

DIAGNOSTIC SCIENCE MAJOR: MEDICAL LABORATORY SCIENCE OPTION (B.S.)

<https://www.unh.edu/program/bachelor-science/diagnostic-science-medical-laboratory-science>

Description

The Diagnostic Science program aims to develop the next generation of diagnostic professionals who demonstrate innovation and compassion to advance healthcare. Through interdisciplinary education and a commitment to critical inquiry, our graduates will become pioneers in identifying and solving complex health challenges - driving better outcomes for individuals and communities.

This degree option is designed for students to be eligible for the American Society for Clinical Pathology (ASCP) Board of Certification Medical Laboratory Scientist generalist examination.

Additionally, students complete the medical laboratory science internship courses in their final semester at an affiliated clinical laboratory. This pathway ensures the student completes all required electives and credit requirements needed for graduation.

The Medical Laboratory Science (MLS) option involves coursework and an applied learning experience at an affiliated hospital laboratory.

The sequence of courses offered in this option fulfills programmatic accreditation requirements outlined by the National Accrediting Agency for Clinical Laboratory Science.

Requirements

Degree Requirements

Minimum Credit Requirement: 128 credits

Minimum Residency Requirement: 32 credits must be taken at UNH

Minimum GPA: 2.0 required for conferral*

Core Curriculum Required: Discovery & Writing Program Requirements

Foreign Language Requirement: No

All Major, Option and Elective Requirements as indicated.

*Major GPA requirements as indicated.

Major Requirements

Code	Title	Credits
Required Courses		
<i>Foundation Courses</i>		
CHEM 403	General Chemistry I	4
CHEM 404	General Chemistry II	4
CHEM 545 & CHEM 546	Organic Chemistry and Organic Chemistry Laboratory	5
BIOL 528	Applied Biostatistics I	4
<i>Bioscience Core Courses</i>		
BMS 503 & BMS 504	General Microbiology and General Microbiology Laboratory	5

BIOL 411	Introductory Biology: Molecular and Cellular	4
BMS 507	Human Anatomy and Physiology I	4
BMS 508	Human Anatomy and Physiology II	4
BMCB 658 & BMCB 659	General Biochemistry and General Biochemistry Lab	5
GEN 604	Principles of Genetics	4

<i>Diagnostic Science Core Courses</i>		
MCBS 401	Professional Perspectives in Molecular, Cellular, and Biomedical Sciences	1
BMS 560 & BMS 561	Body Fluids and Body Fluids Laboratory	4
BMS 602 & BMS 603	Pathogenic Microbiology and Pathogenic Microbiology Laboratory	5
BMS 642 & BMS 643	Clinical Immunology and Serology and Clinical Serology Laboratory	4
BMS 644 & BMS 645 & BMS 646	Clinical Hematology and Clinical Hematology Laboratory and Clinical Hemostasis	6
BMS 650	Molecular Diagnostics	4
BMS 656 & BMS 657	Immunohematology and Blood Banking Laboratory	4
BMS 658 & BMS 659	Medical Biochemistry and Clinical Chemistry Laboratory	5
BMS 720 & BMS 721	Mycology, Parasitology, and Virology and Mycology, Parasitology, and Virology Laboratory	5

<i>Medical Laboratory Science Option Courses</i>		
BMS 610	Biomedical Lab Management ¹	4
BMS 640	Phlebotomy Theory ¹	2
BMS 751	Advanced Clinical Microbiology Internship ²	4
BMS 752	Advanced Hematology Internship ²	4
BMS 753	Advanced Immunohematology Internship ²	4
BMS 754	Advanced Clinical Chemistry Internship ²	4

Total Credits 103

Code	Title	Credits
<i>Approved Elective Courses</i>		
BMS 623	Histology: Microscopic Cellular Structure and Function	4
BMS 641	Phlebotomy Clinical Internship	1
BMS 702	Endocrinology	4
BMS 704	Pathologic Basis of Disease	4
BMS 711	Toxicology	4
BMS 719	Host-Microbe Interactions	4
BMS 740	Human Microbiome	4
BMS 749	Case Studies in Hematology and Immunology	2
BMS 750	Case Studies in Microbiology	2
BMS 790	Undergraduate Teaching Experience ³	1
BMS 799H	Senior Honors Thesis ⁴	1
BMS 799	Senior Thesis ⁴	1
BMCB 760	Pharmacology	4
GEN 706	Human Genetics	4
SOC 635W	Medical Sociology	4

¹ Students are required to take this course to be eligible for the clinical internship.

