

# MEDICAL LABORATORY SCIENCE (MLS)

## **MLS 1501 Introduction to the Medical Laboratory Profession 2 s.h.**

Overview of the medical laboratory profession, ethics, responsibilities and clinical relevance of laboratory procedures. Concurrent with: MLS 1501L.

**Prereq.:** MATH 1504 or level 20 on Math Placement Test, high school chemistry or CHEM 1501, high school biology or BIOL 1505.

## **MLS 1501L Introduction to the Medical Laboratory Profession Laboratory 1 s.h.**

Phlebotomy, specimen collection and processing; basic medical laboratory exercises. Three hours lab per week. Concurrent with: MLS 1501.

**Prereq.:** MATH 1504 or level 20 on Math Placement Test, high school chemistry or CHEM 1501, high school biology or BIOL 1505.

## **MLS 1502 Urinalysis and Body Fluids 2 s.h.**

Theory, clinical correlation and techniques in the analysis of urine and body fluids.

**Prereq.:** MLS 1501/L, BIOL 2601/L.

**Cross-Listed:** MLT 1502.

## **MLS 1502L Urinalysis and Body Fluid Laboratory 1 s.h.**

Chemical and microscopic analysis of urine and body fluids.

**Prereq.:** MLS 1501/L, CHEM 1510/L.

**Cross-Listed:** MLT 1502L.

## **MLS 1503 Immunohematology 3 s.h.**

Fundamental theories and techniques in immunohematology and blood banking.

**Prereq.:** MLS 1501/L; BIO 2601/L.

**Coreq.:** MLS 1503L.

**Cross-Listed:** MLT 1503.

## **MLS 1503L Immunohematology Laboratory 1 s.h.**

ABO and RH typing, direct and indirect antiglobulin testing, compatibility testing. Three hours lab per week.

**Prereq.:** MLS 1501/L; BIO 2601/L.

**Coreq.:** MLS 1503.

**Cross-Listed:** MLT 1503L.

## **MLS 2601 Clinical Chemistry 1 2 s.h.**

This course provides an introduction to the principles, procedures, and significance of tests performed in the clinical chemistry laboratory. Theory and principles of test methodologies are discussed and data are correlated to physiological processes.

**Prereq.:** MLS 1501/L; CHEM 1510/L.

**Cross-Listed:** MLT 2601.

## **MLS 2601L Clinical Chemistry 1 Laboratory 1 s.h.**

This course will apply principles of semi-automated and automated analysis including Spectrophotometry and various techniques for analysis of glucose, electrolytes, enzymes, and other chemical constituents of serum and body fluid.

**Prereq.:** MLS 1501/L, CHEM 1510/L.

**Coreq.:** MLS 2601.

**Cross-Listed:** MLT 2601L.

## **MLS 2603L Advanced Immunohematology Laboratory 1 s.h.**

Clinical application of advanced Immunohematology procedures. Three hours of laboratory per week. 1 s.h.

**Prereq.:** MLS 1503/L (Minimum grade "C").

**Cross-Listed:** MLT 2603L.

## **MLS 2605 Molecular Diagnostics 2 s.h.**

This course focuses on the newest medical laboratory discipline known as molecular diagnostics. The content will include principles of molecular biology (nucleic acid) tools and their application to aid in identification, diagnosis, and prognosis of conditions and disease states.

**Prereq. or Coreq.:** BIO 2601/2601L, MLS or MLT 1501/L.

**Cross-Listed:** MLT 2605.

## **MLS 3700 Clinical Chemistry 2 4 s.h.**

This course will explore the principles and procedures of routine clinical chemistry analysis, including correlation of test results with pathophysiology, testing criteria and variables that impact accuracy.

**Prereq.:** MLT 2601 or CHEM 1510/L.

## **MLS 3701 Clinical Hematology 1 2 s.h.**

Hematopoiesis; theory and laboratory application of manual procedures in hematology including cell counts, hemoglobin, hematocrit, and differentials; introductory hemostasis and laboratory applications. Two hours of lecture per week.

**Prereq.:** MLS 1501, MLS 1501L, BIOL 2601 with a minimal grade of "C".

## **MLS 3701L Clinical Hematology 1 Laboratory 1 s.h.**

Laboratory application of manual procedures in hematology including cell counts, hemoglobin, hematocrit, and differentials; introductory hemostasis and laboratory applications. Three hours of laboratory per week.

**Prereq.:** MLS 1501, MLS 1501L, BIOL 2601 with a minimal grade of "C".

**Coreq.:** MLS 3701.

## **MLS 3702 Clinical Hematology 2 2 s.h.**

Advanced theory and laboratory procedures in hematology and hemostasis, including leukemia, anemia, hematopathology and coagulation disorders; abnormal differentials and automated methods. Two hours of lecture week.

**Prereq.:** MLS 3701, MLS 3701L with a minimal grade of "C".

## **MLS 3702L Clinical Hematology 2 Laboratory 1 s.h.**

Laboratory procedures in hematology and hemostasis, including leukemia, anemia, hematopathology and coagulation disorders; abnormal differentials and automated methods. Three hours of laboratory per week.

**Prereq.:** MLS 3701, MLS 3701L with a minimal grade of "C".

**Coreq.:** MLS 3702.

## **MLS 3704 Clinical Immunology and Serology 3 s.h.**

A study of the diagnostic applications of immunology and methods of serological testing. The immunology and diagnosis of infectious disease, autoimmunity, immunodeficiency, and immunoproliferative disease will be discussed.

**Coreq.:** MLS 3704L.

**Cross-Listed:** MLT 3704.

## **MLS 3704L Clinical Immunology and Serology 1 s.h.**

A study of the diagnostic applications of immunology and methods of serological testing. The immunology and diagnosis of infectious disease, autoimmunity, immunodeficiency, and immunoproliferative disease will be discussed.

