubations (instead, work on assignments!)
4	Participate in class discussions in a constructive manner	Silence (indicating lack of preparation), unprofessional contributions (e.g. ad hominem criticisms in a discussion, sexist or racist remarks, jokes, or appellation of instructor/classmates)
5	Show enthusiasm for learning and willingness to accept constructive feedback from instructors	Impatience or rudeness with instructor or classmates such as inattention to instructions, eye-rolling when given feedback, or aggressive behavior.

Ferris State University Molecular Diagnostics Program Student Evaluation Form

Student: _____ Laboratory: _____ Date: _____

Completed by Faculty: _____ Signature: _____

Reviewed by Student: _____ Signature: _____

Directions: Choose the number that best describes the student’s behavior in class or in your section of the laboratory. Use the “comment” spaces to describe the student’s behavior. If you cannot rate the student in a particular category, write NA.

1. **Unacceptable performance:** Student has difficulty performing in the laboratory or class, making consistent errors, displaying a difficult attitude, or both.
2. **Inconsistent competence:** Student requires constant, detailed supervision and instruction in order to perform in the laboratory or class.
3. **Minimal Competence:** Student can perform in the laboratory or class, with instructor available to assist when problems occur.
4. **Competence:** Student performs in laboratory or class with proficiency; checks unexpected or abnormal results; takes into account significant variables that affect test results; and anticipates problems in early stages taking positive steps to prevent errors.

I. Attendance and reliability

	4	3	2	1	NA
Arrives on time and is ready to begin working					
Begins working promptly					
Schedules breaks appropriately					
Prepares to finish at end of lab or shift					
Follows procedure for reporting absences					
Follows procedure for making up missed work					

Comments on this student’s attendance and reliability:

II. Initiative

	4	3	2	1	NA
Performs assigned tasks					
Looks for ways to help with routine work					

Comments on this student’s initiative:

III. Interest in molecular science

	4	3	2	1	NA
Completes reading and other assignments					

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Displays interest in working in this area					
Is alert and attentive to work performed					
Asks relevant questions, as needed					
Participates in continuing education, as available					

Comments on this student's interest in molecular science:

IV. Responsibility

	4	3	2	1	NA
Prepares in advance to work in the laboratory					
Replenishes supplies and reagents as needed					
Maintains a neat and clean work area					
Checks for specimen identification and appropriateness before testing					
Maintains equipment according to protocols					
Stores reagents and supplies when finished					

Comments on this student's responsibility:

V. Work Habits and Professional Performance

	4	3	2	1	NA
Performs at a consistent and acceptable pace					
Organizes work in terms of priority					
Maintains composure under stress					
Respects confidentiality of test results					
Documents work appropriately					
Applies safety training to work habits					
Adapts to change with minimal difficulty					

Comments on this student's work habits and professional performance:

VI. Professional Relationships

	4	3	2	1	NA
Works well as a team member					
Helps others willingly					
Presents results for review before reporting (when assigned to do so)					
Communicates well with patients and clients					
Communicates well with physicians and other health professionals					

Comments on this student's professional relationships:

VII. Judgment and Decision Making

	4	3	2	1	NA

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Identifies problems and works with supervisors toward solutions					
Takes appropriate action when difficulties are encountered					
Demonstrates increasing decisiveness as experience is gained					
Notes abnormal or discrepant results and takes action before reporting					

Comments on this student's judgment and decision making:

VIII. Integrity

	4	3	2	1	NA
Admits errors when they occur					
Follows procedures and policies of the laboratory					
Pays attention to detail					
Accepts constructive criticism					
Applies constructive criticism toward improving performance					

Comments on this student's integrity