

# HEALTH CARE RESEARCH & DISCOVERY

## CAREER PATHWAY



### MEDICAL LABORATORY SCIENTIST GUIDE

#### Planning a HealthCare Research & Discovery Pathway with the BSHS Degree

##### Career Description

Medical Laboratory Scientists (also known as Clinical Laboratory Scientists) play a crucial role in the detection, diagnosis and treatment of diseases in patients. Laboratory tests help determine the presence, extent, or absence of disease and monitor the effectiveness of treatment. They perform complex chemical, biological, hematological, immunologic, microscopic and bacteriological tests, requiring significant analytical and independent judgment. Medical Laboratory Scientists have a more extensive theoretical knowledge base which allows them to perform laboratory procedures, evaluate and interpret results, integrate data, problem solve, consult, and develop new test methods.

- *The American Society for Clinical Laboratory Science*

##### Work Environment

Although they are not often personally involved with patients, Medical Laboratory Scientists play a crucial role in the process of providing personalized care. They can be found in hospital clinical laboratories, veterinary clinics, forensic or public health laboratories, as well as pharmaceutical industries, biotechnology companies, and many other facilities. This type of profession may require individuals to make decisions independently, meet strict deadlines, and be exposed to diseases and bodily fluids. Medical Laboratory Scientists also are more likely to advance to management positions.

- *Explore Health Careers & The American Society for Clinical Laboratory Science*

##### Education Needed

Many employers require Medical Laboratory Scientists to obtain a baccalaureate degree and complete an accredited MLS certificate program by the National Accrediting Agency for Clinical Laboratory Sciences (NAACLS). After graduating, students receive certificates which qualify them to sit for the national certification examination. Some states require licensure in addition to certification. Additionally, some employers do not require certification but will consider a baccalaureate degree in a science or health related field (e.g. chemistry or microbiology). Masters and doctoral programs are also available in medical laboratory science for those who wish to further their education.

- *The American Society for Clinical Laboratory Science*

##### Important Resources:

- [Exploring Medical Laboratory Science and Medical Laboratory Technician \(Mayo Clinic\)](#)
- [Laboratory Science Careers](#)
- [American Society for Clinical Laboratory Science](#)
- [American Society for Clinical Pathology](#)
- [Medical Laboratory Sciences at University of MN Twin Cities](#) (Capstone Option)
- [Medical Laboratory Sciences Program at Mayo Clinic School of Health Sciences](#) (Capstone Option)

---

##### About the About Health Care Research and Discovery Pathway

Tomorrow's groundbreaking health care protocols result from today's research and discovery. Outstanding research opportunities for all UMR students prepare them for careers that apply rigorous investigation and analysis to the grand health care challenges of the 21st century.

## PREREQUISITE AND RECOMMENDED COURSEWORK

### Chemistry

CHEM 1331	Chemical Structures and Properties
CHEM 1333	Chemical Reactivity
CHEM 2231	Organic Chemistry II
CHEM 2132	Organic Chemistry II Lab
CHEM 2335	General Chemistry II
CHEM 2336	General Chemistry II Lab

### Biology

BIOL 2311	Integrative Biology
BIOL 2331	Anatomy & Physiology I
BIOL 3332	Anatomy & Physiology II
BIOL 3344	Microbiology

### Quantitative Reasoning

MATH 1161	Introduction to Statistics
MATH 1171	Calculus, Modeling, and Data I (required by UMTC)

### Recommended Upper Division Science

BIOL 3311	Genetics (required by UMTC)
BIOC 3321	Biochemistry (required by UMTC)
BIOL 4312	Advanced Topics in Molecular and Cellular Biology and Genetics
BIOL 4364	Immunology

### Additional Required Courses for UMTC

MLSP 1010	Orientation to MLS (online)
MLSP 5011W	Professional Issues (online)
MLSP 5311	Laboratory Techniques (in-person/summer option available)

*Note: This list does not include all courses needed to graduate with a Bachelors of Science in Health Sciences. Please work with your success coach to create a detailed graduation plan that includes major, degree, and MLS program prerequisites for the school(s) you plan to apply to.*

*Please review [Mayo Clinic School of Health Science MLS Program](#) complete list of admission requirements. See the [MLS Sample Plan \(3+1 for MCSHS\)](#)*

*Please review [University of MN Twin Cities MLS Certificate option](#) complete list of admission requirements. See the [MLS Sample Plan \(3+1.5 with UMTC\)](#)*

## **BSHS Capstone Experience**

The Capstone experience is very specific for students who pursue the Medical Laboratory Science track. Students are eligible to apply for the certificate program offered through the Mayo Clinic School of Health Science (MCSHS) in Rochester or through the University of Minnesota Twin Cities campus. Students will commit their entire Capstone experience to certification work and clinicals either on the UMTC campus or at the Mayo Clinic in Rochester. Both capstone options require extensive planning. Students pursuing the MCSHS option should follow the [Mayo 3+1 Comprehensive Advising Plan](#) and work closely with their Student Success Coach, UMR One Stop Student Services, Mayo Clinic School of Health Sciences before, during, and after their capstone experience.