² Students must complete this course to be eligible for Medical Laboratory Science (ASCP) examination.

³ To be considered a capstone, students must complete two semesters of this course after acquiring 90 credits and senior status.

⁴ Students must complete a minimum of 4 credits for this course to count as an elective.

Degree Plan

Sample Degree Plan

This sample degree plan serves as a general guide; students collaborate with their academic advisor to develop a personalized degree plan to meet their academic goals and program requirements.

First Year

Fall		Credits
MCBS 401	Professional Perspectives in Molecular, Cellular, and Biomedical Sciences	1
BMS 507	Human Anatomy and Physiology I	4
ENGL 401	First-Year Writing	4
CHEM 403	General Chemistry I	4
Discovery course		4
Credits		17
Spring		
BMS 508	Human Anatomy and Physiology II	4
BIOL 411	Introductory Biology: Molecular and Cellular	4
CHEM 404	General Chemistry II	4
BIOL 528	Applied Biostatistics I	4
Credits		16

Second Year

Fall		
BMS 503 & BMS 504	General Microbiology and General Microbiology Laboratory	5
GEN 604	Principles of Genetics	4
Discovery Course (Writing Intensive)		4
Discovery Course		4
Credits		17
Spring		
BMS 602 & BMS 603	Pathogenic Microbiology and Pathogenic Microbiology Laboratory	5
BMS 560 & BMS 561	Body Fluids and Body Fluids Laboratory	4
CHEM 545 & CHEM 546	Organic Chemistry and Organic Chemistry Laboratory	5
BMS 640	Phlebotomy Theory	2
Credits		16

Third Year

Fall		
BMS 650	Molecular Diagnostics	4
BMCB 658 & BMCB 659	General Biochemistry and General Biochemistry Lab	5
BMS 644 & BMS 645 & BMS 646	Clinical Hematology and Clinical Hematology Laboratory and Clinical Hemostasis	6
Credits		15
Spring		
BMS 642 & BMS 643	Clinical Immunology and Serology and Clinical Serology Laboratory	4
BMS 720 & BMS 721	Mycology, Parasitology, and Virology and Mycology, Parasitology, and Virology Laboratory	5

BMS 610	Biomedical Lab Management	4
Discovery Course		4
Credits		17
Fourth Year		
Fall		
BMS 658 & BMS 659	Medical Biochemistry and Clinical Chemistry Laboratory	5
BMS 656 & BMS 657	Immunohematology and Blood Banking Laboratory	4
Major Elective (BMS 749 and 750 recommended for Medical Laboratory Science option students)		4
Discovery		4
Credits		17
Spring		
BMS 751	Advanced Clinical Microbiology Internship	4
BMS 752	Advanced Hematology Internship	4
BMS 753	Advanced Immunohematology Internship	4
BMS 754	Advanced Clinical Chemistry Internship	4
Credits		16
Total Credits		131

Student Learning Outcomes

Program Learning Outcomes

- Demonstrate an understanding of foundational knowledge in biochemistry, cell biology, genetics, and clinical science
- Apply scientific and statistical methods to critically evaluate and draw conclusions from experimental evidence or clinical data
- Use evidence-based strategies to troubleshoot unexpected experimental outcomes or problem solve in clinical scenarios
- Evaluate the reliability of laboratory results using pertinent quality control and quality assurance data
- Demonstrate effective written and verbal communication skills to effectively communicate scientific and clinical data
- Correlate clinical and laboratory data to patient diagnosis and prognosis
- Perform procedures routinely completed in clinical laboratories within acceptable limits of precision and accuracy.
- Exhibit attitudes, behaviors, and ethics expected of entry-level medical professionals
- Describe essential principles of education and laboratory management.
- Develop an awareness of the need for continuing education amongst medical laboratory professionals