

# MEDICAL LABORATORY SCIENCE (MLS)

## MLS 3150 - Urinalysis and Immunology Laboratory

1 Credit

Students will learn and perform serological and immunological laboratory testing, an introduction to body fluid analysis, as well as a how to perform and interpret a complete urinalysis (physical, chemical, and microscopic exams). Related lab math, correlation to disease states, and safety is discussed as well as the pre-analytical, analytical, and post-analytical factors impacting test results.

**Prerequisite(s):** BLS 3110

**Restrictions:**

Enrollment is limited to students with a major in Investigative Med Sciences, Medical Laboratory Science or Medical Sciences.

## MLS 3210 - Clinical Education & Laboratory Management

2 Credits

This course provides an overview of basic principles of education and concepts of management and their application in the clinical laboratory setting.

**Restrictions:**

Enrollment is limited to students with a major in Investigative Med Sciences, Medical Laboratory Science or Medical Sciences.

## MLS 3400 - Laboratory Operations

1 Credit (Repeatable for credit)

This course introduces students to the general operation of a clinical laboratory. Content focuses on laboratory organization, laboratory safety, basic laboratory equipment, laboratory math, pre-analytical, analytical and post-analytical variables, method validation, quality control procedures, calibration, and regulatory requirements.

**Prerequisite(s):** (MATH 1300 with a grade of C- or higher or STAT 1300 with a grade of C- or higher)

**Restrictions:**

Enrollment is limited to students with a major in Investigative Med Sciences, Medical Laboratory Science or Medical Sciences.

## MLS 4150 - Analytical Chemistry

2 Credits

A hybrid lecture/laboratory course which introduces analytical principles and instrumentation used in a clinical chemistry laboratory. Topics include: photometry, electrochemistry, immunoassays, chromatography, mass spectrometry, osmometry, automation, and point-of-care-testing. Experiments are designed to demonstrate basic principles and laboratory techniques.

**Corequisite(s):** BLS 4110

**Restrictions:**

Enrollment is limited to students with a major in Investigative Med Sciences, Medical Laboratory Science or Medical Sciences.

## MLS 4250 - Hematology Laboratory

1 Credit

Performance, interpretation, and troubleshooting of a variety of basic hematology procedures will be accomplished using clinical specimens. Cell counts and differentials and other hematology procedures will be performed on blood. Physical analysis and cell counting procedures will be discussed and performed on various body fluids. Principles and reactions involved in the testing procedure will be emphasized as well as the interpretation of results. Students will also receive an introduction to phlebotomy.

**Corequisite(s):** BLS 4210

**Restrictions:**

Enrollment is limited to students with a major in Investigative Med Sciences, Medical Laboratory Science or Medical Sciences.

## MLS 4350 - Immunohematology Laboratory

1 Credit

Practice in routine testing procedures utilized in the blood bank such as blood typing, antibody identification, and crossmatching using clinical samples. Theoretical principles, troubleshooting procedures and interpretation of results will be discussed.

**Corequisite(s):** BLS 4310

**Restrictions:**

Enrollment is limited to students with a major in Investigative Med Sciences, Medical Laboratory Science or Medical Sciences.

## MLS 4515 - Medical Microbiology Laboratory

1 Credit

Medical Microbiology Laboratory is a one-semester course that offers student an opportunity to exercise medical microbiological principles, including plating, workup, identification, and reporting of organisms in the clinical setting.

**Corequisite(s):** BLS 4510

**Restrictions:**

Enrollment limited to students in the following programs:

- BS ES, Athletic Train(Pre-PA)
- BS NutritionDiet-PrePA
- BS Health Info Mgmt-Pre PA
- BS Health Sciences-Pre-PA
- BS Invstgtve Med Sci-PrePA
- BS Medical Lab Sci-Pre-PA
- BS Magnetic Res Img-Pre PA
- BS Nuclear Med Tech-Pre PA
- BS Radiation Thrpy-Pre PA

## MLS 4520 - Medical Bacteriology

2 Credits

Content focuses on prokaryotic microbes of pathologic importance. Included are discussions on structure, molecular biology, molecular diagnostics, metabolism, growth, replication, current topics and emerging concerns. Pathogenicity, epidemiology, diagnosis and laboratory identification of important groups of human pathogenic bacteria are emphasized. Modes of action of selected antimicrobics and chemotherapeutic agents are also discussed.

