Fall 2023

UMass | Dartmouth

Department of Medical Laboratory Science

CLS Option Student Handbook

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Introduction

The American Society of Clinical Laboratory Science defines clinical laboratory science professionals as vital healthcare detectives, uncovering and providing laboratory information from laboratory analyses that assist physicians in patient diagnosis and treatment, as well as in disease monitoring or prevention (maintenance of health). Clinical laboratory science professionals generate accurate laboratory data that are needed to aid in detecting cancer, heart attacks, diabetes, infectious mononucleosis, and identification of bacteria or viruses that cause infections, as well as in detecting drugs of abuse. In addition, they monitor testing quality and consult with other members of the healthcare team. Laboratory testing encompasses such disciplines as clinical chemistry, hematology, immunology, immunohematology, microbiology, and molecular biology. US News and World Report has listed careers in the clinical laboratory in the top 100 careers of 2020 due to an increased need for qualified professionals and good starting salaries.

Diversity, Equity, and Inclusion Statement

The College of Nursing & Health Sciences and the entire UMass Dartmouth community are committed to diversity, equity, and inclusion. The college is committed to a welcoming and respectful community where all students, faculty, and staff feel valued and accepted. It is vital to our educational mission and professional preparation that our classroom and workplace environment build and maintain civility and respect for all. The College is also committed to social justice, reducing health disparities, and educating culturally competent health professionals who will work in an increasingly multicultural society.

The College of Nursing & Health Sciences will continue to advocate for diversity, equity, and inclusion within our chosen healthcare professions, amongst our student body, and within society at large.

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Accreditation Statement

The option in clinical laboratory science is an integrated program, accredited by the National Accrediting Agency for Clinical Laboratory Sciences, 5600 N. River Rd, Suite 720, Rosemont, IL 60018-5119.

Telephone: 847-939-3597 or 773-714-8880.

Website: http://www.naacls.org

Email: INFO@naacls.org

Outcome Measures

Please refer to the department website for the most current outcome data.

RESULTS FROM NATIONAL CERTIFICATION EXAMINATIONS

The certification examination for graduates from the Clinical Laboratory Science program is the Medical Laboratory Scientist (MLS) examination offered by the Board of Certification (American Society for Clinical Pathology). The pass rate for graduates who have taken the exam within one year following graduation:

CLS Class of 2021:	100% Pass Rate (National pass rate was 69%)
CLS Class of 2022:	93% Pass Rate (National pass rate was 69%)
CLS Class of 2023:	75% Pass Rate (National pass rate not yet determined) *

*Incomplete data. Results are calculated November and May each year for the current year, with May indicating the final 1-year mark.

GRADUATION/ATTRITION RATES

For students who begin the senior year, the graduation rates are:

CLS Class of 2021:	100% (with a 0% attrition rate)
CLS Class of 2022:	100% (with a 0% attrition rate)
CLS Class of 2023:	100% (with a 0% attrition rate)

EMPLOYMENT SUCCESS RATES

For students that graduate and either obtained a job or continued education within one year of graduation:

CLS Class of 2021:	100% placement
CLS Class of 2022:	100% placement
CLS Class of 2023:	100% placement

Mission Statement

In accordance with the mission statements of the University system and UMass Dartmouth campus and standards of the National Accrediting Agency for Clinical Laboratory Science, the Department of Medical Laboratory Science perceives its mission to be the education of professional clinical laboratory scientists, cytotechnologists, biotechnologists, and health care practitioners as defined by the following attributes:

- Ability to relate knowledge and skills to other fields of endeavor
- Competency in the chosen practice area
- Ability to appropriately communicate orally and/or in writing with scientists, health care professionals, and the patient public
- Development of a broad understanding of the issues that underscore the imperatives of our times
- Commitment to life-long learning and professional competence
- Development of professionalism.

Goals

The Department goals for students focus on education in their specified discipline or option plus those that (1) help students identify their personal goals and development with a sense of self-worth, self- confidence, and capacity to have an impact on events in their lives, (2) involve students in professional organizations and activities that support their personal development, (3) develop students' scholarly and intellectual capacities to the fullest and instill in them a permanent commitment to learning, (4) interrelate subject matter throughout their academic career, and (5) raise the students' awareness of their role as competent, ethical, and caring healthcare practitioners.

Learning Outcomes

After completion of this program, the graduate will be able to demonstrate entry- level competence providing quality patient care in the following areas of professional practice:

- Satisfactory scientific content in major disciplines: clinical biochemistry, microbiology, immunology, genetics, hematology, hemostasis, statistics, phlebotomy, urinalysis/body fluids, and molecular diagnostics.

- Collecting and processing biological specimens for analysis.
- Performing analytical tests on body fluids, cells, and other samples.
- Make critical judgments by integrating and relating data generated by the various clinical laboratory departments.
- Evaluating quality control, instituting corrective procedures, and developing a quality assurance plan.
- Performing preventive and corrective maintenance on equipment and instruments or referring to appropriate sources to repair.
- Evaluating new techniques and procedures for their applicability to a given laboratory.
- Demonstrating concern for patients and cooperating with laboratory personnel and other health care professionals.
- Communicating effectively and professionally with patients, laboratory personnel, other health care professionals and the public.
- Applying principles of safety, management and supervision, governmental regulations and standards related to laboratory practice.
- Being familiar with education methodologies, current information systems, and research methodology.
- Interpret clinical data as it relates to patient diagnosis and treatment.
- Assess critical pathways and perform outcome analyses.

Recommendations for Success in the CLS Program

The MLS program at the University of Massachusetts Dartmouth is a rigorous academic program.
It is important for students to know that many of their previous study habits such as straight memorization of facts, studying only for recognition of the answer on a multiple-choice exam, or studying the night before an exam will not allow for the successful progression and completion of the MLS program. Students must truly learn the content of each course and apply it to the situations presented during exams. All MLS courses are integrated in content, meaning that information in one course may be applied to others because the field of laboratory medicine in also integrated. Recommendations to help you succeed in the program:

- Read and review course content daily – do not study just for the exams.
- Review course materials thoroughly prior to class discussions or lab exercises.

