MEDICAL LABORATORY SCIENCE

Undergraduate Degree Offered
B.S.M.L.S · Bachelor of Science in Medical Laboratory Science

Areas of Study
Chemistry; Hematology and Hemostasis; Immunohematology (Blood Bank); Microbiology, Parasitology and Mycology; Molecular Diagnostics; Urine and Body Fluid Analysis; Laboratory Operations (including phlebotomy)

Length of Program
Eleven (11) months - The program consists of 45 semester hours and begins in late May of each year. Graduates are eligible to apply for ASCP board certification as medical laboratory scientists upon completion of the program.

The MLS Program has three phases: student laboratory (13 weeks) on the Omaha or Kearney Campus (University of Nebraska at Kearney), first clinical rotation (17 weeks), and second clinical rotation (17 weeks) at assigned clinical locations. At each phase of the program, students must learn to integrate practice with theoretical knowledge and understanding.

Description
The MLS Program provides patient-centered educational opportunities, with theoretical knowledge and practical experience in hematology, clinical chemistry, microbiology, immunohematology (blood bank), immunology, molecular diagnostics and management. The program emphasizes laboratory principles and procedures, clinical significance and application, principles and practice of quality assurance, principles of laboratory management and supervision, safety, instructional methods, and computer applications.

Through affiliated programs, students have the option of obtaining their clinical education at one of several clinical affiliate sites (http://www.unmc.edu/alliedhealth/education/mls/about/affiliates.html). Students are not accepted into the MLS program if clinical experience cannot be guaranteed.

Degree Requirements
All students must successfully complete the entire curriculum of the MLS Program in order to be considered for the Bachelor of Science degree in Medical Laboratory Science. Students must have completed a total of 120 semester credit hours to qualify for the baccalaureate degree from the University of Nebraska Medical Center.

Certification
Graduates of the UNMC Medical Laboratory Science Program are eligible to take a national examination administered by the Board of Certification (BOC), the separate, certifying body within the organizational structure of the American Society for Clinical Pathology (ASCP). Those who pass the exam in medical laboratory science may use the initials, MLS(ASCP)CM, after their name to show they are proficient in their field.

Additional information is available by contacting
ASCP Board of Certification (https://www.ascp.org/content/board-of-certification)
Phone: 312.738.1336, ext. 1344
Email: boc@ascp.org

About the Profession
Medical Laboratory Scientists (formally known as Clinical Laboratory Scientists or Medical Technologists) are responsible for the development, performance, evaluation of laboratory testing that is needed in patient medical care and clinical research. They analyze samples of blood, tissue, and body fluids using cutting-edge technology and a variety of analytical techniques. They are at the forefront of healthcare guiding other health care professionals. 70-80% of all medical decisions are based on laboratory results. A Bachelor of Science degree in Medical Laboratory Science will give you the ability to work in many different environments and several areas of expertise.

Medical Lab Scientists work in many environments:
- Hospitals
- Clinics
- Reference Laboratories
- Forensic Laboratories
- Research
- Veterinary Clinics
- Industry
- Public Health
- Pharmaceutical Laboratories

Areas of Expertise:
- Chemistry
- Hematology
- Immunology/ Serology
- Microbiology/ Virology
- Blood Banking
- Toxicology
- Urinalysis
- Molecular Diagnostics

Career Outlook
Medical laboratory scientists find challenging employment in a variety of laboratory settings. As vital members of the health care team, they enjoy assisting practitioners during the care, diagnosis and treatment of patients. Medical laboratory scientists can work in all areas of laboratories or specialize in one of several sections of a clinical laboratory such as chemistry, transfusion medicine, hematology, immunology, and microbiology.

You can be employed in hospitals, clinics, doctors’ offices, research facilities, industry, public health institutions, forensic or pharmaceutical laboratories, and animal clinics.

National Outlook
- 8.7% vacancy rate (2014)*
- 19.2% expected retirement rate between 2014-19*
- 16% job growth (2014-24)**
Advancement Opportunities

Medical laboratory scientists have many opportunities for advancement, with supervisory skills and with technical expertise in such areas as advanced immunology, cell marker technology, transplantation, toxicology, cancer research, and cytogenetics.

