

MEDICAL LABORATORY SCIENCE, B.S.

Saint Louis University's Bachelor of Science in Medical Laboratory Science degree prepares graduates to take a national certification exam to become certified laboratory professionals. Graduates of SLU's medical laboratory science program become professionals who save lives by performing and assuring the reliability of tests that provide objective information used in the early detection, diagnosis, monitoring and effective treatment of disease.

Clinical laboratory testing impacts up to 80% of all clinical decisions. The knowledge and skills required of medical laboratory professionals are diverse, involving both scientific detective work and managerial competence. Each day offers a challenge, and the opportunities to learn are endless.

Program Highlights

- SLU's MLS program was one of the first in the country; it has over 90 years of continuous accreditation.
- SLU's MLS program has guaranteed placement in clinical practicum training sites.
- SLU's MLS program boasts a low student-faculty ratio and state-of-the-art medical laboratory science labs – both of which help to substantially enhance the experience of students.
- SLU's MLS graduates' exam pass rates are consistently at or near 100%, as is the graduate career placement rate.
- SLU's MLS students have numerous opportunities for personal and professional growth through faculty, professional and peer interactions. They can join professional organizations such as the American Society for Clinical Laboratory Science (ASCLS) and the American Society of Clinical Pathology (ASCP).

Curriculum Overview

Following two years of core courses in basic sciences and the liberal arts, and one year of pre-clinical laboratory-related coursework, students will enter the practicum phase of the curriculum in a clinical setting under supervision. Medical laboratory science students must maintain a cumulative GPA of 2.5/4.0 and earn a C- or better in math, science and program-specific (BLS/MLS prefix) courses to progress in the program.

Seniors spend 16 weeks in practicum at hospital laboratories in St. Louis and surrounding areas.

Clinical and Research Opportunities

Clinical practicum experiences in clinical practice settings (e.g., hospitals, reference labs, etc.) are a required component of the medical laboratory science curriculum and are guaranteed upon admission.

The Medical Laboratory Science Program assigns clinical placements for all MLS students entering the clinical year who are in good academic standing. Clinical placements are randomly assigned while considering transportation issues. While the program will do its best to assign students to their desired location, it cannot be guaranteed. Students may have to travel or relocate to perform their clinical rotations, and this will be at the expense of the student.

In the event a clinical affiliate is unable to fulfill their prior obligation, alternative clinical rotations will be sought at other affiliate institutions. In the very unlikely event alternative clinical rotations are unable to be secured, affected students will be reassigned to the first available rotation site. The next available clinical rotation will occur as soon as possible but no later than one year from the time the rotation was canceled. If the clinical rotation cancellation occurs after clinical rotations have commenced, the affected student will be placed first in the queue to receive the first available clinical rotation slot that will occur no later than one year after the cancellation. If the clinical rotation cancellation occurs prior to the start of clinical rotations, affected students will be selected based on GPA calculated from performance in the BLS/MLS courses. Students with the lowest GPAs will be required to relinquish their clinical rotation slots which will delay clinical rotations.

Students can conduct research and produce projects and papers for publication and presentation at professional conferences.

Clinical Affiliates

- BJC Barnes-Jewish Hospital- St. Louis
- BJC Christian Hospital-Northeast -St. Louis
- BJC St. Louis Children's Hospital- St. Louis
- BJC Missouri Baptist Hospital- St. Louis
- John Cochran VA Medical Center -St. Louis
- Mercy Hospital Jefferson – Crystal City, Missouri
- Mercy Hospital South – St. Louis
- Impact Life Blood Center- St. Louis
- Quest Diagnostics -St. Louis
- SSM Health DePaul Health Center- Bridgeton, Missouri
- SSM Health St. Joseph's Health Center -St. Charles, Missouri
- SSM Health St. Joseph's Hospital West- Lake St. Louis, Missouri
- SSM Health St. Mary's Hospital -St. Louis
- SSM Health Saint Louis University Hospital- St. Louis
- St. Luke's Hospital – St. Louis

Careers

Medical laboratory scientists are vital members of health care teams. As highly skilled bioanalysts, graduates contribute data critical to disease diagnosis and patient treatment. In a typical laboratory setting, the medical laboratory scientist performs a full range of laboratory tests, from blood smears to detect anemia to highly complex procedures used to diagnose and monitor the status of patients suffering from various forms of cancer.