- Study to analyze, interpret, and problem solve.
- Understand that by design you may not be able to find the answer directly written in your notes or textbook – this field is about analysis and critical evaluation of information.
- Use the course objectives to guide your study and to critically assess your learning.
- Do not fall behind - each class will continue to layer information from week to week.
- Communicate questions or areas needing clarification early to your instructor.
- Limit work hours as much as possible.
- Get enough sleep and eat properly.
- Remember that the instructors' goal is to help you learn and succeed - seek their help, and do not wait until the last minute.

Essential Functions

In addition to the previously stated academic requirements, admission to the upper division of the option in clinical laboratory science also requires evidence that the student is able to meet the following non-academic criteria (essential functions or technical standards).

1. Observation. The student must be able to participate actively in laboratory exercises and clinical experiences. In particular, the CLS student must be able to:

- Participate actively and independently in laboratory and clinical exercises.
- Use the microscope to identify structures, cells, and organisms.
- Recognize and distinguish text, numbers and graphics in print and on monitor screens.
- Complete forms and enter computer data.
- Inspect specimens and reagents for suitability.
- Operate analytical instruments appropriately and safely.

2. Communication. The student must be able to communicate with fellow students, faculty, staff and members of a health care team. In particular, the CLS student must be able to:

- Independently and effectively report, discuss, or explain the results of laboratory tests in English to classmates, faculty, laboratory personnel, physicians and other health care providers.
- Read and comprehend technical and professional materials written in English.

- Follow verbal or written instructions given in English in order to perform laboratory test procedures correctly, either independently or as part of a team.
- Converse with patients and/or the public regarding laboratory tests or instructions for specimen collection in an effective, confidential, and sensitive manner.
- Communicate appropriately and in a timely manner with faculty, students, staff, and health professionals.

3. Motor skills. The student must have sufficient motor skills to independently perform basic diagnostic tests and meet minimum affiliate standards. In particular, the CLS student must be able to:

- Obtain, manipulate and measure specimens safely and with precision.
- Manipulate reagents, materials, instruments, computers, and analytical equipment according to established procedures and standards, safely and with speed, accuracy, and precision.
- Move safely about the laboratory.
- Reach laboratory bench tops and shelves.
- Reach patients lying in hospital beds or seated for purposes of collection specimens.
- Perform moderately taxing continuous physical and mental work, often requiring prolonged sitting or standing, over an eight-to-ten-hour period.
- Lift and move objects weighing up to 10 pounds on a regular basis.
- Hold, manipulate and control laboratory equipment (i.e., pipettes, inoculating loops, phlebotomy needles) to collect blood specimens and perform laboratory procedures.

4. Intellectual/Conceptual, Integrative and Quantitative Abilities. The student must be able to problem solve and comprehend spatial relationships of structure. In particular, the CLS student must be able to:

- Possess and use the following intellectual skills: comprehension, measurement, mathematical calculation, reasoning, integration, analysis, and comparison.
- Exercise sufficient judgment to recognize and correct deviations from acceptable performance.
- Receive and implement constructive criticism appropriately.
- Evaluate the performance of peers, tactfully offering constructive comments.

5. Behavioral. The student must have the ability to interact appropriately in a professional manner with fellow students, faculty, staff and members of a healthcare team and demonstrate honesty and integrity by adherence to MLS, UMD and affiliate facility code of conduct and academic honesty policies. In particular the CLS student must be able to:

- Manage the use of time and prioritize actions in order to complete tasks within realistic constraints.
- Possess the necessary emotional health to exercise good judgment and demonstrate honesty, compassion, integrity, tolerance, responsibility and ethical behavior.
- Exercise good judgment in responding to stressful and emergency situations with patients or peers.
- Be flexible and creative in adapting to professional and technical change.
- Recognize potentially hazardous materials, equipment, and situations and proceed in a manner designed to minimize risk of injury to self and nearby personnel.
- Adapt to working with unpleasant biological materials or reagents.
- Support and promote the activities of colleagues, adopting a team approach to learning, task completion, problem solving and patient care.

Summary of the Clinical Laboratory Science Curriculum

Freshman Year

Fall Semester			Credits
MLS	115	Fundamentals of Medical Laboratory Science	1
MLS	116	Fundamentals of Medical Laboratory Science Techniques	1
CHM	151	Principles of Modern Chemistry I	3
CHM	161	Introduction to Applied Chemistry I	1
ENL	101	Critical Reading and Writing I	3
		University Studies	6
			15

Spring Semester

MLS	121	Human Genetics	3
MLS	122	Human Genetics Laboratory	1
CHM	152	Principles of Modern Chemistry II	3
CHM	162	Introduction to Applied Chemistry II	1
MTH	147	Fundamentals of Statistics	3
ENL	102	Critical Reading and Writing II	3
		University Studies	3
			17

Sophomore year

Fall Semester

MLS	211	Fundamentals of Human Physiology	4
CHM	251	Organic Chemistry I	3
CHM	263	Bio-organic Chemistry Laboratory I	1
		University Studies	6
			14

Spring Semester

MLS	221	Pathophysiology	3
MLS	222	Pathophysiology Laboratory	1
MLS	241	Instrumentation Analysis	3
MLS	242	Clinical Chemistry Applied Diagnostic Technique Laboratory	1
		University Studies/Free Elective	6
			14

Junior Year

Fall Semester

MLS	301	Principles of Microbiology	4
MLS	303	Principles of Microbiology Laboratory	1
MLS	325	Clinical Immunobiology	3
MLS	326	Clinical Immunobiology Laboratory	1
		University Studies/Free Elective	3
			12

Spring Semester

MLS	313	Medical Microbiology	3
MLS	314	Medical Microbiology Laboratory	1
MLS	331	Fundamentals of Clinical Hematology	3
MLS	332	Fundamentals of Clinical Hematology Laboratory	1
MLS	341	Clinical Chemistry in Diagnostic Techniques	3
MLS	342	Clinical Instrumental Analysis Laboratory	1
		University Studies/Free Elective	3
			15