## **University of Minnesota - Twin Cities MLS Certificate Program**

### *Program Overview*

Once admitted, UMR students will spend their final year of their undergraduate degree on the Twin Cities campus. The program consists of two full-time semesters of professional-level coursework, and one full-time semester of clinical experience during the following summer or fall semester.

### *Admission Highlights*

- Admission into the MLS professional program is a competitive process. Students must meet the minimum academic and non-academic requirements of the program.
- Students are evaluated on their strong academic background in the sciences, critical reasoning abilities, personal integrity and ethics as well as a commitment to promoting the health and well-being of individuals and society.
- Students must complete ALL prerequisite requirements by the end of spring term to allow processing of grades.

### *Application Process*

Students must follow these [steps to apply](#). Applications have an early February priority deadline. For any college level coursework taken at another institution official transcripts must be sent MLS Certificate Admissions for Review. MLS program can contact the UMR Registrar to have external UofM transcripts sent to the MLSP Admissions.

### *Non-Academic Requirements for Admissions*

- Technical Standards are the knowledge, skill, and attitude/behavioral requirements necessary for successful admission and continuance by students for the MLS program. They are also necessary to acquire or demonstrate competence in a discipline as complex as diagnostic laboratory medicine.
- All students (including international students) must meet immunization requirements as a condition of enrollment.
- Complete an annual criminal background study during enrollment of the program.
- All MLS students are required to have health insurance while they are attending/participating in all course work including clinical experience rotations.

### *Interview & Skills Assessment*

The interview and Skills Assessments are by invitation only, and occur in early March on the University of Minnesota Twin Cities campus.

## Mayo Clinic School of Health Science MLS Program

### *Program Overview*

The 10.5 month program consists of didactic lectures as well as hands-on clinical rotations. The entire program earns the student 35 academic credit hours with courses in hematology, clinical chemistry, immunology, clinical microbiology, molecular diagnostics, transfusion medicine, laboratory management, quality control, and method validation. Students are then able to perform clinical laboratory testing in the context of the work setting.

### *Admissions Highlights*

- Two paths to admissions:
  - Students are eligible to apply for the 3+1 Medical Laboratory Science Program for their capstone experience. Students in this program receive a certificate in medical laboratory science from Mayo Clinic School of Health Sciences and a baccalaureate degree from University of Minnesota Rochester.
  - Students with a baccalaureate degree may apply directly for the 4+1 Medical Laboratory Science Program. Students enrolling in the post-baccalaureate receive a certificate in Medical Laboratory Science from Mayo Clinic.
- Candidates are evaluated by a selection committee based on academic performance, written and verbal communication, interview, letters of recommendation, and knowledge of the profession.

### *The Application Process*

Acceptance to the program is on a rolling admission. Applications are accepted beginning Sept. 1 with a Dec. 1 deadline for the program starting the following July. Applications are accepted throughout the year, but applicants are encouraged to apply as soon as possible. Applications may close earlier depending on how quickly the program slots are filled. Applicants must complete an online application, submit an essay and official transcripts, and pay an application fee.

### *Letter of Evaluation/Recommendation*

Two recommendation writers are required. It is preferred that references, at a minimum, complete the online recommendation section where they will rate certain qualities. Additional comments can also be submitted as part of that process. Students requesting a letter from UMR faculty or staff must complete the [Reference Authorization Form](#).

### *Interview*

Each application is carefully reviewed by a selection committee. Candidates are evaluated based on academic performance, written and verbal communication, interview, letters of recommendation, and knowledge of the profession. Individuals considered for an appointment are invited to interview. The interview process includes a behavioral panel interview followed by individual faculty interviews. It includes a tour of the facilities and typically lasts about three to four hours. Payment of the \$250 slot-retention fee is required upon acceptance into the program. Students can practice interviewing with their Student Success Coach or with the online resource [Interview Stream](#).