

BACHELOR OF SCIENCE IN MEDICAL LABORATORY SCIENCE

Program Director

Joan O'Connell-Spalla
(330) 941-1761
joconnellspalla@ysu.edu

Overview

Medical Laboratory Programs

Laboratory analysis plays an important role in the detection, diagnosis, and treatment of many diseases. Laboratory professionals perform a myriad of such tests to aid the physician in the management of disease.

For more information, contact Joan O'Connell-Spalla 330-941-1761
joconnellspalla@ysu.edu

MLS Internship Guidelines

Students should apply for Medical Laboratory Science Internship upon completion of the second year of the program or after completing approximately 60-65 semester hours. Application packets containing information on clinical affiliations and the application process are available from the program director or in the Department of Health Professions. Students should apply for graduation at the beginning of the junior year so their transcripts may be evaluated by an academic advisor in the Bitonte College of Health and Human Services. This application will help ensure that all of the requirements for internship and graduation have been fulfilled.

The University **does not** guarantee acceptance into the fourth year of hospital clinical internship. Selection and acceptance into a particular hospital program is based on that program's admission and selection process. Thus, students are selected by the hospital programs, which are very competitive. Students are urged to maintain a minimum 3.0 GPA, especially in all science and medical laboratory courses. To enhance their chances of acceptance into a medical internship, students are encouraged to apply to several accredited programs. A list of these programs is available through the program director. Students should notify the program director upon their acceptance by a professional program.

Medical Laboratory Science (BS-MLS) Curriculum

The medical laboratory science program is a four-year program leading to a Bachelor of Science degree with a major in Medical Laboratory Science. Students in the program must have a physical examination 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. Students receiving a total of 6 semester hours of "D" or "F" grades in MLS, biology or chemistry courses will be dismissed from the program. Readmission to the program is based on GPA and on the availability of space in the class.

The program follows the "3+1" format with the student completing a pre-professional phase of courses in clinical laboratory technology, general chemistry, biological sciences, organic and biochemistry, microbiology, immunology, and mathematics during the first three years of the program. The final year of the program is completed at an accredited MLS hospital program. Upon successful program completion, graduates are qualified to take the

certification examinations offered through ASCP and become certified as MLS (ASCP). Additionally, a MLT-to-MLS completion program is available.

Medical laboratory scientists perform hundreds of scientific procedures that have been devised to detect subtle changes that occur in disease. The MLS performs a full range of laboratory tests, ranging from complete blood counts, to more complex tests to uncover diseases such as leukemia, and diabetes. Studying blood cells under the microscope, the analysis of the chemical composition of blood, the isolation and identification of disease causing bacteria, and blood grouping and cross matching for transfusions are examples of the high complexity procedures performed by medical laboratory scientists. Positions are available as bench-level technologists, supervisors, and laboratory managers.

In addition to traditional laboratory careers, there are opportunities in education, research, and in industry as technical and sales representatives. In their quest to aid the physician and other health care providers, laboratory professionals do much more than look through a microscope. They operate complex analytical equipment, perform computations, and utilize precision instruments. Medical laboratory scientists act as an integral part of the health care team. Because of their academic and diverse clinical experience, graduates are well qualified for post-graduate programs in medicine, clinical chemistry, and biology.

Advanced Placement Option -Medical Laboratory Science

The Advanced Placement Option in the Medical Laboratory Science program provides a pathway for ASCP certified Medical Laboratory Technicians (MLT) to become Medical Laboratory Scientists (MLS). The program is designed to meet the needs of the working medical laboratory technician so that they can pursue their degree while still employed as a laboratory professional and to address the growing local, regional and national shortage of medical laboratory scientists.

Applicants must meet the following criteria for acceptance into the program:

- Have graduated from a NAACLS accredited MLT/CLT program
- Have completed prerequisite course work in biology, chemistry, and mathematics and also meet Biology and Chemistry guidelines for eligibility for the ASCP MLS Certification examination.
- Be certified as a MLT(ASCP)
- Be employed in an accredited laboratory that is able to provide training in all required MLS disciplines.

Students may transfer courses from approved institutions with prior approval from the program director or department chairperson. Students may be granted experiential credit for a clinical course and, if so, will not be required to register for that course.