SLU's medical laboratory science program facilitates the attendance of its students at state professional meetings. In addition, clinical affiliates in the St. Louis area frequently request that students seek part-time employment to garner clinical experience and are often retained as full-time employees upon graduation.

The benefits of SLU's medical laboratory science program include several career opportunities. Medical laboratory scientists are qualified to work in five major areas of the laboratory: blood bank, chemistry, hematology, immunology and microbiology.

Throughout a typical workday, graduates from this program might examine specimens under the microscope, operate complex computerized instrumentation, use immunologic methods to prepare

units of blood for transfusion and/or identify disease-causing microorganisms.

While most medical laboratory science graduates work in a clinical laboratory in diagnostic testing and laboratory management, some choose positions in research, forensic science and crime laboratories, laboratory equipment companies or pharmaceutical and biotechnology industries. Many graduates choose to go directly to graduate, medical or professional schools. According to the most recent American Society for Clinical Pathology (ASCP) wage survey, across the nation, staff-level MLS/MT/CLSs are paid an average salary of \$68,240.

Admission Requirements

Freshmen Applicants

Solid academic performance in college preparatory coursework is a primary consideration when we review your first-year application.

Admission criteria include:

- Minimum high school GPA of 3.00 on a 4.00 scale.
- Four years of high school math (with algebra) and English, with some physics recommended.
- Saint Louis University has a test-optional admission process for all undergraduate programs. Applicants may submit standardized test scores, but those who choose not to will not be disadvantaged in any way in the admission process.

Transfer Applicants

Transfer applicants must possess a 2.5 cumulative GPA. Interested applicants who do not meet all the admission requirements should still apply for individual consideration.

The number of transfer students admitted into the B.S. in medical laboratory science program is based on the availability of clinical placement sites for practicum experiences. No student will be accepted into the program until clinical placement for practicum experiences has been secured.

In the event of a limited number of available placement spots, a competitive entry process based on GPA, previous coursework, and letters of recommendation will be used to admit students.

International Applicants

All admission policies and requirements for domestic students apply to international students, along with the following:

- You must demonstrate English language proficiency (<https://catalog.slu.edu/academic-policies/office-admission/undergraduate/english-language-proficiency/>).
- Proof of financial support must include:
 - A letter of financial support from the person(s) or sponsoring agency funding your time at Saint Louis University.
 - A letter from the sponsor's bank verifying that the funds are available and will be so for the duration of your study at the University.
- Academic records, in English translation, of students who have undertaken postsecondary studies outside the United States must include the courses taken and/or lectures attended, practical laboratory work, the maximum and minimum grades attainable, the

grades earned or the results of all end-of-term examinations, and any honors or degrees received. WES and ECE transcripts are accepted.

Background Check

Regulations require all students in this program to complete a criminal background check and a drug test at least once during the program; either or both may be repeated as agency requirements demand. Positive results from the criminal background check or drug tests may result in ineligibility to graduate from the program. A felony conviction will affect a graduate's eligibility for professional certification and professional practice.

Tuition

Tuition/Fee	Cost Per Year
Undergraduate Tuition	\$56,960

Additional charges may apply. Other resources are listed below:

Net Price Calculator (<https://www.slu.edu/financial-aid/tuition-and-costs/calculator.php>)

Information on Tuition and Fees (<https://catalog.slu.edu/academic-policies/student-financial-services/tuition/>)

Miscellaneous Fees (<https://catalog.slu.edu/academic-policies/student-financial-services/fees/>)

Information on Summer Tuition (<https://catalog.slu.edu/academic-policies/student-financial-services/tuition-summer-current/tuition-summer-current.pdf>)

Scholarships and Financial Aid

There are two principal ways to help finance a Saint Louis University education:

- **Scholarships:** Awarded based on academic achievement, service, leadership and financial need. In addition to SLU scholarships, the Doisy College of Health Sciences offers scholarships (<https://www.slu.edu/doisy/about/scholarships-for-current-students.php>) to sophomores, juniors, seniors and graduate students.
- **Financial Aid:** Provided in the form of grants and loans, some of which require repayment.

For priority consideration of merit-based scholarships, applicants should apply for admission by Dec. 1 and complete a Free Application for Federal Student Aid (FAFSA) by Feb. 1.