Senior Year

Fall Semester

MLS	401	Clinical Microbiology I	5
MLS	421	Immunohematology I	3
MLS	443	Clinical Biochemistry I	5
MLS	431	Hematology I	3
			16

Spring Semester

MLS	411	Clinical Microbiology II	3
MLS	422	Immunohematology II	3
MLS	426	Phlebotomy & Urinalysis	2
MLS	444	Clinical Biochemistry II	3
MLS	432	Hematology II	3
MLS	450	Senior Seminar	3
			17

The total number of credits required for a Bachelor of Science degree in Medical Laboratory Science with an option in Clinical Laboratory Science is **120.**

University Studies Requirements

Cluster 1 Foundations for Engagement in the 21st Century		Cluster 2 Science	
1a Writing and Reading	ENL 101	2a Natural Science	MLS 211
1b Writing and Reading	ENL 102	2b Science in the Engaged Comm.	MLS 313
1c Intermediate Writing	ENL 264		
1d Mathematics	MTH 147		
1e Engagement	MLS 115		

Cluster 3 The Cultural World		Cluster 4 Social World	
3a Literature	3 credits	4a Human Questions & Contexts (PHL 215)	3 credits
3b Visual & Performing Arts	3 credits	4b Nature of US Society	3 credits
		4c Nature of Global Society	3 credits

Cluster 5 UMD Experience	
5a Capstone	MLS 450
5b Engagement	MLS 450

The UMD student handbook www.umassd.edu/studentaffairs/studenthandbook further defines rules and regulations governing student conduct, policies and procedures, including those related to grievances and complaints, including those related to Title IX, plus many other campus resources and expectations.

Admission Criteria

University Admissions Requirements:

For information about applying to the University of Massachusetts Dartmouth, please visit www.umassd.edu/admissions/apply/. For undergraduate requirements, please visit www.umassd.edu/apply/.

Internal transfer policy

Any UMass Dartmouth student who wishes to change their major to the Medical Laboratory Science CLS option must have at least a 2.5 overall GPA or a 2.5 GPA in the chemistry sequence (CHM 151, 152, 161, 162), where space allows.

Committee on Advanced Standing: Admission to Upper Division in MLS Department

1. The minimum cumulative grade point average (GPA) for all required science courses completed prior to the evaluation process for admission to the upper division is 2.0.

If the science GPA is less than 2.0 and there is a desirable pattern of academic performance (i.e., improvement), conditional acceptance with an academic contract can be recommended.

2. The student's progress toward satisfying the degree requirements of the University will be evaluated. If there is deviation from the printed curriculum, a plan to ensure completion of all degree requirements should be developed and included in the student's file.

3. The student's progress toward satisfying the requirements of certifying agencies will be evaluated. If there is deviation from printed curriculum, a plan to ensure completion of all requirements should be developed and included in the student's file.

Progression Process

1. A Committee on Advanced Standing will be composed of the Program Director/Education Coordinator, Sophomore Class Advisor and Junior Class Advisor. The Sophomore Class Advisor will prepare the list of students to be presented to the committee.

2. The Committee will meet at the end of the Spring Semester and review the academic record of each student. Ordinarily students completing sophomore level courses are evaluated. Possible recommendations include acceptance to the upper division, conditional acceptance to the upper division (compliance with the terms of the conditions will be monitored by the Junior Class Advisor at the end of each semester), continuation as a sophomore (with reevaluation by this committee 1 year later), and discontinuation.

3. The recommendation of the Committee will be presented to the Department Chairperson, who will make the final decision with input from the department.

4. A letter containing the Committee's decision will be prepared by the Program Director for each student, as appropriate. The student will receive two copies of the letter with instructions to sign the original and return it to the Program Director. The signed letter will be placed in the student's permanent file.

5. Junior and Senior Class Advisors will monitor the progress of students who were conditionally accepted. If a student is found to be noncompliant with the educational contract, the advisor will inform the Department Chairperson and Program Director. Any non-compliant student will be dropped from the major unless there are sufficient openings in the upper division classes. Repeat of courses is allowed only where there is sufficient enrollment space once those taking it for the first time have been registered.

Grade Requirements for CLS-L Option

1. The minimal acceptable grade in **all** MLS classes = **C-.** Less than a C- will be treated like a class failure even though university credits may be earned.
2. For purposes of progression only, please refer to the pre-requisite list.
3. All department, college, and university requirements other than MLS 400 level classes, must be satisfactorily completed PRIOR to entering the senior year.
4. During the senior year, a less than C- in one course makes a student ineligible to take the others as they are co-requisites.
5. A third enrollment to achieve C- or better will not be granted.
6. You must also achieve a minimum **2.0** GPA every semester in MLS Department required courses. Failure to achieve the minimum will result in:

   1st instance <2.0 = warning

   2nd instance <2.0 = probation

   3rd instance<2.0 = dismissal from major

Courses for calculation of the MLS Semester GPA:

1st Semester	2nd Semester	3rd Semester	4th Semester	5th Semester	6th Semester	7th Semester	8th Semester
MLS 115	MLS 121	MLS 211	MLS 221	MLS 301	MLS 313	MLS 401	MLS 411
MLS 116	MLS 122	CHM 251	MLS 222	MLS 303	MLS 314	MLS 421	MLS 422

CHM 151	CHM 152	CHM 263	MLS 241	MLS 325	MLS 331	MLS 431	MLS 426
CHM 161	CHM 162		MLS 242	MLS 326	MLS 332	MLS 443	MLS 432
	MTH 147				MLS 341		MLS 444
					MLS 342		MLS 450

Department of Medical Laboratory Science Grading Criteria:

LETTER	Quality Points	
A+	4.0	97+
A	4.0	94-96
A-	3.7	90-93
B+	3.3	87-89
B	3.0	84-86
B-	2.7	80-83
C+	2.3	77-79
C	2.0	74-76
C-	1.7	70-73
D+	1.3	67-69
D	1.0	64-66
D-	0.7	60-63

-The passing grade for all practicals is a70.
-0.5 or greater; the grade will be rounded up to the next highest whole number; lower than 0.5 will be rounded down. For example: a 59.4 would be a 59 and not 60, but a 59.5 would be rounded up to a 60.