**Coreq.:** MLS 3704.

**Cross-Listed:** MLT 3704L.

## **MLS 3787 Diagnostic Microbiology 3 s.h.**

Clinical applications of human pathogenic microorganisms; infections, frequency, isolation, identification, and treatment of bacteria, fungi, viruses, and parasites. Case studies, problem solving, and quality assurance in clinical microbiology. Three hours lecture per week.

**Prereq.:** MLS 1501/L.

**Coreq.:** MLS 3787L.

## **MLS 3787L Diagnostic Microbiology Laboratory 2 s.h.**

A clinical approach to the study of bacteria, fungi, viruses, and parasites. Methods to isolate and identify clinically significant pathogens from clinical specimens; case studies in clinical microbiology. Six hours lab per week. Identical with MLT 3787L.

**Prereq.:** MLS 1501/L.

**Coreq.:** MLS 3787.

**MLS 4800 MLS Chemistry Clinical Experience 7 s.h.**

Didactics and critical analysis of clinical chemistry provided at the clinical site. 7 semester hours. Grading is Traditional or PR.

**Prereq.:** Acceptance into an MLS 3+1 clinical internship .

**MLS 4801 MLS Hematology Clinical Experience 7 s.h.**

Didactics and clinical analysis of clinical hematology. 7 semester hours. Grading is Traditional or PR.

**Prereq.:** Acceptance into the 3+1 clinical internship year.

**MLS 4802 MLS Immunohematology Clinical Experience 7 s.h.**

Didactics and critical analysis of blood banking, Immunohematology, and Transfusion Medicine. Seven semester hours. Grading is Traditional or PR.

**Prereq.:** Acceptance into a 3+1 clinical internship.

**MLS 4803 MLS Microbiology Clinical Experience 7 s.h.**

Didactics and critical analysis of bacteriology, mycology, virology and Parasitology. Seven semester hours. Grading is Traditional or PR.

**Prereq.:** Acceptance into an MLS 3+1 clinical internship year.

**MLS 4804 Miscellaneous Clinical Experience 7 s.h.**

Didactic and clinical analysis of specimen collection and processing. Management, education, molecular diagnostics, hemostasis, clinical immunology, and urinalysis and body fluids. Seven semester hours. Grading is Traditional or PR.

**Prereq.:** Acceptance into an MLS 3+1 clinical internship year.

**MLS 4807 Advanced Clinical Chemistry 4 s.h.**

The study of fundamental principles of chemical analysis in the laboratory and correlation to pathological disease states. Web based lecture .

**Prereq.:** Acceptance into the MLS Advanced placement online completion program .

**MLS 4807L Advanced Clinical Chemistry Lab Competency 2 s.h.**

Laboratory procedures in clinical chemistry. Students may submit verified competency and receive experiential credit. Students who do not meet required competency must register for and engage in clinical training at an affiliated clinical site .

**Prereq.:** Acceptance into the MLS Advanced Placement online completion program.

**MLS 4808 Advanced Hematology 4 s.h.**

Advanced study of human blood and laboratory analysis and correlation to hematological and hematopoetic disorders. Web based lecture.

**Prereq.:** Acceptance into the MLS Advanced Placement Online Completion Program.

**MLS 4808L Advanced Hematology Clinical Competency 2 s.h.**

Laboratory application of hematological and hematopoetic analysis.

**Prereq.:** Admission to the MLS Advanced Placement Online Completion Program.

**MLS 4809 Advanced Immunohematology 4 s.h.**

Didactic and critical analysis of bloodbanking, immunohematology, and transfusion medicine. Web based lecture.

**Prereq.:** Admission to the MLS Advanced Placement Online Completion Program .

**MLS 4809L Advanced Immunohematology Clinical Competency 2 s.h.**

Clinical application of IH procedures in the laboratory.

**Prereq.:** Admission to the MLS Advanced Placement Online Completion Program.

**MLS 4810 Advanced Diagnostic Microbiology 5 s.h.**

Didactics and critical analysis of host/Microbial interaction and laboratory identification of medically significant bacteria, fungi, parasites, and viruses. Correlation to disease states and analysis of laboratory techniques utilized in the diagnosis of infections and disease. Web based lecture.

**Prereq.:** Admission to the MLS Advanced Placement Online Completion Program.

**MLS 4810L Advanced Microbiology Competency 3 s.h.**

Clinical competency in Microbiological procedures utilized in the Medical Laboratory.

**Prereq.:** Admission to the MLS Advanced Placement Online Completion Program.

**MLS 4811 Advanced Immunology and Urinalysis 4 s.h.**

Didactics and Critical analysis of Immunological and Serological principles and analysis in the clinical laboratory and correlation to disease states. Web based lecture.

**Prereq.:** Admission to the MLS Advanced Placement Online Completion Program.

**MLS 4811L Adv Immuno/Sero, Urinalysis, and Molecular Competency 2 s.h.**

Competent application of Immunological and Serological techniques utilized in the medical laboratory. Competent application of techniques in Urinalysis and Molecular Diagnostics.

**Prereq.:** Admission to the MLS Advanced Placement Online Completion Program.

**MLS 4812 Advanced Laboratory Operations 2 s.h.**

Didactics and critical analysis of laboratory management, regulations, safety, quality control and quality assurance in the clinical laboratory. Web based lecture.

**Prereq.:** Acceptance in MLS Advanced Placement Online Completion Program.

**MLS 4813 Advanced Placement Seminar 1 s.h.**

Certification preparation.

**Prereq.:** Admission to MLS advanced placement program and instructor approval.