For more information, visit the Office of Student Financial Services (<https://www.slu.edu/financial-aid/>).

Accreditation

The Medical Laboratory Science program at Saint Louis University has been continuously accredited since the graduation of its first class in 1933.

We are one of the oldest programs in the nation, founded in 1929, and boast more than 90 years of educational service to the medical laboratory science profession.

The program is accredited by:

National Accrediting Agency for Clinical Laboratory Science
5600 N. River Road, Suite 720

Rosemont, IL 60018

phone: 773-714-8880

fax: 773-714-8886

www.naacls.org (<https://www.naacls.org>)

Learning Outcomes

1. Graduates will demonstrate respect for human life with regard to all aspects of laboratory testing.
2. Graduates will communicate accurate laboratory information to members of the healthcare team.
3. Graduates will apply critical reasoning to solve laboratory-based case studies.
4. Graduates will integrate knowledge of laboratory theory into practice.
5. Graduates will adhere to the principles found in the American Society for Clinical Laboratory Science (ASCLS) Professional Code of Ethics.

Professional Performance Standards

The medical laboratory science student must possess or have the ability to achieve certain competencies to successfully complete the curriculum. These competencies include knowledge, skills and attitudes that are necessary for professional practice. The essential requirements outlined below are presented for applicants and matriculates to review and use to assess their ability to successfully complete degree requirements. If you have any questions regarding your ability to achieve any of these essential requirements, you can clarify your concerns by contacting a faculty member within the medical laboratory science program. If you perceive you will require special accommodations to meet these requirements, you must notify your advisor or the MLS program director to arrange for a University-level assessment.

The medical laboratory science student must be able to:

- In course assignments and within the laboratory practice setting, apply theoretical knowledge, ethical practice and sound judgment in following problem situations to their logical conclusions.
- Assimilate mathematical and scientific data to allow the application of basic principles in concrete situations related to laboratory practice and test interpretation.
- Physically manipulate themselves and small objects (20 pounds or less) within the laboratory/clinical/research setting in a safe and effective fashion.
- Display a functional level of manual dexterity in the performance of laboratory testing including phlebotomy and numerous other laboratory procedures requiring delicate manipulations and in the utilization of computerized instrumentation.
- Demonstrate functional use of their senses including but not limited to:
 - Visual acuity in distinguishing colorimetric endpoints and subtle microscopic differences between diagnostic elements in clinical specimens when examined under a microscope and/or displayed on a monitor. Students must be able to discern subtle differences in color.
 - Sense of touch to distinguish temperature discrimination for safety purposes.
 - Visual acuity and accurate transcription in the reporting of testing data and quality control information in a written or computer-generated format.

- Utilize effective and respectful written and oral communication skills in professional interactions with patients, colleagues, and other health care professionals.
- Accurately perform complex technical procedures under stressful working conditions (e.g. emergency situations, ambiguous orders, heavy workload, and a distracting and noisy environment) and within reasonable time constraints.
- Comprehend and adhere to policies and regulations as prescribed by appropriate governing agencies. These policies are generally but not exclusively related to competent, ethical and safe practice.
- Submit to and receive a satisfactory report on criminal background checks and drug testing for substances of abuse, and must be up to date on their vaccinations.
- Transfer applicants will be accepted on the basis of clinical site availability.

Certification and Licensure

Graduates of the MLS program are eligible to take a nationally administered certification exam. Passing this exam indicates a knowledge base and skill set necessary to function as a healthcare professional. License and certification vary depending on the state in which you will practice. Currently, 12 states require a license to practice as a clinical laboratory professional, including California, Florida, Louisiana, Montana, Nevada, New York, North Dakota, Rhode Island, Tennessee, West Virginia, PR, GA.

Certification Exam Pass Rate

- SLU graduates consistently have a pass rate higher than the national average
- Pass rate is usually at or near 100 percent

Two certification exams are recognized nationally within the profession:

- American Society for Clinical Pathology Board of Certification exam (<https://www.ascp.org/content/board-of-certification/get-credentialed/#examinfo>)
- American Medical Technology (<https://www.americanmedtech.org/default.aspx>)

Licensure

To practice in some states a licensure examination is also required by law. It is advisable to check with the individual state's department of health to determine if such an exam is required.