You also can obtain an advanced degree related to other fields of laboratory medicine including forensics, genetics, microbiology, medical informatics, public health, adult education, or business administration.

An advanced practice degree is in development: Doctorate in Medical Laboratory Science. Learn more about its development and scope of practice.

Other Opportunities

Medical laboratory scientists are very versatile in what positions they can fill within the lab and beyond its walls. For example, in industry, clinical laboratory scientists are needed for product development, research, marketing, sales, and quality assurance.

Admissions

Medical Laboratory Science

Admission Requirements


Enrollment in each program is limited and competitive. The admissions committee of each program, composed of program faculty and administration, evaluates the qualifications of each applicant and makes the final selections for admission. For consideration for admission, students must meet the essential requirements (http://www.unmc.edu/alliedhealth/education/mls/admission/essential-requirements.html) and complete prerequisites (http://www.unmc.edu/alliedhealth/education/mls/admission) by the end of the spring semester prior to enrolling at UNMC for their senior year.

Required Minimum GPAs:
1. Cumulative GPA 2.5
2. Cumulative Science GPA 2.5 and/or 20 most recently completed biology/chemistry semester hours 2.5

Admission to the senior year of our Medical Laboratory Science Program requires the applicant to successfully complete the following prior to matriculation:

University / College Required Prerequisites:
Successful completion of 77 semester hours (or equivalent quarter hours) at an accredited college or university. Only 66 semester hours (or equivalent quarter hours) can be accepted from a community college. A total of 11 semester hours (or equivalent quarter hours) must be completed at a 4-year regionally-accredited college or university. Upper level science courses taken at a 4-year institution are strongly recommended. Credits for courses in which grades below "C-" were received, are not accepted in fulfillment of the individual course prerequisites listed below. The 77 semester hours must include the following:

**Biological Sciences (16 semester hours) including:**
1. Microbiology (with lab preferred)
2. Immunology (CAHP offers an on-line course (https://www.unmc.edu/alliedhealth/courses/mls.html) in Fall & Spring)

**Chemistry (14 semester hours) including:**
Minimum of two upper level (200 level or above) Chemistry courses. Upper level chemistry courses may include Organic Chemistry I, Organic Chemistry II, Biochemistry or Analytical Chemistry. Biochemistry with a lab recommended.

**English Composition (3 semester hours)**
**Mathematics (3 semester hours) - Statistics is preferred.**

Advanced Placement:
A maximum of six College Level Examination Program (CLEP), Advanced Placement (AP) and/or Defense Activity for Non-Traditional Support (DANTES) semester hours will be accepted for transfer. Any CLEP, AP or DANTES semester hours will not be accepted towards prerequisite science courses.

Suggested Electives:
Physiology and Molecular Biology are strongly recommended. Additional recommended courses include Cell Biology, Introduction to Hematology, Pathogenic Microbiology, and Parasitology.

Evaluation of Applicants:
Applicants are evaluated for admission on several levels, including, but not limited to:
1. Cumulative GPA
2. Science GPA or most recently completed 20 biology/chemistry hours
3. Course load/course levels
4. Writing ability demonstrated through personal essay and narrative, and writing skills demonstrated during interview
5. Communication skills demonstrated during interview

An applicant may strengthen their application through job shadowing experience or direct observation of a clinical laboratory, additional coursework in science and mathematics and demonstrating academic ability through the completion of higher level courses with a laboratory component (such as the suggested electives).

Get complete application details on How to Apply (https://www.unmc.edu/alliedhealth/education/mls/admission/apply.html).

Application Deadline (https://www.unmc.edu/alliedhealth/education/deadlines.html)

Curriculum

Note: Degree Completion Advancement (MLT to MLS) will have a different schedule from what is listed below, but are required to complete the listed courses.