MLS COURSE PREREQUISITES AND COREQUESITES

COURSE	PREREQUISITES	COREQUISITES
MLS 121	MLS 116	
MLS 122	MLS 116	MLS 121 (or prerequisite)
MLS 211	MLS 121	
MLS 221	MLS 121, 211	MLS 222
MLS 222	MLS 116, 122 (or co-req 122)	MLS 221
MLS 241	CHM 152, 162, MLS 211	MLS 242

MLS 242	CHM 152, 162, MLS 211	MLS 241
MLS 301	MLS 241, 221	MLS 303
MLS 303	MLS 222, 242	MLS 301
MLS 313	MLS 301	MLS 314
MLS 314	MLS 303	MLS 313
MLS 325	MLS 221, MLS 222	MLS 326
MLS 326	MLS 222	MLS 325
MLS 331	MLS 221	MLS 332
MLS 332	MLS 222	MLS 331
MLS 341	MLS 241, 301, 325	MLS 342
MLS 342	MLS 242, 303, 326	MLS 341
MLS 401	MLS 313, 314, 331, 332, 341, 342 *	MLS 421, 431, 443
MLS 421	MLS 313, 314, 331, 332, 341, 342 *	MLS 401, 431, 443
MLS 431	MLS 313, 314, 331, 332, 341, 342 *	MLS 401, 421, 443
MLS 443	MLS 313, 314, 331, 332, 341, 342 *	MLS 401, 421, 431
MLS 450	MLS 401, 421, 431, 443	MLS 411, 422, 426, 432, 444

* *See page 16, note #3*

Academic Integrity

Unacceptable student conduct is described in both the University student handbook as well as the general catalog. A reprint of this information is also available from any MLS faculty member. Students found guilty of academic dishonesty are subject to severe disciplinary action, which may include expulsion from the University. You are referred to the Student Judicial Code for due process in such a situation. In addition to the specific instances described in these documents, (plagiarism and Code of Responsible Computing), the MLS faculty reaffirm the University academic honesty standards and also consider the following as incidences of academic dishonesty:

1. Copying answers to study questions or other assignments from any source (the answer key, another student's answers, textbook, study companion, reference book, etc.) is considered plagiarism.

2. Substituting another student's answers for your own on an examination, quiz, or laboratory exercise. This includes modifying your laboratory results to meet a perceived outcome or fit into a desired range.
3. Obtaining, in advance, copies or information of any kind regarding examinations, quizzes, or laboratory exercises including information from students in other sections. The MLS faculty supports the learning process by providing students with instructional objectives to use as study guides. Review sessions prior to a test are routinely scheduled, when requested, for all MLS required courses. An individual needing additional assistance for better topic understanding should make an appointment with the appropriate instructor.

UMass Student Association for Medical Laboratory Science

Founded in the mid 1960s, this organization has been continuously active on the campus with meetings and social events in the local constituent chapter of the American Society for Clinical Laboratory Science (ASCLS: Central New England), the Regional chapter of ASCLS (ASCLS: Region I which includes New York and New England), and the national organization itself.

UMass Dartmouth students account for more than half of all Student Presidents of ASCLS:CNE, which is approximately one third of all Student Representatives for Region I, and is proud to have eight ASCLS National Student Forum Chairs and Vice Chairs. No other program in the country comes close to this level of leadership activities. Students attend state and local scientific meetings, compete in poster session contests, and lobby state and federal legislators on behalf of patient care and quality clinical laboratory science. The club has monthly meetings, some of which are specific to each class year. Pot- luck lunches and suppers are a noted specialty!

The club maintains its own Facebook page for easy communications and the alumni maintain their own Facebook page, which allows for classmates to keep up to date on each other's activities and networking for both full time and part time employment opportunities.

Laboratory Coat, Calculator, and Computer Requirements

LAB COAT:

To best meet the safety requirements from the Centers for Disease Control and Prevention for protecting individuals from health risks associated with chemical and biological exposures in the clinical lab environment, the Department of Medical Laboratory Science agrees that all lab coats used within the department shall comply with these minimum standards.

Mid-calf length or longer
Elastic cuffs
Full length closure such as buttons, snaps, or Velcro
Whole garment or front panel 80%/20% polyester/cotton or 100% polyester
White

These coats are generally only found at uniform shops specializing in health care garments. The Department of Medical Laboratory Science has established a working relationship with our campus store where you may seek assistance in ordering and choosing the correct size.

UMass Dartmouth Campus Store
MacLean Campus Center
UMass Dartmouth
(508) 999-8190

Please be sure that you mention that you are a student in the **Department of Medical Laboratory Science**. Most sizes are usually in stock, but you should allow 3 to 4 weeks for special orders or if out of stock.

CALCULATOR:

Sharp Scientific Calculator (approximately $6.00)
Model # EL-501XBWH
Model # EL-501X
Model # EL-501W

MINIMUM COMPUTER SPECIFICATIONS:

Apple Laptop:	**Windows Laptop:**
Operating system: 10.14X	Operating system: 32-bit and 64-bit versions Windows 10
Processor: Core i5	Processor: Intel Core i5
Memory/ RAM: 8GB	Memory/ RAM: 8GB
Hard Drive: 256GB	Hard Drive: 256GB
Built in webcam	Built in webcam
OR external HD webcam	OR external HD webcam

Senior Year

Professional Attire/Dress Code

The UMass Dartmouth Medical Laboratory Science Department is a safe and welcoming place. We respect differences and embrace diversity. We demonstrate a professional commitment to maintain safety in the clinical setting.

Students who would like to request an exemption to any part of the policy as an accommodation due to religious belief, disability or other reason should contact the Program Director.