For more information, visit the American Society for Clinical Pathology. (<https://www.ascp.org/content/board-of-certification/get-credentialed/#state-licensure>)

Program Outcomes

Graduate certification rates demonstrating an average of at least 75% pass rate.

Year	Rate
2022-2023	100%
2023-2024	100%
2024-2025	92%

Graduation rates demonstrating an average of at least 70% of students who have begun the final half of the program to graduate successfully.

Year	Rate
2022-2023	100%
2023-2024	100%
2024-2025	100%

Graduate placement rates demonstrating that an average of at least 70% of respondent graduates either find employment in the field or a closely related field (for those who seek employment) or continue their education within one year of graduation.

Year	Rate
2022-2023	100%
2023-2024	100%
2024-2025	100%

Requirements

Students in Saint Louis University's medical laboratory science major take the following courses.

Code	Title	Credits
University Undergraduate Core (https://catalog.slu.edu/academic-policies/academic-policies-procedures/university-core/)		
Foundation		
BIOL 1240 & BIOL 1245	General Biology: Information Flow and Evolution and Principles of Biology I Laboratory	4
BIOL 1260 & BIOL 1265	General Biology: Transformations of Energy and Matter and Principles of Biology II Laboratory	4
BIOL 3020	Biochemistry and Molecular Biology	3
CHEM 1110 & CHEM 1115	General Chemistry 1 and General Chemistry 1 Laboratory	4
CHEM 1120 & CHEM 1125	General Chemistry 2 and General Chemistry 2 Laboratory	4
CHEM 2410 & CHEM 2415	Organic Chemistry 1 and Organic Chemistry 1 Laboratory	4
CMM 1200	Public Speaking	3
ENGL 1900	Advanced Strategies of Rhetoric and Research	3
HSCI 3700	Research Methods	3
MATH 1400	Pre-Calculus	3
PPY 2540	Human Physiology	4
STAT 1300	Elementary Statistics with Computers	3
Biomedical Laboratory Science		
BLS 1000	The Power of Laboratory Medicine	2
BLS 1150	Foundations of Medical Laboratory Science Lab	1
BLS 3110	Urinalysis & Body Fluids	2
BLS 4110	Medical Biochemistry I	3
BLS 4120	Medical Biochemistry II	2
BLS 4130	Principles & Techniques in Molecular Biology	2
BLS 4210	Hematology	4

BLS 4220	Hemostasis and Thrombosis	2
BLS 4310	Immunoematology	3
BLS 4411	Fundamentals of Immunology	2
BLS 4420	Medical Immunology	2
BLS 4510	Medical Microbiology	4
Medical Laboratory Science		
MLS 3150	Urinalysis and Immunology Laboratory	1
MLS 3210	Clinical Education & Laboratory Management	2
MLS 3400	Laboratory Operations	1
MLS 4150	Analytical Chemistry	2
MLS 4250	Hematology Laboratory	1
MLS 4350	Immunoematology Laboratory	1
MLS 4520	Medical Bacteriology	2
MLS 4541	Medical Mycology and Parasitology	3
MLS 4550	Medical Bacteriology Laboratory	2
MLS 4611	Advanced Topics and Case Correlations	2
MLS 4701	Clinical Chemistry Practicum	3
MLS 4710	Clinical Chemistry	1
MLS 4740	Clinical Hematology Practicum	2
MLS 4750	Clinical Hematology	1
MLS 4770	Clinical Phlebotomy Practicum	1
MLS 4780	Clinical Immunoematology Practicum	2
MLS 4790	Clinical Immunoematology	1
MLS 4800	Clinical Microbiology Practicum	3
MLS 4811	Clinical Microbiology	1
MLS 4820	Clinical Urinalysis Practicum	1
Total Credits	Credit Hour Note (https://catalog.slu.edu/126-127-academic-policies/academic-policies-procedures/double-counting/)	

Continuation Standards

Students must maintain a minimum 2.50 grade point average (GPA).

Roadmap

Roadmaps are recommended semester-by-semester plans of study for programs and assume full-time enrollment unless otherwise noted.

Courses and milestones designated as critical (marked with !) must be completed in the semester listed to ensure a timely graduation. Transfer credit may change the roadmap.

