Program Change Request

Date Submitted: 04/13/26 1:21 pm

Viewing: SC-BS-MLAB : Medical Laboratory Science, BS

Last approved: 03/25/26 4:54 pm

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Changes proposed by: jbazaz

Catalog Pages Using this Program

Medical Laboratory Science, BS

Are you completing this form on someone else's behalf?

Yes

Requestor:

In Workflow

1. **BIOL Program Chair**
2. SC Curriculum Committee
3. SC Assistant Dean
4. Assoc Provost-Undergraduate
5. Registrar-Programs

History

1. Oct 23, 2017 by clmig-jwehrheim
2. Feb 14, 2018 by rzachari
3. Feb 26, 2018 by rzachari
4. Mar 6, 2018 by rzachari
5. Dec 7, 2018 by Jennifer Bazaz Gettys (jbazaz)
6. Feb 1, 2019 by Tory Sarro (vsarro)
7. Feb 21, 2019 by Tory Sarro (vsarro)
8. Mar 31, 2023 by Jennifer Bazaz Gettys (jbazaz)
9. May 8, 2023 by Tory Sarro (vsarro)
10. Mar 6, 2025 by Jennifer Bazaz Gettys (jbazaz)

11. Mar 25, 2026 by Jennifer Bazaz Gettys (jbazaz)

Name	Extension	Email
Anne Verhoeven	5302	averhoev@gmu.edu

Effective Catalog: 2026-2027

Program Level: Undergraduate

Program Type: Bachelor's

Degree Type: Bachelor of Science

Title: Medical Laboratory Science, BS

Banner Title: Medical Laboratory Science, BS

Registrar/OAPI Use Only – SCHEV Status Approved

Registrar's Office Use Only – Program Start Term Fall 2018

Registrar/OAPI Use Only – SCHEV Letter

Registrar/OAPI Use Only – SACSCOC Status

Concentration(s):

	Associated Concentrations	Registrar's Office Use Only: Concentration Code
1	Molecular Biology	MOB
2	Microbiology	MIB
3	Histotechnology	HSTT
4	Histology	HISO

Registrar/IRR Use Only – Concentration CIP Code

College/School: College of Science

Department / Academic Unit: Biology

Jointly Owned Program? No

Is there an embedded degree as part of a program?

Justification

What: Adding BIOL 103, 105 to the core.

Why: They're required prerequisites for subsequent courses.

What: Offering more course options for the MLAB and BIOL section.

Why: We have students that can't get into BIOL 430 and 431 in certain semesters. If these students decide to switch to BIOL from MLAB it requires that they take 8 more credits of BIOL electives which can throw off their graduation- it also provides the MLAB students a little more flexibility.

Total Credits Required: Total credits: minimum 120

Registrar's Office Use Only - Program Code: SC-BS-MLAB

Registrar/IRR Use Only – Program CIP Code

Admission Requirements:

Admissions

University-wide admissions policies can be found in the Undergraduate Admissions Policies section of this catalog. To apply for this program, please complete the George Mason University Admissions Application.

Program-Specific Policies:

Policies

Students must fulfill all Requirements for Bachelor's Degrees including the Mason Core[1].

MLAB 300 Science Writing(Mason Core) fulfills this major's writing intensive requirement.

Important information and departmental policies are available with the Department of Biology.

This program requires the equivalent of three years of full-time pre-professional study at the college level preceding a senior year of professional education in an affiliated program of medical laboratory science. Affiliated schools (see below) are accredited by the National Accrediting Agency for Clinical Laboratory Sciences (NAACLS).

1

Note: Because of the extensive pre-professional education requirements stipulated by NAACLS, students majoring in medical laboratory science are exempt from the Mason Core 'Arts' requirement.

Important Program Requirements

- Students must complete MLAB 200 Introduction to Medical Laboratory Science and present their biology coursework and supporting requirements with a minimum GPA of 2.00.
- A grade of 'C' or better must be earned in both BIOL 213 Cell Structure and Function and BIOL 215 Cell Structure and Function Laboratory in order to advance to other major requirements. Students may repeat BIOL 213 Cell Structure and Function and BIOL 215 Cell Structure and Function Laboratory once and a second time only with permission of the Department of Biology.
- Medical laboratory science majors must earn a minimum of 'C' in all biology core courses.

