

MLS - Medical Laboratory Sciences

Courses numbered 100 to 299 = *lower-division*; 300 to 499 = *upper-division*; 500 to 799 = *undergraduate/graduate*.

MLS 281. Cooperative Education (1-8).

Provides a field placement that integrates theory with a planned and supervised professional experience designed to complement and enhance the student's academic program. Individualized programs must be formulated in consultation with, and approved by, appropriate faculty sponsors and the cooperative education coordinator. Repeatable for credit. Prerequisites: basic requirements for admission include successful completion of the freshman year and satisfactory academic standing prior to the first job assignment.

MLS 311. Biochemistry for Clinical Scientists (3).

3 Classroom hours. A discussion of the structure and metabolic pathways of carbohydrates, proteins, lipids and nucleic acids, with emphasis on metabolic control via enzymes, hormones and vitamins, and the biochemistry of clinical pathology. Prerequisites: two semesters of general chemistry with laboratory, at the major level.

MLS 400. Clinical Laboratory Management/Education (3).

A study of the principles and methodologies of laboratory management and supervision, and teaching techniques applicable to the clinical laboratory sciences. Prerequisite: program consent.

MLS 405. Medical Immunology (3).

An introduction to the study of immunological concepts as they apply to the study, prevention and causation of the disease process. Prerequisite: BIOL 223 or HS 290.

MLS 411. Special Topics (1-6).

Supervised intensive study of special topics and problems related to health professions. Repeatable to a total of 6 credit hours. Prerequisite: program director's consent.

MLS 453. Clinical Chemistry (8).

6 Classroom hours; 4 Lab hours. Includes the study of the principles, concepts and techniques used in the clinical chemistry laboratory for the analysis of serum, plasma and other body fluids. Correlation and analysis of chemical substances in the body and the assessment of health and disease is emphasized. Applicable practice in the analysis of body fluids is provided, including the physical, chemical and microscopic analysis of urine. Coursework includes the study of clinical laboratory regulation, general laboratory operations, safety, and instrumentation methodologies, as well as discussion regarding the assessment of normal physiological function and associated disease conditions for each of the major body systems to include assessment of carbohydrates, proteins and other nonprotein nitrogen-containing compounds, heme synthesis and derivatives, enzymes, electrolytes, acid-base balance, lipids and lipoproteins, cardiac biomarkers, hormones, tumor markers, therapeutic drug monitoring, and toxicology. Prerequisite: admission to the MLS program.

MLS 458. Advanced Clinical Chemistry (4).

The study of the principles, concepts and techniques of laboratory testing of body fluids, including the study of advanced instrumentation principles and techniques, acid-base balance, advanced enzymology, nutrition and digestive assessment, endocrinology and toxicology. Correlation of chemical substances of the body and assessment of health and disease is emphasized. Practice in procedures used for chemical analysis of body fluids is provided. This course is designed for certified medical laboratory technicians to assist them in reaching baccalaureate level practice in laboratory medicine. Prerequisite: admission to the MLS program.

MLS 463. Clinical Hematology (8).

6 Classroom hours; 4 Lab hours. Emphasizes the theory underlying basic and advanced procedures performed in the hematology laboratory and the relationship between these procedures and the diagnosis of hematological disorders. The clinical significance of laboratory data and its correlation with pathologic conditions are discussed, including in-depth discussions of anemias, polycythemias, leukemias, lymphomas and hemostasis abnormalities. The laboratory component of the course includes performance of basic and advanced hematology procedures including manual and automated complete blood counts, normal and abnormal differentials, cytochemical stains, and routine hemostasis testing. Prerequisite: admission to the MLS program.

MLS 468. Advanced Clinical Hematology (4).

Emphasizes the theories underlying procedures performed in the hematology, hemostasis and body fluids laboratories, and the relationships between these procedures and the diagnosis of disease, including in-depth discussions of anemias and leukemias. Opportunity is given to practice specialized hematologic, hemostasis and body fluid procedures used in the clinical laboratory. Course is designed for certified medical laboratory technicians to assist them in reaching baccalaureate level practice in laboratory medicine. Prerequisite: admission to the MLS program.

MLS 473. Immunohematology (8).

6 Classroom hours; 4 Lab hours. The practices and procedures in the transfusion service and donor center are presented, including the application of genetics and immunology to blood group serology. Problem solving in transfusion medicine, including complex antibody identification techniques and resolution of serological incompatibilities encountered in blood typing. Hemolytic disease of the newborn and hemolytic anemia are explored. Practice is offered in the techniques relevant to the performance of blood bank testing by the medical laboratory scientist in both the donor center and transfusion center, including automated testing methods, collection, storage and processing of blood components for transfusion. Reagents, testing of blood products and quality principles in blood banking are summarized. Prerequisite: admission to the MLS program.

MLS 478. Advanced Immunohematology (4).

Emphasizes practice and problem solving in transfusion services and donor centers. Practice is offered in techniques relevant to the performance of blood bank testing. Designed for certified medical laboratory technicians to assist them in reaching baccalaureate level practice in laboratory medicine. Prerequisite: admission to the MLS program.

MLS 479. Applied Immunohematology (3).

Application of the theory and technical skill of immunohematology in a clinical laboratory with experiences in prenatal testing, antibody identification, direct antiglobulin evaluation, provision of safe blood or blood components for transfusion, and resolution of discrepancies encountered in performing any of the procedures. Prerequisite: MLS program consent.

MLS 482. Molecular Diagnostic Techniques (3).

2 Classroom hours; 1 Lab hour. An introduction to molecular diagnostic techniques performed in the clinical laboratory, including rationale of testing methodologies, comparison of test methods, performance of lab tests, interpretation of test results, and clinical correlations of testing to specific disease, as well as the molecular basis of various pathologic conditions.

MLS 488. Core Laboratory Practicum (8).

Application of theory and techniques of clinical analysis of body fluids for the assessment of health and disease. Prerequisite: MLS program consent.

MLS 495. Clinical Microbiology (8).

Theory and practice of isolation and identification of human pathogenic micro-organisms, including (a) procedures for specimen processing in the clinical laboratory; (b) normal flora of human body sites; (c) morphological, cultural and serologic characteristics of medically significant micro-organisms; and (d) antimicrobial principles and susceptibility testing techniques. Prerequisite: admission to the MLS program.

MLS 498. Applied Clinical Microbiology (3).

Application of theoretical and practical aspects of clinical microbiology in a commercial laboratory and operating hospital laboratory.

Prerequisites: MLS program consent.

MLS 499. Advanced Clinical Microbiology (4).

The study of medically significant bacteria, viruses, fungi and parasites emphasizing their identification in the clinical laboratory. Designed for certified medical laboratory technicians to assist them to reach baccalaureate level practice in laboratory medicine. Prerequisite: admission to the MLS program.