The MLS Advanced Placement Option is accredited through the National Accrediting Agency for Clinical Laboratory Sciences (NAACLS):
5600 N. River Rd. Suite 720 Rosemont, IL 60018-5119, Phone: 773.714.8880, www.naacls.org, info@naacls.org

COURSE	TITLE	S.H.
FIRST YEAR REQUIREMENT -STUDENT SUCCESS		
YSU 1500	Success Seminar	1-2
or SS 1500	Strong Start Success Seminar	
or HONR 1500	Intro to Honors	
General Education Elective		
ENGL 1550	Writing 1	3
ENGL 1551	Writing 2	3
CMST 1545	Communication Foundations	3
STAT 2625	Statistical Literacy and Critical Reasoning	4
Social Sciences (2 courses)		6

Social & Personal Awareness (2 courses)	6	CHEM 1510L	Chemistry for the Allied Health Sciences Laboratory	0
Arts & Humanities (2 courses)	6	CMST 1545	Communication Foundations	3
Major Courses		ENGL 1550	Writing 1	3
MLS 1501 & 1501L	3	Semester Hours		14-15
MLS 3700	4	Spring		
MLS 3701 & 3701L	3	ENGL 1551	Writing 2	3
MLS 3702 & 3702L	3	CHEM 1515	General Chemistry 1	3
MLS 3703 & 3703L	4	CHEM 1515L	General Chemistry 1 Laboratory	1
MLS 3787 & 3787L	5	BIOL 2601	General Biology: Molecules and Cells	4
		BIOL 2601L	General Biology: Molecules and Cells Laboratory	0
		General Ed Elective 3sh		3
		Semester Hours		14
Biology Courses		Year 2		
BIOL 2601 & 2601L	4	Fall		
BIOL 2602 & 2602L	4	BIOL 2602	General Biology: Organisms and Ecology	4
BIOL 1545 & 1545L	5	BIOL 2602L	General Biology: Organisms and Ecology Laboratory	0
BIOL 3702 & 3702L	4	CHEM 1516	General Chemistry 2	3
		CHEM 1516L	General Chemistry 2 Laboratory	1
		STAT 2625	Statistical Literacy and Critical Reasoning	4
		General Elective		3
		Semester Hours		15
Chemistry Courses		Spring		
CHEM 1510 & 1510L	4	BIOL 1545	Allied Health Anatomy and Physiology	5
CHEM 1515 & 1515L	4	BIOL 1545L	Allied Health Anatomy and Physiology Laboratory	0
CHEM 1516 & 1516L	4	CHEM 3719	Organic Chemistry 1	4
CHEM 3719 & 3719L	4	CHEM 3719L	Organic Chemistry 1 Laboratory	0
		General Ed Elective 3.0 sh		3
		Semester Hours		12
Internship Year		Summer		
MLS 4800 & 4800L	6	MLS 3700	Clinical Chemistry 2	4
MLS 4801 & 4801L	7	MLS 3701 & 3701L	Clinical Hematology 1 and Clinical Hematology 1 Laboratory	3
MLS 4802 & 4802L	7	Semester Hours		7
MLS 4803 & 4803L	8	Year 3		
MLS 4804 & 4804L	6	Fall		
AHLT 4806	3	MLS 3702	Clinical Hematology 2	2
		MLS 3702L	Clinical Hematology 2 Laboratory	1
		MLS 3787	Diagnostic Microbiology	3
		MLS 3787L	Diagnostic Microbiology Laboratory	2
		BIOL 3702	Microbiology (General Education Electives)	4
		BIOL 3702L	Microbiology Laboratory (General Education Electives)	0
		Semester Hours		12
Total Semester Hours	124-125	Spring		
Year 1		MLS 3703 & 3703L	Clinical Immunology and Clinical Immunology Laboratory	3
Fall	S.H.	BIOL 3703L	Clinical Immunology Laboratory (General Education Electives)	1
YSU 1500 or HONR 1500 or SS 1500	1-2	General Electives 9 s.h.		9
MLS 1501 & 1501L	3	Semester Hours		13
CHEM 1510	4	Summer		
		AHLT 4806	Research Methods	3
		MLS 4804	Miscellaneous Clinical Experience	4

MLS 4804L	Miscellaneous Clinical Practice	2
Semester Hours		9
Year 4		
Fall		
MLS 4801	Advanced Hematology	4
MLS 4801L	Advanced Hematology Clinical Practice	3
MLS 4802	Advanced Immunohematology	4
MLS 4802L	Advanced Immunohematology Clinical Practice	3
Semester Hours		14
Spring		
MLS 4803	Advanced Microbiology	5
MLS 4803L	Advanced Microbiology Clinical Practice	3
MLS 4800	Advanced Clinical Chemistry	4
MLS 4800L	Advanced Clinical Chemistry Clinical Experience	2
Semester Hours		14
Total Semester Hours		124-125

¹ General education courses must fulfill the requirements for the baccalaureate degree. Students must take two courses from Arts & Humanities, two courses from Social Science, and two courses from Social and Personal Awareness.

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.