YES

Business professional or business casual

Wrinkle-free and clean

Practical and safe fit for laboratory work

Clothing that covers legs and feet

Safe jewelry and piercings for laboratory work

NO

Holes, tears or see-through

Sandals, open-toed shoes

Graphics, typography or large logos

Hooded tops

Perfume or fragranced grooming products

Long nails that may pierce gloves

Brimmed hats

Visible undergarments

Sweatpants, cargo pants, shorts, capris

Denim

Tops

All tops must cover shoulders, armpits and mid-section

Bottoms

Skirts and dresses may be worn if leggings or nylons are worn underneath

Socks or hosiery must be worn

Neat and no tears

Footwear

Footwear must cover the top of the foot with a closed heel and toe

Footwear must have flat, non-slip outsoles

Hair

Long hair must be tied back and kept away from the face in the laboratory.

Affiliates

Baystate Medical Center, Springfield, MA

Beth Israel Deaconess Medical Center- Boston, MA

Beth Israel Deaconess- Milton, Milton, MA

Beth Israel Deaconess- Plymouth, Plymouth, MA

Boston Children's Hospital, Boston, MA

Boston Healthcare VA System, W. Roxbury, MA

Boston Medical Center, Boston, MA

Cambridge Health Alliance, Cambridge, MA

Cape Cod Healthcare System, Hyannis, MA

Care New England- Kent Memorial Hospital, Warwick, RI

Care New England- Women & Infants Hospital, Providence, RI

Charlton Memorial Hospital, Fall River, MA

Cooley Dickinson Health Care- A Massachusetts General Hospital Affiliate, Northampton, MA

Dartmouth – Hitchcock Medical Center, Lebanon, NH

Good Samaritan's Medical Center, Brockton MA

Massachusetts General Hospital, Boston, MA

Massachusetts Institute of Technology, Boston, MA

Milford Regional Medical Center, Milford, MA

Miriam Hospital, Providence, RI

Morton Hospital A Steward Family Hospital, Taunton, MA

New England Baptist Hospital, Boston, MA

Norwood Hospital A Steward Family Hospital, Norwood, MA

Providence VA Medical Center, VISN-1, Providence, RI

Signature Healthcare System (Brockton Hospital), Brockton, MA

South Shore Hospital, South Weymouth, MA

St. Anne's Hospital, Fall River, MA

St. Elizabeth's Medical Center, Brighton, MA

St. Luke's Hospital, New Bedford, MA

Sturdy Memorial Hospital, Attleboro, MA

Tufts Medical Center, Boston, MA

Fees/Expenses

Clothing

See "Dress Code for Seniors in the Department of Medical Laboratory Science" for details.

Laboratory Supplies

Permanent markers

Pipet bulbs

Sharp Scientific Calculator and Laboratory Coats (see Laboratory Coats, Calculator, and Computer Requirements section)

Travel

1. Gas- Distance to Providence – 30 miles; distance to South Weymouth- 65 miles.
2. Parking Garages- Tufts Medical Center and Cambridge Health Alliance have additional parking fees.
3. Bus, Commuter Rail, and Subway. See www.mbta.com for schedules and fares and directions of purchase of the Charlie Card.

Professional Fees

1. Certification Exam: Board of Certification ($240.00)
   www.ascp.org/Board-of-Certification
   Click link for "Get Certification"
2. Licensure Fees: variable by state.

Criminal Background Check

Prior to the start of the clinical practicum, all students will be required to have a criminal background check performed. For the majority of students, a Criminal Offender Record Information (CORI) will be performed. The CORI searches records at a local (i.e., Commonwealth of Massachusetts) level. Students assigned to Massachusetts General Hospital, Boston Medical Center, and St. Anne's Hospital will be required to have a more extensive background check. CORI's are conducted by a third-party outside agency at a cost of $99.00 to the student. The results of criminal background checks are reported to the program director and are handled confidentially, on a "need to know" basis. The program director will share any positive results with the student. In accordance with our contracts, positive results also will be shared with any clinical site to which the student is assigned so that the affiliate may make a determination about a student's eligibility. If you have any questions about this, please contact the CLS program director.

Immunization Policy

Prior to the start of the clinical practicum, all students are required to meet immunization requirements as mandated for students in health-related fields by the assigned affiliate, the University of Massachusetts Dartmouth, the Commonwealth of Massachusetts, and/or the Department of Health.
The student is required to document current immune status for Hepatitis B, measles, mumps, rubella, varicella (chicken pox), tetanus/diphtheria, polio, flu, and COVID-19. In addition, the student is required to show results

of a tuberculin skin test. In general, the information must be obtained from the student's primary care physician. Verifying immune status may require laboratory testing and vaccinations. The student is responsible for all costs. The program director will provide the appropriate form and a detailed list of requirements to the student at the completion of the junior year of study. The completed forms with documentation materials are submitted to the program director and are handled confidentially. The information is released to the individual student's affiliate only with the student's written permission. Immunization documents are handled by an outside agency at a cost of $35.00 to the student.

Clinical Rotation Requirement

All CLS seniors are required to participate in clinical rotations. The means and costs of transportation, as well as any living expenses or costs for relocation are the student's responsibility.

Clinical Rotation Placement

At the completion of their junior year, all eligible juniors will participate in a placement interview. The program director and the program manager conduct the placement interview. The purpose of the interview is to determine the student's preference for placement during the clinical practicum and to gather other pertinent information that might be useful in determining the actual placement. The placement decisions are made by the program director, with input from the CLS faculty. Every effort is made to get this information to the student during the summer prior to the beginning of the senior year of study. Participating in the interview process does not automatically ensure that the student will be a senior or will complete the senior year. Before the placement is official, the student must successfully complete the academic course of study.

Students will be scheduled for clinical rotations at one or more of the program's current clinical sites. If the clinical site cancels a student’s scheduled clinical rotation, the CLS program director will attempt to reschedule that rotation at another clinical site. In the unlikely event that the clinical rotation cannot be scheduled at one of the current clinical sites, the program director will either re-schedule the rotation for a subsequent semester at an existing clinical site or establish a new clinical site. An unexpected change in clinical site availability may affect the date that a student can finish the program but will not affect the student's ability to complete all the required clinical rotations. If a student fails to satisfactorily complete a course associated with a clinical placement, a repeat placement must wait until a vacancy becomes available.