The curriculum includes theory, practical application and technical performance experiences gained through lectures, clinical case studies, writing activities, small group work, independent study, and supervised laboratory experiences. The patient-oriented learning environment includes all areas of a full-service, accredited clinical pathology laboratory.

Required courses totaling 45 semester hours of credit include:

**Fall**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>Completed May-August (Student Laboratory):</td>
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<tr>
<td>MLS 407</td>
<td>2</td>
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<tr>
<td>CLINICAL LABORATORY OPERATIONS</td>
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<tr>
<td>Course Code</td>
<td>Course Title</td>
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<tr>
<td>MLS 408</td>
<td>INTRODUCTION TO CLINICAL HEMATOLOGY</td>
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<tr>
<td>MLS 409</td>
<td>INTRODUCTION TO MEDICAL MICROBIOLOGY</td>
</tr>
<tr>
<td>MLS 410</td>
<td>INTRODUCTION TO CLINICAL CHEMISTRY AND URINALYSIS</td>
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<tr>
<td>MLS 411</td>
<td>INTRODUCTION TO CLINICAL IMMUNOHEMATOLOGY</td>
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Completed August-November (Clinical Rotation I):

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<tbody>
<tr>
<td>MLS 413</td>
<td>CLINICAL ENDOCRINOLOGY AND TOXICOLOGY</td>
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<td>MLS 414</td>
<td>CLINICAL CHEMISTRY AND URINALYSIS I</td>
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<td>MLS 416</td>
<td>CLINICAL HEMATOLOGY I</td>
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<td>MLS 418</td>
<td>CLINICAL MICROBIOLOGY I</td>
<td>2</td>
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<td>MLS 420</td>
<td>CLINICAL IMMUNOLOGY, SEROLOGY AND MOLECULAR DIAGNOSTICS</td>
<td>2</td>
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<td>MLS 422</td>
<td>CLINICAL IMMUNOHEMATOLOGY I</td>
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<td>MLS 430</td>
<td>CLINICAL LABORATORY MANAGEMENT I</td>
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<td>MLS 442</td>
<td>CLINICAL IMMUNOHEMATOLOGY LABORATORY PRACTICUM I</td>
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<tr>
<td>MLS 444</td>
<td>CLINICAL CORE LABORATORY PRACTICUM I</td>
<td>1</td>
</tr>
<tr>
<td>MLS 448</td>
<td>CLINICAL MICROBIOLOGY LABATORY PRACTICUM I</td>
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**Credit Hours**

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**Spring**

Completed November-May (Clinical Rotation II):

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<th>Course Code</th>
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<tr>
<td>MLS 412</td>
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<td>MLS 415</td>
<td>CLINICAL CHEMISTRY AND URINALYSIS II</td>
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<td>MLS 417</td>
<td>CLINICAL HEMATOLOGY II</td>
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<td>MLS 419</td>
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<td>MLS 423</td>
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<td>MLS 443</td>
<td>CLINICAL IMMUNOHEMATOLOGY LABORATORY PRACTICUM II</td>
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<td>MLS 445</td>
<td>CLINICAL CORE LABORATORY PRACTICUM II</td>
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<tr>
<td>MLS 449</td>
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**Credit Hours**

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**Total Credit Hours**

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<td>43</td>
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**Academic Calendar**

**MLS 2019-2020 Academic Calendar**

**Fall 2019**

- May 21: Orientation
- May 22: First Day of Fall Classes
- May 27: Memorial Holiday (no classes)
- May 27: Last Day to Drop/Add Courses for Fall
- July 4: Independence Day (no classes)
- September 2: Labor Day (no classes)
- October 18: Last Day to WITHDRAW from Classes

- November 28-30: Thanksgiving Break
- December 20: Last Day of Fall

**Spring 2020**

- January 13: First Day of Spring Classes
- January 19: Last Day to Drop/Add Classes for Spring
- January 20: Martin Luther King Holiday (No Classes)
- February 10: Deadline for filing for May Graduation
- March 22: Spring Break
- April 1: Last Day to WITHDRAW from classes
- May 8: Last Day of Spring