**Prerequisite(s):** BLS 4510 with a grade of C- or higher

**Corequisite(s):** MLS 4550

**Restrictions:**

Enrollment is limited to students with a major in Investigative Med Sciences, Medical Laboratory Science or Medical Sciences.

**MLS 4541 - Medical Mycology and Parasitology**

3 Credits

Course will focus on the clinically relevant parasites and fungi and the diseases they produce in man. Terminology, taxonomy, aspects of epidemiology, modes of transmission, pathogenesis, morphology, life cycles, specimen processing, and techniques of laboratory identification are discussed. (Offered in Spring)

**Prerequisite(s):** BLS 4510 with a grade of C- or higher

**Restrictions:**

Enrollment is limited to students with a major in Investigative Med Sciences, Medical Laboratory Science or Medical Sciences.

**MLS 4550 - Medical Bacteriology Laboratory**

2 Credits

Laboratory course designed to give the student experience in the Gram staining, isolation, identification and susceptibility testing of microorganisms.

**Prerequisite(s):** BLS 4510 with a grade of C- or higher

**Corequisite(s):** MLS 4520

**Restrictions:**

Enrollment is limited to students with a major in Investigative Med Sciences, Medical Laboratory Science or Medical Sciences.

**MLS 4611 - Advanced Topics and Case Correlations**

2 Credits

This course reviews and extends the students' body of knowledge in medical laboratory science and prepares students to successfully sit for the ASCP-BOC certification exam in Medical Laboratory Science. This is a capstone course that also meets the SLU Core Cura Personalis 3 requirement. The course will be delivered online through independent study assignments with some group work.

**Prerequisite(s):** BLS 4120, BLS 4130, BLS 4220, BLS 4420, MLS 3150, MLS 3400, MLS 4250, MLS 4350, MLS 4520, MLS 4541, and MLS 4550; CORE 1900; CORE 1500; CORE 1200\*; CORE 2500\*; CORE 1000

\* Concurrent enrollment allowed.

**Restrictions:**

Enrollment limited to students with a classification of Senior.

Enrollment is limited to students with a major in Medical Laboratory Science or Medical Sciences.

**Attributes:** UUC:Self in the World

**MLS 4620 - Advanced Topics and Case Correlations-Clinical Chemistry**

1 Credit

Key content areas of clinical chemistry will be reviewed, advanced topics and specialty areas in the clinical chemistry laboratory will be discussed. Clinical case studies addressing laboratory test/disease correlation, the selection of laboratory tests, interpretation of laboratory results, and problem resolution will be emphasized. Advanced theory and clinical practice issues are presented and reinforced through lectures, discussions, and case presentations.

**Prerequisite(s):** MLS 4701 with a grade of C- or higher; MLS 4710 with a grade of C- or higher; MLS 4821 with a grade of C- or higher

**Restrictions:**

Enrollment is limited to students with a major in Investigative Med Sciences or Medical Laboratory Science.

**MLS 4630 - Advanced Topics and Case Correlations - Hematology**

1 Credit

Key content areas in clinical hematology will be reviewed, advanced topics and specialty areas in the clinical hematology laboratory will be discussed. Clinical case studies addressing laboratory test/disease correlation, the selection of laboratory tests, interpretation of laboratory results, and problem resolution will be emphasized. Advanced theory and clinical practice issues are presented and reinforced through lectures, discussions, and case presentations.

