

Medical Laboratory Science

Department Information

- **Department Location:**
Sudro Hall
- **Department Phone:**
701-231-8713
- **Department Web Site:**
www.ndsu.edu/alliedsciences/
- **Credential Offered:**
B.S.
- **Official Program Curriculum:**
bulletin.ndsu.edu/undergraduate/program-curriculum/medical-laboratory-science/

Medical laboratory scientists use analytical procedures and complex instruments to perform tests on blood and body fluids that assist physicians in patient diagnosis and treatment, disease monitoring and prevention. Because the tests performed are so vital in medical treatment, the medical laboratory scientist must know how to perform these tests with scientific precision and accuracy, but also be well educated in the underlying scientific principles and clinical significance of the results.

Background Information

Laboratory work plays a vital role in the daily routine of the medical laboratory scientist and, while usually not having direct contact with patients, the MLS enjoys being a vital member of the health care team. Clinical chemistry, hematology, microbiology, urinalysis, immunohematology and immunology are the principle areas of practice in the medical laboratory. In addition to laboratory testing and analysis, a medical laboratory scientist may also monitor test quality, supervise personnel, conduct research and develop new tests and methodologies.

Career Opportunities

Certified medical laboratory scientists may readily find employment throughout the country in hospitals, medical and diagnostic laboratories, and other healthcare services. According to the U.S. Department of Labor Bureau of Labor Statistics (<https://www.bls.gov/ooh/healthcare/medical-and-clinical-laboratory-technologists-and-technicians.htm>), employment of clinical laboratory workers is expected to grow faster than average for all occupations through 2026. This increase is attributed to growth in the aging population leading to a greater need to diagnose medical conditions through laboratory procedures, as well as, prenatal testing for various genetic conditions which has become increasingly common. Mean annual wages for medical laboratory scientists/technologists was \$62,440 in 2016 (www.bls.gov/oes/2016/may/oes292011.htm).

The Program

North Dakota State University's Bachelor of Science degree, major in medical laboratory science, includes three years of academic courses on campus followed by an 11 to 12 month full-time professional-level internship in an affiliated hospital-based school of medical laboratory science. Graduates are eligible to take a national certification exam administered by the American Society for Clinical Pathology Board of Certification (<https://www.ascp.org/content/Board-of-Certification>). NDSU graduates have enjoyed excellent employment opportunities and pass rates on the ASCP BOC exam. To remain certified, medical laboratory scientists must earn continuing education credits.

Students interested in pursuing medical laboratory science should have an interest and aptitude in the sciences, particularly chemistry and biology. College courses include college algebra, biological sciences, microbiology, general, organic and biochemistry and statistics, along with general education courses. Transfer students need to successfully complete a minimum of 20 resident credits at NDSU prior to beginning an internship. The full-time internship consists of classroom and clinical bench instruction in clinical chemistry, hematology, immunohematology, microscopy/urinalysis, microbiology, serology, phlebotomy, education, management, and research methods.

Internship Admission

Internship application occurs annually in the fall. Pre-MLS students who will have completed all courses on campus by start of the internship and meet grade and grade point average (GPA) requirements may be eligible to apply for the professional-level internship. This internship occurs onsite within an affiliated hospital-based MLS program. NDSU maintains affiliation with seven medical laboratory science programs. These include: Sanford Medical Center (Fargo, ND), Mercy Medical Center (Sioux City, IA), Mercy College of Health Sciences (Des Moines, IA), Methodist Hospital (Omaha, NE), St. Luke's College (Sioux City, IA), St. Luke's Hospital (Cedar Rapids, IA), and Colorado Center for Medical Laboratory Science (Aurora, CO). All affiliated programs are accredited by the National Accrediting Agency for Clinical Laboratory Science. (<https://naacsls.org/Students.aspx>)

Internship admission is selective. Admission criteria are established by each hospital program and generally includes the student's cumulative and science GPA (a minimum of 2.50-3.00 is required and varies by hospital program), courses completed, related experience, references and an interview. In addition, students must comply with criminal background and student conduct requirements. In order to participate in an MLS internship, students must be able to comply with program-designated essential functions, or request reasonable accommodations to meet these essential functions. Requirements include a sound intellect, good motor skills, eye-hand coordination and dexterity, effective communication skills, visual acuity to perform

macroscopic and microscopic analyses, or read procedures and graphs, and behavioral skills such as organization, time management and good judgment, even in emergency situations.

It is highly recommended that students interested in the MLS major meet with a medical laboratory science advisor to discuss degree and major requirements, internship admission, and create an individualized plan of study at least one year prior to their anticipated internship application. Information about the profession, curriculum, internship, and advising contacts are available from the NDSU Department of Allied Sciences (<https://www.ndsu.edu/alliedsciences>).

Plan of Study

Please note this is a sample plan of study and not an official curriculum. Actual student schedules for each semester will vary depending on start year, education goals, applicable transfer credit, and course availability. Students are encouraged to work with their academic advisor on a regular basis to review degree progress and customize an individual plan of study.

First Year		
Fall	Credits	Spring
		Credits
BIOL 150	3	CHEM 122
BIOL 150L	1	CHEM 122L
CHEM 121	3	COMM 110
CHEM 121L	1	CSCI 114
CHP 190	2	ENGL 120*
MATH 103	3	Humanities & Fine Arts (A) & Global Perspective (G)
ENGL 110*	4	
	17	16
Second Year		
Fall	Credits	Spring
		Credits
BIOL 220	3	BIOL 221
BIOL 220L	1	BIOL 221L
CHEM 341**	3	CHEM 342**
CHEM 341L**	1	MICR 460
MLS 200	1	MICR 460L
MICR 350	3	STAT 330
MICR 350L	2	
Wellness (W)	2	
	16	15
Third Year		
Fall	Credits	Spring
		Credits
BIOC 460	3	Humanities & Fine Arts (A)
BIOC 460L	1	MLS 435
BIOL 315	3	MICR 463
BIOL 315L	1	Social & Behavioral Sciences (B) & Cultural Diversity (D)
MICR 470	3	Upper Division Writing (C; 300-400 level)
MICR 471	2	
Social & Behavioral Sciences (B)	3	
	16	13

Fourth Year			
Fall	Credits Spring	Credits Summer	Credits
MLS 496 ^{***}	12 MLS 496 ^{***}	12 MLS 496 ^{***}	6
	12	12	6

Total Credits: 123

- * All students are required to successfully earn credit for Engl 110 and Engl 120. Enrollment is based on English Placement. Upon completion of Engl 120 with a "C" grade or higher, students will be awarded placement credit (4) for Engl 110.
- ** Students have the option to complete Chem 240, Bioc 460, Bioc 460L, & Bioc 461 in place of Chem 341, Chem 341L, Chem 342, Bioc 460 & Bioc 460L.
- *** Credits earned in an affiliated, NAACLS accredited hospital program; one year in length, including one summer session.