Students are responsible to fulfill all the regulatory requirements of the clinical affiliate to which they are assigned, which may or may not include demonstrating proof of malpractice insurance coverage, providing health record documentation, undergoing a CORI screen, and updating immunization status.

Clinical Schedules

During the senior year, classes are scheduled in block style. Students take one course at a time for a stipulated period. Both the fall semester on-campus and the spring clinical practicum courses are scheduled using this format. For planning purposes, students should expect to be "in class" for 8 hours each school day. In general, activities (lectures, lab exercises, etc.) are associated with in class time. Students are expected to utilize outside of class time for studying and completion of assignments. Because of the stressors associated with the time constraints, students are strongly encouraged to refrain from working during the entire senior year, but particularly during the clinical practicum.

Student Service Work

Students are not assigned to clinical sites where they have had prior work experience. Students may not perform paid or unpaid service work during assigned academic hours of the clinical practicum. Students may obtain paid positions during their discretionary time. Qualified students may hold work-study positions, providing the hours of employment do not conflict with required academic hours. Students shall not sign (or initial) out work or verify results on a computerized system. This includes using their own name or code or that of a hospital employee. This statement should not prohibit a student from performing tests or working with instruments. The Department faculty recognizes the importance of hands-on experience so long as that experience occurs under appropriate supervision. The responsibility for the test results must remain with the instructor since this individual is employed by the affiliate.

Students who have graduated from a phlebotomy program must provide a copy of their certificate to the Program Director and are exempt from the phlebotomy rotation.

Senior Clinical Practicum Attendance Policy

General Comments

1. Each student is given a clinical rotation schedule prior to the start of the clinical practicum. It is expected that students will make every effort to be present on all assigned days.

2. The exact starting and ending times vary from hospital to hospital and department to department. These times will be given to the student during the hospital orientation. The schedule cannot be altered in any way without prior approval from the Clinical Education Coordinator in consultation with the Program Director.
3. Students will be required to sign in and out regardless of the policy for employees within the clinical laboratory. The sign-in sheet will be maintained by the Clinical Education Coordinator and will be given to the Practicum Site Visitor at the completion of the clinical practicum.
4. Students are entitled to the same number and length of breaks as prescribed by hospital policy. This policy will be explained during the hospital orientation. In general, the student should plan to go on break and to lunch at the same time as the instructor to whom the student has been assigned on a given day.
5. Students are to treat all persons with whom they have contact, respectfully. Any individual, regardless of credentials, may be appointed as an instructor. Assignments are made because the Clinical Education Coordinator and the Rotation Supervisor believe that individual is best able to provide the student with certain experiences necessary for the development of a competent professional Medical Laboratory Scientist.

Absenteeism

Definition: An absence is defined as one day lost for any reason.

1. Students are required to notify the Rotation Supervisor, Clinical Education Coordinator, and their Practicum Site Visitor (University Faculty) on each day absent. Failure to do so will result in loss of a letter grade for each offense during that particular rotation.
2. Students who are absent 2 or more days within a rotation (for *any* reason outside of weather-related issues*) shall lose a full letter grade for that rotation. Failure to achieve the stated learning objectives may result in a course failure and the need to repeat the rotation, as time and space allows.

*Weather related issues consist only of those that are university or hospital approved. For instance, issues with transportation during inclement weather are not acceptable.

Tardiness

Because your instructors expect you to be available to begin Phlebotomy or to be in your scheduled departments so that work can begin, lateness is considered a major offense. Students are required to notify

the Rotation Supervisor in the event of tardiness. Upon arrival at the hospital, the student will leave a message for the Clinical Education Coordinator giving a reason for the tardiness. The Clinical Education Coordinator will document the incident on the attendance sheet. The completed sheet will be given to the Practicum Coordinator and placed in the student's file. A copy will be given to the student. For the first incident, the student will be issued a verbal warning. Following the second incident, the student will be issued a second verbal warning. For the third and subsequent incidents, the student's grade for the rotation where the lateness occurs will decrease by a full letter grade.

Professional Meetings

Should a student desire to attend the annual meeting sponsored by CLS/CNE, the change in schedule must be discussed and approved by both the Rotation Supervisor and the Clinical Education Coordinator. Since it is felt that attendance of this meeting is part of your educational experience, the time lost will not have to be made up unless it is part of the Urinalysis or Serology rotations or another rotation where the learning objectives may not be met due to absenteeism.

Request for Time Off

1. Any request for time off will be made directly to the Clinical Education Coordinator. It will be that person's responsibility to discuss such requests with the appropriate Rotation Supervisor and to maintain a record of all such requests. If necessary, the Clinical Education Coordinator will consult with the Practicum Coordinator to determine the validity of the request.
2. In general, such time off will be granted for such things as attending educational seminars, family/personal emergencies, funerals, etc. In general, requests for such things as vacations, visit with family or friends visiting from out of town, working at another job, doctor, or dental appointments, etc., will not be approved.
3. Requests for time off should be kept to a minimum. In the event the learning objectives have not been met, additional rotation time may be required to satisfactorily repeat a course where time and space allows.

Bereavement Policy

Bereavement leave will be extended to students who have lost a husband, wife, parent, spouse's parent, sibling, sister or brother-in-law, stepchild, grandparent or person living in their immediate household. A copy of the obituary with the student's name and relation to the deceased will be sufficient evidence.

Making Up Lost Time

1. All time lost (see section "Professional Meetings") shall be made up when the loss impacts on the ability of the student to complete the learning objectives.
2. Within one week of the day the student returns to the laboratory, the student, together with the Rotation Supervisor and the Clinical Education Coordinator, will arrange a schedule to make up time lost.
3. Students will make up the time in the department in which the days were originally missed.
4. In general, students find it easiest to make up time lost at the end of the scheduled Clinical Practicum. However, in the past, some students have arranged to make up some of the time on second or third shifts and/or weekends. Any such arrangement is acceptable to the University so long as prior approval has been received from the Rotation Supervisor and the Clinical Education Coordinator. Any time, which cannot be made up prior to the start of MLS 450, will have to be made up at the completion of this course.

