MEDICAL LABORATORY SCIENCE, B.S.

Saint Louis University’s Bachelor of Science in Medical Laboratory Science (MLS) degree prepares graduates to take a national certification exam to become certified laboratory professionals. Medical laboratory science professionals 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.

Up to 80% of all clinical decisions are impacted by clinical laboratory testing. 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 medical laboratory science program 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 a variety of 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.

Students have the opportunity to conduct research and produce projects and papers for publication and presentation at professional conferences.

Clinical Affiliates

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

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/crime laboratories, laboratory equipment companies or pharmaceutical/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 Medical Laboratory Science B.S. 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.

**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.

**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 University 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 for merit-based scholarships, applicants should apply for admission by Dec. 1 and complete a Free Application for Federal Student Aid (FAFSA) by March 1.

For more information, visit the student financial services office online at http://finaid.slu.edu (http://finaid.slu.edu/).

**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 over 90 years of educational service to the medical laboratory science profession.

Program Outcomes (https://catalog.slu.edu/colleges-schools/health-sciences/clinical-health-sciences/medical-laboratory-science-bs/#learningoutcomestext)

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 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 specimen when examined under a microscope and/or displayed on a monitor.
  - 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.

• 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 varies depending on the state in which you will practice. Currently, 12 states require a license to practice as a clinical laboratory professional, including CA, FL, LA, MT, NY, ND, RI, TN, WV, 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 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.

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

<table>
<thead>
<tr>
<th>Year</th>
<th>Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>2020</td>
<td>86%</td>
</tr>
<tr>
<td>2021</td>
<td>100%</td>
</tr>
<tr>
<td>2022</td>
<td>100%</td>
</tr>
</tbody>
</table>

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.

<table>
<thead>
<tr>
<th>Year</th>
<th>Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>2020</td>
<td>100%</td>
</tr>
<tr>
<td>2021</td>
<td>100%</td>
</tr>
<tr>
<td>2022</td>
<td>100%</td>
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Requirements

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

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>BLS 1000</td>
<td>The Power of Laboratory Medicine</td>
<td>2</td>
</tr>
<tr>
<td>BLS 1150</td>
<td>Foundations of Medical Laboratory Science Lab</td>
<td>1</td>
</tr>
<tr>
<td>BLS 3110</td>
<td>Urinalysis &amp; Body Fluids</td>
<td>2</td>
</tr>
<tr>
<td>BLS 4110</td>
<td>Medical Biochemistry I</td>
<td>3</td>
</tr>
<tr>
<td>BLS 4120</td>
<td>Medical Biochemistry II</td>
<td>2</td>
</tr>
<tr>
<td>BLS 4130</td>
<td>Principles &amp; Techniques in Molecular Biology</td>
<td>0</td>
</tr>
<tr>
<td>BLS 4210</td>
<td>Hematology</td>
<td>4</td>
</tr>
<tr>
<td>BLS 4220</td>
<td>Hemostasis and Thrombosis</td>
<td>2</td>
</tr>
<tr>
<td>BLS 4310</td>
<td>Immunohematology</td>
<td>3</td>
</tr>
<tr>
<td>BLS 4411</td>
<td>Fundamentals of Immunology</td>
<td>2</td>
</tr>
<tr>
<td>BLS 4420</td>
<td>Medical Immunology</td>
<td>2</td>
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</table>
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
---|---|---
BLS 4510 | Medical Microbiology | 4
BLS 4610 | Research Design, Critique & Presentation | 3

Medical Laboratory Science

Course | Title | Credits
---|---|---
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 | Immunohematology Lab | 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 | 3
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

Total Credits | 125-126

Year Two

Fall

Course | Title | Credits
---|---|---
BLS 4110 | Medical Biochemistry I | 3
BLS 4130 | Principles & Techniques in Molecular Biology | 0
CORE 1700 | Ultimate Questions: Philosophy | 3
CORE 2500 | Curs Personalis 2: Self in Contemplation | 0
CORE 2800 | Eloquienia Perfecta 3: Creative Expression | 2-3
CORE 3400 | Ways of Thinking: Aesthetics, History, and Culture | 3
XXXX | Core Elective | 3

Credits | 13-14

Spring

Course | Title | Credits
---|---|---
BLS 3110 | Urinalysis & Body Fluids | 2
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 Three

Fall

Course | Title | Credits
---|---|---
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

Course | Title | Credits
---|---|---
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

<table>
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<th>Course Code</th>
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<tr>
<td>BLS 4210</td>
<td>Hematology</td>
<td>4</td>
</tr>
<tr>
<td>BLS 4610</td>
<td>Research Design, Critique &amp; Presentation</td>
<td>3</td>
</tr>
<tr>
<td>(satisfies CORE 4000)</td>
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<td></td>
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<tr>
<td>MLS 4250</td>
<td>Hematology Laboratory</td>
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</tr>
<tr>
<td>MLS 3210</td>
<td>Clinical Education &amp; Laboratory Management</td>
<td>2</td>
</tr>
<tr>
<td>MLS 3400</td>
<td>Laboratory Operations</td>
<td>1</td>
</tr>
<tr>
<td>MLS 4541</td>
<td>Medical Mycology and Parasitology</td>
<td>3</td>
</tr>
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<td></td>
<td><strong>Credits</strong></td>
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#### Spring

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<tr>
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<tbody>
<tr>
<td>MLS 4611</td>
<td>Advanced Topics and Case Correlations</td>
<td>2</td>
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<tr>
<td>(satisfies CORE 3500)</td>
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<tr>
<td>MLS 4701</td>
<td>Clinical Chemistry Practicum</td>
<td>3</td>
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<td>MLS 4820</td>
<td>Clinical Urinalysis Practicum</td>
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<td></td>
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**Total Credits** 123-124

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**Contact Us**

**Apply for Admission** ([https://www.slu.edu/admission/](https://www.slu.edu/admission/))

**Contact Doisy College of Health Sciences:**

Julie Miller  
Recruitment Specialist  
314-977-2570  
dchs@health.slu.edu