Major in Medical Laboratory Science as a Second Bachelor's Degree

While the standard program for medical laboratory sciences is three years on campus followed by a fourth year at a clinical affiliate (3+1), many students elect to complete a bachelor's degree before entering the clinical program (4+1). Students who have completed the Biology, BS or Chemistry, BS at Mason and then undertake a fifth year at a clinical affiliate may be eligible for a second bachelor's degree with a major in medical laboratory science. Students wishing to receive the second degree must apply before entering their fifth year. For further information, contact a laboratory sciences advisor.

Applying to Medical Laboratory Sciences Schools

Responsibility for applying to schools of medical laboratory sciences and gaining admission rests with the student; however, guidance is provided by the medical laboratory sciences program director. Admission to medical laboratory sciences schools is selective, so candidates should strive for strong academic standing (2.5 science GPA or higher). Students who fail to gain admission to a NAACLS-approved school are unable to complete this degree program. Such students may transfer to Biology, BA or the Biology, BS without loss of credits.

Application to medical laboratory sciences schools should be initiated about a year before the desired entrance date. This fact, coupled with the large number of required courses in the pre-professional curriculum, makes it imperative that students in the program consult regularly with their faculty advisor. All medical laboratory sciences majors and prospective majors are urged to enroll in MLAB 200 Introduction to Medical Laboratory Science as early as possible. This course provides information on the profession, as well as the educational demands placed on candidates.

Senior Year

Students should be aware that the senior year spent off campus requires the following special interpretation of university policies:

- Students may present no more than 6 credits of 'D' grades in biology and chemistry courses required in three years of pre-professional study.
- No unsatisfactory grades (less than 'C') may be presented for courses in the senior year of professional study.
- Transfer students must present at least 16 credits of 300 to 400-level biology or chemistry coursework taken at Mason.

- Transfer students entering with more than 45 transfer credits are often unable to complete the pre-professional phase of their program in the usual three years of full-time study.

Senior students are registered at the university through special procedures. For details, consult the program director.

Affiliated NAACLS-Approved Schools

This program requires the equivalent of three years of full time professional study at the college level preceding a senior year of professional education in an affiliated school of medical laboratory sciences. All affiliated schools are accredited by the NAACLS:

- Augusta Health- School of Clinical Laboratory Science
- George Washington University- School of Medicine and Health Sciences: The Medical Laboratory Sciences Program
- INOVA Fairfax Hospital- Medical Laboratory Science Program
- Sentara Rockingham Memorial Hospital- School of Medical Laboratory Science

Degree Requirements: Students should refer to the Admissions & Policies tab for specific policies related to this program.

Students must complete the requirements outlined below, choosing one Professional Study/Concentration option:

- Not choosing a concentration ("Professional Study: Generalist Option") will provide students generalist training. Upon graduation, the board certification test may be taken and would allow graduates to practice in any area of a hospital or laboratory.
- Choosing a concentration will allow students to complete their clinical rotations in that specific area. Upon graduation, the Molecular Biology or Microbiology (depending upon the concentration chosen) board certification test may be taken.

Biology Core

BIOL 103 & BIOL 105	Introductory Biology II-Survey of Cell and Molecular Biology(Mason Core) and Introductory Biology II Laboratory(Mason Core)	4
BIOL 213 & BIOL 215	Cell Structure and Function and Cell Structure and Function Laboratory	4
BIOL 214	Biostatistics for Biology Majors	4
BIOL 311 & BIOL 313	General Genetics and General Genetics Laboratory	4
Total Credits		16