Snow and Inclement Weather Policy

If the classes at UMass Dartmouth are officially canceled due to inclement weather and/or the University is closed, the students attending clinical rotations will not be required to report to their clinical site. The Program Director and/or Students will notify the appropriate Clinical Liaison and/or hospital staff that classes have been canceled/school is closed. Students shall make up lost time, as needed.

UMass Dartmouth may cancel classes/close after students have already arrived at their respective hospitals for their rotation. When this occurs, students should remain at their clinical site for their rotation, if it is safe to do so. In the event that classes are canceled/the University is closed but it is safe for students to travel to and from their clinical site, students may attend their rotation. The student must communicate this with the Program Director/Practicum Coordinator and the Clinical Liaison/appropriate hospital staff.

The safety of all students, faculty and staff is the priority. If there are unsafe conditions in the area of the clinical site but the University is opened, students shall not be required to attend their clinical rotation.

Clinical Practicum Performance Evaluation and Grading

Evaluation during the clinical practicum courses takes a variety of forms. In general, academic material will be evaluated by means of examinations designed to access students' overall attainment of theory and development of skills. In addition, at the completion of each rotation, clinical faculty will evaluate the performance of each student while in that department. This evaluation is divided into three sections and serves to evaluate the student with respect the following.

1. Overall technical skills, to include, but not limited to, manual dexterity; speed; power of observation; accuracy; compliance with safety procedures; organization; discrimination.
2. Application of theory to technical skills, to include, but not limited to, problem solving, respect for and operation of instruments and equipment.
3. Personal characteristics, to include, but not limited to, courtesy, punctuality, ability to function in stressful situations, interactions on telephone, ability to function with peers and others, professional ethics, confidentiality, utilization of chain of command, performance of minimum/maximum work.

University faculty review the individual student's performance evaluation, convert the results into a numerical grade using a rubric designed by the faculty, and incorporates the grade into the overall final grade for the course. The percentage of the final grade represented by the performance evaluation is the purview of the faculty and will be included in the course syllabus.

Senior Capstone

Each senior is required to research and present one (1) case study. This case study fulfills the University capstone requirement.

Seniors are assigned a case study during their hospital clinical rotation. The student has access to the assigned patient's medical chart including demographics, history, physical exam findings, laboratory data, imaging data, other relevant testing, and the patient's diagnosis. Students are expected to correlate exam findings, laboratory data and imaging data to the patient's condition/diagnosis. Research is done on the particular condition. There are a wide variety of diagnoses ranging from musculoskeletal diseases, visceral diseases, infectious diseases, etc. The case study is presented as a research document. Areas of content must include:

abstract, learning objectives, abbreviations, case presentation, past medical history, pathogenesis, relevant laboratory/imaging/other data, discussion, treatment and prognosis, case conclusion, and references. References will be cited in International Committee of Medical Journal Editors (ICMJE) format. Oral presentations are given to the senior class and department faculty upon the student's return to campus in the spring.

Selection of a case. In consultation with the clinical liaison and/or designated laboratory staff, and faculty advisors, the student will be assigned a case study during the first month of their clinical rotation. The primary focus of the case will reflect the particular discipline that the student chose on campus. The major disciplines include hematology, clinical chemistry, microbiology, and immunohematology. However, the case must also require investigation of laboratory data from ***a minimum of two*** other disciplines.

Case study advisor. Once the case study is selected, a case study advisor from the University faculty will be assigned to the student. Determination of the particular advisor will depend on the primary focus of the case study. The role of the case study advisor is to help the student identify the issues that must be addressed in preparing the report and meet the deadlines associated with the preparation of the case study report.

Graduation

1. To register for graduation, students must complete the "Intent to Graduate" form by March 1. This form is available in the Registrar's Office.
2. Notification concerning cap and gowns will be mailed by the bookstore directly to the student.
3. Please note: earning the B.S. degree in Clinical Laboratory Science is dependent only upon successfully meeting all University, College, and Departmental requirements. Earning the B.S. degree is independent of passing the certification examination. Conversely, successfully earning the degree does not guarantee passing the certification examination. Students are encouraged to take the certification examination as soon as possible following graduation.

Post-Graduation

Certification

Graduates from the CLS Program of the University of Massachusetts Dartmouth are eligible to take the national examination for certification as medical laboratory scientists. The American Society of Clinical

Pathology's Board of Certification (BOC) conducts the examination. Most employers require certification for employment. Application forms, certification examination eligibility requirements, examination content guidelines, and practice tests are available online.

American Society of Clinical Pathologists (ASCP)
Board of Certification (BOC)
33 W. Monroe St., Suite 1600
Chicago, IL 60603-5617
(312) 541-4999 (www.ascp.org/boc)
1-800-257-2727

Licensure

Students are eligible for certification nationally, but UMD has not determined eligibility for individual state licensure as of yet. This information is forthcoming; however, students are notified of this at orientation and at the start of the MLS program. Some states require licensure for those who wish to practice in the field of Clinical Laboratory Science, and licenses are issued to qualifying persons. To obtain a license, states require that the individual has passed the national certification examination, and some states require that the exam is provided from a particular certifying agency. Some states also require additional conditions that must be met in order to be licensed. Those considering employment in a state should contact that State Department of Health for further information. States that currently have licensure laws include California, Florida, Georgia, Hawaii, Louisiana, Montana, Nevada, North Dakota, New York, Tennessee, West Virginia, and Puerto Rico.

