BACHELOR OF SCIENCE IN MEDICAL LABORATORY SCIENCE

Overview

Medical Laboratory Programs

Laboratory data plays an important role in the detection, diagnosis, and treatment of disease. Laboratory scientists perform complex tests to aid physicians and other healthcare providers in the prevention, treatment, and monitoring of disease states.

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Medical Laboratory Science (BS-MLS) Curriculum

The medical laboratory science program is a four-year program leading to a Bachelor of Science degree in Medical Laboratory Science (BSMLS). Students in the program must complete and provide records of their immunizations, including the hepatitis B immunization series.

All course work in the MLS program must be completed with a minimum grade of "C". Students must maintain an overall GPA of 2.75 and a GPA of 2.75 in all MLS courses.

The MLS program follows a "3+1" format. Students complete university general education requirements and pre-professional courses in medical laboratory science, general chemistry, and biological sciences, during the first three years of the program. The final year of the program is completed at an accredited MLS hospital based internship program. Upon successful program completion, graduates are qualified to take the certification examination offered through ASCP and become certified as MLS (ASCP).

Medical laboratory scientists perform, interpret, and report medical tests ranging from routine to complex. They operate and troubleshoot complex analytical instrumentation and perform sophisticated computations to ensure accurate results.

Medical laboratory scientists hold positions as laboratory managers, department supervisors, and technical consultants. In addition to traditional careers in hospitals and other medical facilities opportunities exist in education, research, and industry.

The diverse academic and clinical experience provided by the BSMLS curriculum provides graduates with a solid foundation for continued graduate studies in medicine and other chemical and biological fields of study.

MLS 3+1 Internship Guidelines

Students must apply for Medical Laboratory Science Internship year upon completion of the second year of the program or after completing 60-65 semester hours. Information on clinical affiliations and the application process is available from the program director. Students should apply for graduation at the beginning of the junior year to allow for evaluation of transcripts by an academic advisor in the Bitonte College of Health and Human Services. This application will help ensure that a requirements for internship and graduation have been fulfilled.

The University **does not** guarantee acceptance into the fourth year hospital based internship. Selection and acceptance are based on clinical site admission and selection criteria. Internship placement is competitive, and students are urged to maintain a minimum 3.0 GPA, especially in Chemistry, Biology and Medical laboratory Science courses. Students are encouraged to apply to all our affiliated programs, a list of these programs is available through the program director. Students should notify the program director upon their acceptance to a professional program.

Program Director
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COURSE	TITLE	S.H.
FIRST YEAR REQUIREMENT -STUDENT SUCCESS		
YSU 1500	Success Seminar	1-2
or YSU 1500S	Youngstown State University Success Seminar	
or HONR 1500	Intro to Honors	
General Education		
ENGL 1550	Writing 1	3-4
or ENGL 1549	Writing 1 with Support	
ENGL 1551	Writing 2	3
Gen Ed Math Course		
STAT 2601	Introductory Statistics	3-6
or STAT 2625	Statistical Literacy and Critical Reasoning	
or STAT 2625C	Statistical Literacy and Critical Reasoning with Co-Requisite Support	
Social Sciences (6 s.h.) Select 2 courses		6
Arts & Humanities (6 s.h.)		
HIST 2650	CL History of American Democracy	3
Select 1 Arts and Humanities course		3
Natural Science (7 s.h.) Met with BIOL 2601 and 1545/L required courses in the major		
General Education Electives (9 s.h.) 2 Courses met with CHEM 1510 and 1515 in the major		
Select 1 General Education Elective		3
Major Courses		
MLS 1501	Introduction to the Medical Laboratory Profession	2
MLS 1501L	Introduction to the Medical Laboratory Profession Laboratory	1
MLS 1502	Urinalysis and Body Fluids	2
MLS 1502L	Urinalysis and Body Fluid Laboratory	1
MLS 1503	Immunohematology	3
MLS 1503L	Immunohematology Laboratory	1
MLS 2601	Clinical Chemistry 1	2
MLS 2601L	Clinical Chemistry 1 Laboratory	1
MLS 2603L	Advanced Immunohematology Laboratory	1
MLS 2605	Molecular Diagnostics	2
MLS 3700	Clinical Chemistry 2	4
MLS 3701	Clinical Hematology 1	2
MLS 3701L	Clinical Hematology 1 Laboratory	1
MLS 3702	Clinical Hematology 2	2
MLS 3702L	Clinical Hematology 2 Laboratory	1
MLS 3704	Clinical Immunology and Serology	3
MLS 3704L	Clinical Immunology and Serology	1
MLS 3787	Diagnostic Microbiology	3
MLS 3787L	Diagnostic Microbiology Laboratory	2
Biology Courses		
BIOL 2601 & 2601L	General Biology 1: Molecules and Cells and General Biology I: Molecules and Cells Laboratory	4
BIOL 1545 & 1545L	Allied Health Anatomy and Physiology and Allied Health Anatomy and Physiology Laboratory	5
Chemistry Courses		