This roadmap should not be used in the place of regular academic advising appointments. All students are encouraged to meet with their advisor/mentor each semester. Requirements, course availability and sequencing are subject to change.

Course	Title	Credits
Year One		
Fall		
! BIOL 1240 & BIOL 1245	General Biology: Information Flow and Evolution and Principles of Biology I Laboratory (! satisfies CORE 3800)	4
BLS 1000	The Power of Laboratory Medicine	2

BLS 1150	Foundations of Medical Laboratory Science Lab	1
! CHEM 1110 & CHEM 1115	General Chemistry 1 and General Chemistry 1 Laboratory	4
CORE 1500	Cura Personalis 1: Self in Community	1
MATH 1400	Pre-Calculus	3
Credits		15

Spring

! BIOL 1260 & BIOL 1265	General Biology: Transformations of Energy and Matter and Principles of Biology II Laboratory	4
! CHEM 1120 & CHEM 1125	General Chemistry 2 and General Chemistry 2 Laboratory	4
CORE 1600	Ultimate Questions: Theology	3
ENGL 1900	Advanced Strategies of Rhetoric and Research (satisfies CORE 1900)	3
STAT 1300	Elementary Statistics with Computers (satisfies CORE 3200)	3
Credits		17

Year Two

Fall

BIOL 3020	Biochemistry and Molecular Biology	3
! CHEM 2410 & CHEM 2415	Organic Chemistry 1 and Organic Chemistry 1 Laboratory	4
CMM 1200	Public Speaking (satisfies CORE 1200)	3
PPY 2540	Human Physiology	4
XXXX	Core Elective	3
Credits		17

Spring

BLS 3110	Urinalysis & Body Fluids	2
BLS 4130	Principles & Techniques in Molecular Biology	2
CORE 1700	Ultimate Questions: Philosophy	3
CORE 2500	Cura Personalis 2: Self in Contemplation	0
CORE 2800	Eloquentia Perfecta 3: Creative Expression	2-3
CORE 3600	Ways of Thinking: Social and Behavioral Sciences	3
XXXX	Core Elective	3
Credits		15-16

Year Three

Fall

BLS 4110	Medical Biochemistry I	3
BLS 4411	Fundamentals of Immunology	2
BLS 4510	Medical Microbiology	4
CORE 3400	Ways of Thinking: Aesthetics, History, and Culture	3
MLS 4150	Analytical Chemistry	2
Credits		14

Spring

BLS 4120	Medical Biochemistry II	2
BLS 4220	Hemostasis and Thrombosis	2
BLS 4310	Immunohematology	3
BLS 4420	Medical Immunology	2

MLS 3150	Urinalysis and Immunology Laboratory	1
MLS 4350	Immunohematology Laboratory	1
MLS 4520	Medical Bacteriology	2
MLS 4550	Medical Bacteriology Laboratory	2

Credits 15

Year Four

Fall

BLS 4210	Hematology	4
MLS 4250	Hematology Laboratory	1
HSCI 3700	Research Methods	3
MLS 3210	Clinical Education & Laboratory Management	2
MLS 3400	Laboratory Operations	1
MLS 4541	Medical Mycology and Parasitology	3

Credits 14

Spring

MLS 4611	Advanced Topics and Case Correlations (satisfies CORE 3500)	2
MLS 4701	Clinical Chemistry Practicum	3
MLS 4710	Clinical Chemistry	1
MLS 4740	Clinical Hematology Practicum	2
MLS 4750	Clinical Hematology	1
MLS 4770	Clinical Phlebotomy Practicum	1
MLS 4780	Clinical Immunohematology Practicum	2
MLS 4790	Clinical Immunohematology	1
MLS 4800	Clinical Microbiology Practicum	3
MLS 4811	Clinical Microbiology	1
MLS 4820	Clinical Urinalysis Practicum	1

Credits 18

Total Credits 125-126

2+SLU

2+SLU programs provide a guided pathway for students transferring from a partner institution.

Medical Laboratory Science, B.S. (STLCC 2+SLU) (<https://catalog.slu.edu/academic-policies/office-admission/undergraduate/2plusslu/stlcc/med-lab-sci/>)

Contact Us

Apply for Admission (<https://www.slu.edu/admission/>)

Contact Doisy College of Health Sciences

Recruitment specialist
314-977-2570
dchs@health.slu.edu