Professional Organizations

American Society for Clinical Laboratory Science (ASCLS)
1861 International Drive, Suite 200
McLean, VA 22102 (571)-748-3770 | Email ascls@ascls.org

American Society for Clinical Pathology (ASCP)
33 West Monroe Street, Suite 1600
Chicago, IL 60603

For those with specialized interests:

American Society for Microbiology (ASM)

1752 N Street, N.W.

Washington, D.C. 20036-2904

(202) 737-3600

AABB

8101 Glenbrook Road

Bethesda, MD 20814-2749

Phone: +1.301.907.6977

Fax: +1.301.907.6895

Email: aabb@aabb.org

American Society of Hematology (ASH)

2021 L Street NW, Suite 900

Washington, DC 20036 Phone 202-776-0544

American Association for Clinical Chemistry (AACC)

1850 K Street, NW Suite 625

Washington, DC 20006

Phone: (800) 892-1400

ASCLS Pledge to the Profession

As a Medical Laboratory Professional, I pledge to uphold my duty to Patients, the Profession and Society by:

- Placing patients' welfare above my own needs and desires.
- Ensuring that each patient receives care that is safe, effective, efficient, timely, equitable and patient-centered.
- Maintaining the dignity and respect for my profession.
- Promoting the advancement of my profession.
- Ensuring collegial relationships within the clinical laboratory and with other patient care providers.

- Improving access to laboratory services.
- Promoting equitable distribution of healthcare resources.
- Complying with laws and regulations and protecting patients from others' incompetent or illegal practice
- Changing conditions where necessary to advance the best interests of patients.

ASCLS Code of Ethics

Preamble

The Code of Ethics of the American Society for Clinical Laboratory Science sets forth the principles and standards by which Medical Laboratory Professionals and students admitted to professional education programs practice their profession.

professional education programs practice their profession.

I. Duty to the Patient

Medical Laboratory Professionals' primary duty is to the patient, placing the welfare of the patient above their own needs and desires and ensuring that each patient receives the highest quality of care according to current standards of practice. High quality laboratory services are safe, effective, efficient, timely, equitable, and patient-centered. Medical Laboratory Professionals work with all patients and all patient samples without regard to disease state, ethnicity, race, religion, or sexual orientation. Medical Laboratory Professionals prevent and avoid conflicts of interest that undermine the best interests of patients.

Medical Laboratory Professionals are accountable for the quality and integrity of the laboratory services they provide. This obligation includes maintaining the highest level of individual competence as patient needs change, yet practicing within the limits of their level of practice. Medical Laboratory Professionals exercise sound judgment in all aspects of laboratory services they provide. Furthermore, Medical Laboratory Professionals safeguard patients from others' incompetent or illegal practice through identification and appropriate reporting of instances where the integrity and high quality of laboratory services have been breached.

Medical Laboratory Professionals maintain strict confidentiality of patient information and test results. They safeguard the dignity and privacy of patients and provide accurate information to patients and other health

care professionals. Medical Laboratory Professionals respect patients' rights to make decisions regarding their own medical care.

II. Duty to Colleagues and the Profession

Medical Laboratory Professionals uphold the dignity and respect of the profession and maintain a reputation of honesty, integrity, competence, and reliability. Medical Laboratory Professionals contribute to the advancement of the profession by improving and disseminating the body of knowledge, adopting scientific advances that benefit the patient, maintaining high standards of practice and education, and seeking fair socioeconomic working conditions for members of the profession.

Medical Laboratory Professionals accept the responsibility to establish the qualifications for entry to the profession, to implement those qualifications through participation in licensing and certification programs, to uphold those qualifications in hiring practices, and to recruit and educate students in accredited programs to achieve those qualifications.

Medical Laboratory Professionals establish cooperative, honest, and respectful working relationships within the clinical laboratory and with all members of the healthcare team with the primary objective of ensuring a high standard of care for the patients they serve.

III. Duty to Society

As practitioners of an autonomous profession, Medical Laboratory Professionals have the responsibility to contribute from their sphere of professional competence to the general well being of society. Medical Laboratory Professionals serve as patient advocates. They apply their expertise to improve patient healthcare outcomes by eliminating barriers to access to laboratory services and promoting equitable distribution of healthcare resources.

Medical Laboratory Professionals comply with relevant laws and regulations pertaining to the practice of Clinical Laboratory Science and actively seek, to change those laws and regulations that do not meet the high standards of care and practice.

Possible Careers

Medical Laboratory Science graduates can travel down any number of career paths: working in hospital or physician's labs, in specialty laboratories such as those that deal with cancer treatment, in fields such as

molecular biology and toxicology, in blood banks, in medical research, in the public health agencies that track diseases and viruses, and in many other paths. Many of our students go on to graduate studies in areas such as medicine, public health, and hospital laboratory management, while others do sales or marketing for medical and pharmaceutical firms.

Alumni from UMass Dartmouth's Department of Medical Laboratory Science currently hold the following positions. Graduates of similar programs throughout the state, region and the nation enter similar careers.

Staff Clinical Laboratory Scientist
Clinical Hematologist
Clinical Toxicologist
Coagulation Specialist
Medical Bacteriologist
Microbiology Supervisor
Immunohematology Supervisor
Public Health Microbiologist
Public Health Mycologist
Point of Care Supervisor
Diagnostic Services Manager
Research Associate (many areas)
Medical Products Manufacturer
Laboratory Information Services Director
Computer Services Director
College Professor
Biomedical Engineer
Health Care Paraprofessional
Patent Attorney
Hospital President
Ambulatory Care Outreach Coordinator
Chiropractor
Obstetrician (DO)

Infectious Disease Physician (MD)

Family Medicine Physician (MD)

Military Scientist

On-Board Medical Diagnostics Specialist

Science Teacher (Elementary or High School)

Clinical Microbiologist

Clinical Chemist

Clinical Virologist

Clinical Mycologist

Specialist in Blood Banking

Chemistry Supervisor

Infection Control Specialist

Public Health Virologist

Public Health Inspector

Laboratory Manager

Research Director

Quality Control Specialist

Hospital Information Services Director

Industrial Design Engineer

Medical Equipment Engineer

Health Care Attorney

Corporate Vice President

Hospital Systems Group President

On-Board Diagnostics Services Director

Surgeon (MD)

Cardiologist (MD)

Pediatrician (MD)

Health Care Legislative Assistant

Emergency Medicine Technician (EMT)

Acupuncturist

Forensic Scientist

Physician Assistant (Primary Care, Dermatology, Psychiatry)

Anesthesiologist (MD)