**Prerequisite(s):** MLS 4740 with a grade of C- or higher; MLS 4750 with a grade of C- or higher; MLS 4821 with a grade of C- or higher

**Restrictions:**

Enrollment is limited to students with a major in Investigative Med Sciences or Medical Laboratory Science.

**MLS 4640 - Advanced Topics and Case Correlations - Microbiology**

1 Credit

Key content areas in clinical microbiology will be reviewed, advanced topics and specialty areas in the clinical microbiology laboratory will be discussed. Clinical case studies addressing laboratory test/disease correlation, the selection of laboratory tests, interpretation of laboratory results, and problem resolution will be emphasized. Advanced theory and clinical practice issues are presented and reinforced through lectures, discussions, and case presentations.

**Prerequisite(s):** MLS 4800 with a grade of C- or higher; MLS 4811 with a grade of C- or higher

**Restrictions:**

Enrollment is limited to students with a major in Investigative Med Sciences or Medical Laboratory Science.

**MLS 4701 - Clinical Chemistry Practicum**

3 Credits

Clinical rotation course focuses on clinical chemistry testing in a practicum setting. Concepts and techniques include: protein structure and function; enzyme kinetics; carbohydrate and lipid metabolism; hormonal regulation; pathophysiology of water, electrolyte, acid-base balance, and special techniques. Laboratory techniques, workflow management, quality control and evaluation of results in the interpretation of health/disease status are emphasized.

**Prerequisite(s):** BLS 4110 with a grade of C- or higher; BLS 4120 with a grade of C- or higher; MLS 4150 with a grade of C- or higher

**Corequisite(s):** MLS 4710

**Restrictions:**

Enrollment is limited to students with a major in Investigative Med Sciences, Medical Laboratory Science or Medical Sciences.

**MLS 4710 - Clinical Chemistry**

1 Credit

Discussions, assignments and exams covering the theory, concepts and procedures used in the clinical chemistry practicum.

**Prerequisite(s):** BLS 4110 with a grade of C- or higher; BLS 4120 with a grade of C- or higher; MLS 4150 with a grade of C- or higher

**Corequisite(s):** MLS 4701

**Restrictions:**

Enrollment is limited to students with a major in Investigative Med Sciences, Medical Laboratory Science or Medical Sciences.

**MLS 4740 - Clinical Hematology Practicum**

2 Credits

Clinical rotation course focuses on the counting, identification and analysis of the cellular components of blood in a clinical laboratory setting using advanced techniques and state of the art computer integrated instruments. Laboratory techniques, workflow management, quality control and evaluation of results in the interpretation of health/disease status are emphasized.

**Prerequisite(s):** BLS 4210 with a grade of C- or higher; MLS 4250 with a grade of C- or higher

**Corequisite(s):** MLS 4750

**Restrictions:**

Enrollment is limited to students with a major in Investigative Med Sciences, Medical Laboratory Science or Medical Sciences.

**MLS 4750 - Clinical Hematology**

1 Credit

Discussions, assignments and exams covering the theory, concepts and procedures used in the clinical hematology practicum.

**Prerequisite(s):** BLS 4210 with a grade of C- or higher; MLS 4250 with a grade of C- or higher

**Corequisite(s):** MLS 4740

**Restrictions:**

Enrollment is limited to students with a major in Investigative Med Sciences, Medical Laboratory Science or Medical Sciences.

**MLS 4760 - Clinical Hemostasis Practicum**

1 Credit

Clinical rotation course involving specialized hemostasis testing in a practicum setting. Concepts and techniques include the evaluation of bleeding and thrombotic disorders. Laboratory techniques, workflow management, quality control and evaluation of results in the interpretation of health/disease status are emphasized.

**Prerequisite(s):** BLS 4220 with a grade of C- or higher

**Restrictions:**

Enrollment is limited to students with a major in Investigative Med Sciences, Medical Laboratory Science or Medical Sciences.