Additional MLAB and BIOL ~~Additional~~ Courses

MLAB 200	Introduction to Medical Laboratory Science	1

MLAB 300	Science Writing(Mason Core)	3
BIOL 305 & BIOL 306	Biology of Microorganisms and Biology of Microorganisms Laboratory	4
~~BIOL 306~~	~~Biology of Microorganisms Laboratory~~	~~1~~
BIOL 452 & BIOL 453	Immunology and Immunology Laboratory	4
~~BIOL 453~~	~~Immunology Laboratory~~	~~1~~
Select two from the following:		5-8
BIOL 322	Developmental Biology	
BIOL 382	Introduction to Virology	
BIOL 385	Biotechnology and Genetic Engineering	
BIOL 404	Medical Microbiology	
BIOL 409	Medical Mycology	
BIOL 413	Histotechniques	
BIOL 420	Vaccines	
BIOL 424	Female Reproductive Biology Health	
BIOL 425	Human Physiology	
BIOL 429	Biological Foundations of Pharmacology	
BIOL 430	Advanced Human Anatomy and Physiology I [2]	
BIOL 431	Advanced Human Anatomy and Physiology II [2]	
BIOL 432	Clinical Applications in Human Physiology	
BIOL 465	Histology	
BIOL 484	Cell Signaling and Disease	
BIOL 486	Molecular Biology and Biotechnology Laboratory	
Total Credits		17-20

1 Fulfills writing intensive requirement.

2 These courses are highly recommended for fulfilling this requirement.

Chemistry

CHEM 211	General Chemistry I(Mason Core)	4
& CHEM 213	and General Chemistry Laboratory I(Mason Core)	
CHEM 212	General Chemistry II(Mason Core)	4
& CHEM 214	and General Chemistry Laboratory II(Mason Core)	
CHEM 313	Organic Chemistry I	3
CHEM 315	Organic Chemistry Lab I	2
Select one from the following:		4-5
BIOL 483	General Biochemistry	
CHEM 314	Organic Chemistry II	
& CHEM 318	and Organic Chemistry Lab II	
Total Credits		17-18

Mathematics

Select one from the following:		4-6
MATH 111	Linear Mathematical Modeling(Mason Core)	
MATH 113	Analytic Geometry and Calculus I(Mason Core)	
MATH 123	Calculus with Algebra/Trigonometry, Part A	
& MATH 124	and Calculus with Algebra/Trigonometry, Part B(Mason Core)	
Total Credits		4-6

Information Technology

Select one from the following:		3
CDS 130	Computing for Scientists(Mason Core) [1]	
Any course(s) which fulfills the Mason Core: Information Technology requirement		
Total Credits		3

1 Recommended course for this major

Professional Study: Generalist Option

Senior students are registered at the university through special procedures. For details, consult the medical laboratory science program director.

The senior year spent off campus requires the following special interpretation of university policies:

- Transfer students must present at least 16 credits of 300 to 400-level biology or chemistry coursework taken at Mason.
- No unsatisfactory grades (less than 'C') may be presented for courses in the senior year of professional study.
- Transfer students entering with more than 45 transfer credits are often unable to complete the pre-professional phase of their program in the usual three years of full-time study.

Students may have up to 30 credits of professional study during the senior year awarded for clinical education at an affiliated school of medical technology. No more than 30 professional credits may be applied toward the degree.

The distribution of credits in these courses varies with the school of medical technology. In consultation with the advisor, select from the following:		30
MLAB 401	Orientation to the Problems and Practices of the Clinical Laboratory	
MLAB 402	Clinical Hematology and Coagulation	
MLAB 403	Clinical Microscopy	
MLAB 404	Serology and Immunohematology	
MLAB 405	Clinical Microbiology	
MLAB 406	Clinical Chemistry	
MLAB 407	Clinical Molecular Biology	
Total Credits		30

Notes:

Students are encouraged to elect additional basic science courses during their pre-professional years. Recommended courses include:

BIOL 465	Histology	4
BIOL 483	General Biochemistry	4
BIOL 484	Cell Signaling and Disease	3
BIOL 485	Cell Signaling Laboratory	2-3
CHEM 321	Quantitative Chemical Analysis	4
PHYS 243	College Physics I(Mason Core)	3
PHYS 244	College Physics I Lab(Mason Core)	1
PHYS 245	College Physics II(Mason Core)	3
PHYS 246	College Physics II Lab(Mason Core)	1

Professional Study: Molecular Biology Concentration (MOB)

Senior students are registered at the university through special procedures. For details, consult the medical laboratory science program director.