CHEM 1510 & 1510L	Chemistry for the Allied Health Sciences and Chemistry for the Allied Health Sciences Laboratory	4
CHEM 1515 & 1515L	General Chemistry 1 and General Chemistry 1 Laboratory	4
CHEM 1516 & 1516L	General Chemistry 2 and General Chemistry 2 Laboratory	4
CHEM 3719 & 3719L	Organic Chemistry 1 and Organic Chemistry 1 Laboratory	4
Internship Year		
MLS 4800	MLS Chemistry Clinical Experience	7
MLS 4801	MLS Hematology Clinical Experience	7
MLS 4802	MLS Immunohematology Clinical Experience	7
MLS 4803	MLS Microbiology Clinical Experience	7
MLS 4804	Miscellaneous Clinical Experience	7
Total Semester Hours		**120-125**

Year 1

Fall		**S.H.**
YSU 1500 or YSU 1500S or HONR 1500	Success Seminar or Youngstown State University Success Seminar or Intro to Honors	1-2
ENGL 1550 or ENGL 1549	Writing 1 or Writing 1 with Support	3-4
STAT 2601 or STAT 2625 or STAT 2625C	Introductory Statistics or Statistical Literacy and Critical Reasoning or Statistical Literacy and Critical Reasoning with Co-Requisite Support	3-6
BIOL 1545 & 1545L	Allied Health Anatomy and Physiology and Allied Health Anatomy and Physiology Laboratory	5
	Semester Hours	**12-17**
Spring		
ENGL 1551	Writing 2	3
BIOL 2601 & 2601L	General Biology 1: Molecules and Cells and General Biology I: Molecules and Cells Laboratory	4
CHEM 1510 & 1510L	Chemistry for the Allied Health Sciences and Chemistry for the Allied Health Sciences Laboratory	4
Any Gen Ed Social Science		3
	Semester Hours	**14**

Year 2

Fall		
CHEM 1515 & 1515L	General Chemistry 1 and General Chemistry 1 Laboratory	4
MLS 1501 & 1501L	Introduction to the Medical Laboratory Profession and Introduction to the Medical Laboratory Profession Laboratory	3
MLS 3704 & 3704L	Clinical Immunology and Serology and Clinical Immunology and Serology	4
Any Gen Ed Arts and Humanities		3
	Semester Hours	**14**
Spring		
CHEM 1516 & 1516L	General Chemistry 2 and General Chemistry 2 Laboratory	4
MLS 1502 & 1502L	Urinalysis and Body Fluids and Urinalysis and Body Fluid Laboratory	3
MLS 1503 & 1503L	Immunohematology and Immunohematology Laboratory	4
MLS 2601 & 2601L	Clinical Chemistry 1 and Clinical Chemistry 1 Laboratory	3
	Semester Hours	**14**
Summer		
MLS 3700	Clinical Chemistry 2	4
MLS 3701 & 3701L	Clinical Hematology 1 and Clinical Hematology 1 Laboratory	3
	Semester Hours	**7**

Year 3

Fall		
MLS 2603L	Advanced Immunohematology Laboratory	1
MLS 3702 & 3702L	Clinical Hematology 2 and Clinical Hematology 2 Laboratory	3
MLS 3787 & 3787L	Diagnostic Microbiology and Diagnostic Microbiology Laboratory	5
HIST 2650	CL History of American Democracy	3
	Semester Hours	**12**
Spring		
CHEM 3719 & 3719L	Organic Chemistry 1 and Organic Chemistry 1 Laboratory	4
MLS 2605	Molecular Diagnostics	2
Any Gen Ed Social Science		3
Any Gen Ed Elective		3
	Semester Hours	**12**
Summer		
MLS 4804	Miscellaneous Clinical Experience	7
	Semester Hours	**7**

Year 4

Fall		
MLS 4801	MLS Hematology Clinical Experience	7
MLS 4802	MLS Immunohematology Clinical Experience	7
	Semester Hours	**14**
Spring		
MLS 4803	MLS Microbiology Clinical Experience	7
MLS 4800	MLS Chemistry Clinical Experience	7
	Semester Hours	**14**
	Total Semester Hours	**120-125**

[1] General education courses must fulfill the requirements for the baccalaureate degree.

Learning Outcomes

The student learning outcomes for the medical laboratory programs (MLS-BS and MLT-AAS) are as follows:

- Graduates will be prepared to function as entry-level health care professionals in the medical laboratory as medical laboratory technicians and medical laboratory scientists. At entry level, the medical laboratory graduate will be able to demonstrate the ability to comprehend, apply and evaluate information relative to the medical laboratory profession.
- These learning outcomes include comprehension of the theory and the ability to apply and evaluate the didactics of hematology, clinical chemistry, immunohematology, microbiology, immunology, coagulation, molecular diagnostics, and other emerging diagnostics.
- Graduates will be prepared to function as entry-level health care professionals in the medical laboratory as medical laboratory technicians and medical laboratory scientists. Upon completion of the program,

graduates will demonstrate technical proficiency in laboratory applications.

- These psychomotor learning outcomes include the performance of laboratory procedures in hematology, clinical chemistry, immunohematology, microbiology, immunology, coagulation, molecular diagnostics, and other emerging diagnostics. The graduate will demonstrate proficiency in the functions of all phases of laboratory analysis (pre-analytical, analytical, and post-analytical processes).
- Graduates will demonstrate professional conduct and interpersonal communication skills consistent with the medical laboratory profession.
- Students will exhibit the ability to think critically across all 3700-level courses through the application of fundamental didactic and psychomotor skills to assess the medical relevance and significance of specific aspects of laboratory testing.