**MLS 4770 - Clinical Phlebotomy Practicum**

1 Credit

Clinical rotation course where experience is gained in the principles and procedures of blood collection. Professional and interpersonal communication with patients along with accurate selection and handling of equipment/collection are emphasized. Following OSHA and standard clinical safety guidelines in the collection and handling of blood is required.

**Prerequisite(s):** CORE 1500\* ; (CORE 1000 or UUC Ignite Seminar Waiver with a minimum score of S)

\* Concurrent enrollment allowed.

**Restrictions:**

Enrollment is limited to students with a major in Investigative Med Sciences or Medical Laboratory Science.

**Attributes:** UUC:Reflection-in-Action

**MLS 4780 - Clinical Immunohematology Practicum**

2 Credits

Clinical rotation course providing laboratory experience in routine and specialized blood bank techniques such as antibody identification, crossmatching and component preparation. Laboratory techniques, workflow management, quality control and evaluation of results in the interpretation of health/disease status are emphasized.

**Prerequisite(s):** BLS 4310 with a grade of C- or higher; MLS 4350 with a grade of C- or higher

**Corequisite(s):** MLS 4790

**Restrictions:**

Enrollment is limited to students with a major in Medical Laboratory Science.

**MLS 4790 - Clinical Immunohematology**

1 Credit

Discussion, assignments and exams covering the theory, concepts and procedures used in the clinical immunohematology practicum.

**Prerequisite(s):** BLS 4310 with a grade of C- or higher; MLS 4350 with a grade of C- or higher

**Corequisite(s):** MLS 4780

**Restrictions:**

Enrollment is limited to students with a major in Medical Laboratory Science.

**MLS 4800 - Clinical Microbiology Practicum**

3 Credits

Clinical rotation course applying principles and procedures used in the isolation, identification and susceptibility testing of microorganisms in a clinical setting. Laboratory techniques, workflow management, quality control and evaluation of results in the interpretation of health/disease status are emphasized.

**Prerequisite(s):** BLS 4510 with a grade of C- or higher; MLS 4520 with a grade of C- or higher; MLS 4550 with a grade of C- or higher

**Corequisite(s):** MLS 4811

**Restrictions:**

Enrollment is limited to students with a major in Investigative Med Sciences, Medical Laboratory Science or Medical Sciences.

**MLS 4811 - Clinical Microbiology**

1 Credit

Assignments and exams covering the theory, concepts and procedures used in the clinical microbiology practicum.

**Prerequisite(s):** BLS 4510 with a grade of C- or higher; MLS 4520 with a grade of C- or higher; MLS 4550 with a grade of C- or higher

**Corequisite(s):** MLS 4800

**Restrictions:**

Enrollment is limited to students with a major in Investigative Med Sciences, Medical Laboratory Science or Medical Sciences.

**MLS 4820 - Clinical Urinalysis Practicum**

1 Credit

Clinical rotation course focuses on the physical, chemical and cellular components of urine in a clinical laboratory setting. Laboratory techniques, workflow management, quality control and evaluation of results in the interpretation of health/disease status are emphasized. (Offered in Fall and Spring)

**Prerequisite(s):** BLS 3110 with a grade of C or higher; MLS 3150 with a grade of C or higher

**Restrictions:**

Enrollment limited to students with a classification of Senior.

Enrollment is limited to students with a major in Investigative Medical Sciences or Medical Laboratory Science.

**MLS 4821 - Clinical Urinalysis and Phlebotomy**

1 Credit

Clinical rotation course focuses on the physical, chemical and cellular components of urine and the principles and procedures of blood collection in a clinical laboratory setting. Professional and interpersonal communication with patients along with accurate selection and handling of equipment/collection are emphasized. Laboratory techniques, workflow management, quality control and evaluation of results in the interpretation of health/disease status are emphasized.

**Prerequisite(s):** BLS 3110 with a grade of C- or higher; MLS 3150 with a grade of C- or higher

**Restrictions:**

Enrollment is limited to students with a major in Investigative Medical Sciences, Medical Laboratory Science or Medical Sciences.