The senior year spent off campus requires the following special interpretation of university policies:

- Transfer students must present at least 16 credits of 300 to 400-level biology or chemistry coursework taken at Mason.
- No unsatisfactory grades (less than 'C') may be presented for courses in the senior year of professional study.
- Transfer students entering with more than 45 transfer credits are often unable to complete the pre-professional phase of their program in the usual three years of full-time study.

Students may have up to 30 credits of professional study during the senior year awarded for clinical education at an affiliated school of medical technology. No more than 30 professional credits may be applied toward the degree. This concentration is a pathway leading to eligibility for categorical certification as a Certified Technologist by the American Society for Clinical Pathology (ASCP) Board of Certification (BOC). The concentration is one year long, consisting of about 20% classroom and 80% hands-on laboratory experience.

In addition to the courses required for all Medical Laboratory Science students, the following are required:		30
MLAB 401	Orientation to the Problems and Practices of the Clinical Laboratory	
MLAB 407	Clinical Molecular Biology	
Total Credits		30

Notes:

Students are encouraged to elect additional basic science courses during their pre-professional years. Recommended courses include:

BIOL 465	Histology	4
BIOL 483	General Biochemistry	4
BIOL 484	Cell Signaling and Disease	3
BIOL 485	Cell Signaling Laboratory	2-3
CHEM 321	Quantitative Chemical Analysis	4
PHYS 243	College Physics I(Mason Core)	3
PHYS 244	College Physics I Lab(Mason Core)	1
PHYS 245	College Physics II(Mason Core)	3
PHYS 246	College Physics II Lab(Mason Core)	1

Professional Study: Microbiology Concentration (MIB)

Senior students are registered at the university through special procedures. For details, consult the medical laboratory science program director.

The senior year spent off campus requires the following special interpretation of university policies:

- Transfer students must present at least 16 credits of 300 to 400-level biology or chemistry coursework taken at Mason.

- No unsatisfactory grades (less than 'C') may be presented for courses in the senior year of professional study.
- Transfer students entering with more than 45 transfer credits are often unable to complete the pre-professional phase of their program in the usual three years of full-time study.

Students may have up to 30 credits of professional study during the senior year awarded for clinical education at an affiliated school of medical technology. No more than 30 professional credits may be applied toward the degree. This concentration is a pathway leading to eligibility for categorical certification as a Certified Technologist by the American Society for Clinical Pathology (ASCP) Board of Certification (BOC). The concentration is one year long, consisting of about 20% classroom and 80% hands-on laboratory experience.

In addition to the courses required for all Medical Laboratory Science students, the following are required:		30
MLAB 401	Orientation to the Problems and Practices of the Clinical Laboratory	
MLAB 405	Clinical Microbiology	
Total Credits		30

Notes:

Students are encouraged to elect additional basic science courses during their pre-professional years. Recommended courses include:

BIOL 465	Histology	4
BIOL 483	General Biochemistry	4
BIOL 484	Cell Signaling and Disease	3
BIOL 485	Cell Signaling Laboratory	2-3
CHEM 321	Quantitative Chemical Analysis	4
PHYS 243	College Physics I(Mason Core)	3
PHYS 244	College Physics I Lab(Mason Core)	1
PHYS 245	College Physics II(Mason Core)	3
PHYS 246	College Physics II Lab(Mason Core)	1

Professional Study: Histotechnology Concentration (HISO)

In addition to the courses required for all Medical Laboratory Science students, the following are required:		30
MLAB 401	Orientation to the Problems and Practices of the Clinical Laboratory	
MLAB 408	Clinical Histology	
MLAB 409	Clinical Histology Practicum	
Total Credits		30

MLAB 401 Topics

The following topics will be covered under MLAB 401 Orientation to the Problems and Practices of the Clinical Laboratory:

1. Introduction to CLS and Laboratory Operations

This course is a brief introduction to the Clinical Laboratory Science professions and Laboratory Operations. Topics include: Introduction to Laboratory Operations, Pre-analytics and Specimen Types, Quality Management Concepts, Quality Control, Laboratory Professions, Professional Ethics, Laboratory Mathematics, Proper use of Laboratory Equipment, Introduction to Laboratory Instrumentation.

2. Board Exam Preparation

This course is a structured review and practice in preparation for the American Society for Clinical Pathology Technologist in Molecular Biology Board of Certification Exam. Practice tests and questions from a variety of published and authoritative sources are used to reinforce the content of the Technologist in Molecular Biology program.

MLAB 405 Topics

The following topics are covered under MLAB 405 Clinical Microbiology:

1. Introduction to Clinical Microbiology

This course is a brief introduction to the discipline of Clinical Microbiology, and laboratory diagnostic techniques. Topics include: Overview of Microbiology Theory, Methods and Applications, Instrumentation, Staining, and Media, Immunology, Serology, and Molecular Diagnostics.

2. Medical Virology

This course is a survey of the characteristics, pathogenicity, and laboratory diagnosis of important human viruses. Topics include viral taxonomy and classical virology. Special emphasis is placed on the epidemiology and the laboratory's role in influenza pandemics.

3. Medical Mycology

This course is a comprehensive presentation of medically important fungi. Emphasis is placed on clinical presentation and laboratory identification of pathogenic species and opportunistic pathogens. Topics include general mycology methods, yeasts, susceptibility testing, molds (Hyaline, Mucor, Dematiaceous), Dermatophytes, Systemic infections, and Pneumocystis.

4. Medical Parasitology

This course is a comprehensive presentation of human parasites. Emphasis is placed on clinical presentation and laboratory identification. Topics include Flagellates, Ciliates, Coccidians, Malaria and Babesia, Other Blood Born and Tissue Born parasites, Nematodes, Cestodes, Trematodes, and Arthropods.

5. Molecular Detection of Infectious Disease

This course examines the advances in using molecular methods to detect human infectious disease. Careful attention is given to the comparison of molecular technologies with traditional microbiology methods. Topics include molecular methods and applications, including PCR, sequencing, TMA, and PEGE, specimens of choice,

sample preparation, Quality Control, primer selection, Molecular methods in selecting antimicrobial agents, molecular epidemiology, and target organisms: fungi, bacteria, parasites, and viruses.

6. Medical Bacteriology

This course is a comprehensive presentation of bacteria isolated in the clinical laboratory. Emphasis is placed on the laboratory identification of isolates from a variety of specimen sources, and pathogenic species. Topics include Instrumentation and MALDI, Gram Positive Cocci, Gram Positive Baccili, Enterics, non-fermenters, *Moraxella, Neisseria, Pasteurella, Haemophilus and HACEK, Camphylobacter, Helicobacter, Legionella*, CDC Select Agents, *Chlamdydia, Mycoplasm, Ureaplasm*, Spirochetes, Anaerobes, Antibiotics and Susceptibility testing, and Acid Fast Bacilli.

7. Microbiology Clinical Correlations

Designed as the capstone for the Technologist in Microbiology program, this course takes a body system view of the pathogenicity of infectious disease. Attention is given to integrating clinical presentation and case history to laboratory investigation and diagnosis. Topics include UTI/Genital, Food Borne/GI, Cystic Fibrosis, Blood, CSF, Body Fluids, and Wounds.

MLAB 407 Topics

The following topics will be covered under MLAB 407 Clinical Molecular Biology:

1. Introduction to Clinical Molecular Biology

This course presents the fundamentals of nucleic acid testing in the clinical laboratory and the underlying human genetics. Topics include: Fundamentals of Nucleic Acid Biochemistry, Common Techniques in Molecular Biology (Extraction, Resolution and Detection of Nucleic Acids, Analysis and Characterization, Amplification, Chromosomal Structure and Mutations, Gene Mutations, and DNA Sequencing).

2. Advanced Methods in Clinical Molecular Biology

This course applies the fundamentals of nucleic acid testing to advanced methods commonly used in the contemporary clinical and research laboratory. Topics include: PCR, Transcription-Based Amplification, Probe Amplification, Branched DNA, Hybrid Capture, Amplification: Signal, Cleavage-Based, Cycling Probe, Sequencing: Direct, Next Gen, Pyrosequencing, Bisulfite, RNA Sequencing, Bioinformatics, Human Genome Project.

3. Molecular Detection of Infectious Disease

This course examines the advances in using molecular methods to detect human infectious disease. Careful attention is given to the comparison of molecular technologies with traditional microbiology methods. Topics include: Molecular methods and applications, including PCR, sequencing, TMA, and PEGE, specimens of choice, sample preparation, Quality Control, primer selection, Molecular methods in selecting antimicrobial agents, molecular epidemiology, and target organisms: fungi, bacteria, parasites, and viruses.

4. Human Molecular and Chromosomal Applications and Pathology

This course presents advanced methods in nucleic acid testing to human medico-legal, forensic, and pathology applications. Topics include: Polymorphisms, RFLP, Paternity Testing, Linkage, Single Nucleotide Polymorphisms, Bone Marrow Engraftment, Mitochondrial DNA Polymorphisms and Disorders, Chromosomal Abnormalities, Patterns of Inheritance, Single Gene Disorders, Lysosomal Storage Disorders, Cystic Fibrosis, Trinucleotide Repeats, Genomic Imprinting, Array CGH, Molecular Oncology, HLA and Transplantation.

Retroactive Requirements Updates: For CY 25-26, 24-25, 23-24, 22-23, allow the combination of BIOL 213 & BIOL 215 (4cr) to fill BIOL 213 (4cr) in the Biology Core requirement.

For CY 25-26, 24-25, 23-24, 22-23, allow the combination of BIOL 311 & BIOL 313 (4cr) to fill BIOL 311 (4cr) in the Biology Core requirement.

Plan of Study:

Honors Information:

Program Outcomes

Additional Program Information

This information is required by the Office of Accreditation and Program Integrity.

Courses offered via distance (if applicable):

What is the primary delivery format for the program?

Face-to-Face Only

Does any portion of this program occur off-campus?

Yes

Off-campus details:

Senior year spent off campus training.

Are you working with a vendor / other collaborators to offer your program?

Yes

Please explain:

Students spend their senior year in a laboratory (Augusta Health, GWU, INOVA, Sentara, Quest Diagnostics).

Related Departments

Could this program prepare students for any type of professional licensure, in Virginia or elsewhere?

Yes

Please explain:

Medical laboratory scientists.

Are you adding or removing a licensure component?

No

Additional SCHEV & SACSCOC Information

Is this change a simple retitling of an existing program, with no other changes, to any existing program content, curriculum requirements, etc?

No

Does this change represent a repackaging of content in an existing approved degree/certificate program at the same instructional level (i.e., baccalaureate, master's, or doctoral)?

No

Percentage of total credits containing new course content. ("New course content" is defined by SACSCOC as content that is not currently included in an existing approved degree/certificate program at the same instructional level. Do not exclude gen ed credits in calculations for undergraduate programs.)

0%-24%

Does this change include the addition of a distance education or face-to-face method of delivery for this program?

No

Does this change include the addition of a course/credit-based competency-based education delivery option?

No

Will any additional equipment/facilities be needed?

No

Will any additional faculty be required?

No

Will any additional financial resources be needed?

No

Additional library/learning resources needed?

No

Have you reached out to the Libraries to determine whether there are adequate resources to support your program? If not, please email Meg Meiman, Associate University Librarian for Learning, Research, and Engagement at mmeiman2@gmu.edu.

OAPI Use Only – Determination of SACSCOC Impact

Comments or Notes

Green Leaf Program Designation

Is this a Green Leaf program? No

Does this program cover material which crosses into another department?

No

Additional Attachments

SCHEV Proposal

Executive Summary

Reviewer Comments

Additional Comments

Is this course required of all students in this degree program?

%wi_required.eschtml%

Key: 34