MLT 103. Introduction to Medical Laboratory Technology (Formerly CLS103). 4 Credits.

This introductory course provides students with the theory and laboratory skill that serve as the foundation for clinical coursework in the hospital laboratory. An overview of the role of the clinical laboratory scientist in health care in general and patient care in particular is emphasized. Basics of laboratory equipment, measurement, and lab math, along with use of information systems are covered. Learning and understanding of the quality assurance process and safety in the lab prepares the student for introduction to specialized departments within the laboratory. Students will be introduced to basic immunology, serology, and the use of antigen/antibody reactions in the medical laboratory. In addition, a brief introductory survey of selected topics in hematology, clinical chemistry and immunohematology will be presented. Prerequisites: ENG 098, FYE 101, MAT 092, RDG 098, or placement; BIO 113 (preferred) or BIO 109; CHE 107 recommended. Fall.

MLT 105. Introduction to Medical Laboratory Technology II (Formerly CLS105). 3 Credits.

This introductory course expands on the student's knowledge gained in MLT 103, and concentrates on the analysis of selected body fluids and the proper collection of peripheral blood samples. The course covers the production of selected body fluids (e.g., urine, semen, synovial fluid and feces); their normal characteristics and pathological changes will be discussed within the practice of acceptable quality assurance. A description of the laboratory tests used in the clinical evaluation of body fluids will also be presented. Throughout this course, special emphasis is placed on the correlation of laboratory results with the patient's probable condition. The course also provides theory in phlebotomy and practical instruction in skills needed to obtain acceptable blood samples by venipuncture, capillary (dermal) puncture, or other techniques. Students will learn to safely and proficiently collect various types of blood specimen for laboratory analysis. NOTE: Students must pass both the UA/Body Fluids and Phlebotomy component with a grade of “C+” (77 percent) or better to maintain an acceptable performance level to progress in the pre-MLT program. If a student fails to achieve at least a “C+” (77 percent) in either UA/Body Fluids or Phlebotomy, their final grade for the course will be the lower of the two grades. THE STUDENT WILL NOT BE ALLOWED TO CONTINUE IN SEQUENCE TO MLT 106 OR PROGRESS TO THE MLT PROGRAM CLINICAL YEAR IF THEY FAIL TO ACHIEVE A “C+” (77 PERCENT) OR HIGHER IN ANY LABORATORY OR LECTURE (UA/BODY FLUIDS AND PHLEBOTOMY) COMPONENT IN THE CURRICULUM. Prerequisites: MLT 103; BIO 204 recommended (or corequisite). Spring.

MLT 106. Phlebotomy and Urinalysis Practicum for pre-MLT Students. 1 Credit.

This course provides practical experience (37.5 scheduled hours of urinalysis and drawing blood) for the student to apply the knowledge, attitudes, and skills of clinical laboratory practice in specimen collection, phlebotomy and urinalysis that were gained in MLT 105. This knowledge is integrated into the clinical laboratory through the practice of phlebotomy and urinalysis, utilizing appropriate resource management, communications, quality assurance, safety, and information systems. Placement by arrangement. Prerequisites: MLT 103 and MLT 105. Summer.

MLT 220. Clinical Hematology and Hemostasis. 5 Credits.

This course is designed to develop medical laboratory technician skills that will be used in the Hematology and Hemostasis laboratories in a hospital setting. The course details the formation, function, and morphology of the blood's normal cellular elements as well as the systems involved in coagulation and fibrinolysis. Students will apply their knowledge and skills using theoretical knowledge, principles and procedures of hematology and coagulation testing, identify sources of error, and relate clinical significance of laboratory results to human disease. Students will learn to correlate laboratory findings with the patient's clinical signs and symptoms using case studies, homework and practical exams. Prerequisites: MLT 103, MLT 105, MLT 106, MAT 143, CHE 107, BIO 204 and BIO 205 with a C+ or higher. Fall.

MLT 221. Clinical Practicum I - Hematology. 3 Credits.

This course is the clinical practicum experience in Hematology and Hemostasis, which takes place in a local hospital. The practicum is scheduled as 3 weeks long, 5 days/week, 40 hours/week by arrangement with MLT clinical coordinator. Students will apply the knowledge and skills using principles and procedures of hematology and coagulation testing, identifying sources of error and relate the clinical significance of results to human disease. Students are to be able to correlate a patient's laboratory findings with the patient's diagnosis or other laboratory results. The students must receive a passing grade (representing a C+ or higher) in order to progress through the program. Prerequisites: C+ or higher in MLT 220 and MLT 222. Fall.

MLT 222. Clinical Immunohematology. 5 Credits.

This course is designed to develop medical lab science skills in Immunohematology. Theoretical concepts underlying blood group biochemistry, genetics, and serology as they relate to blood donation and transfusion therapy practices are presented. An understanding of the role of both humoral and cellular immunity in defense against disease is investigated as they relate to common immunoassays. Students will apply their knowledge and skills using principles and routine blood bank and serology procedures including donor selection, compatibility testing, detection and identification of antibodies, and component preparation and handling. Prerequisites: MLT 103, MLT 105, MLT 106, MAT 143, CHE 107, BIO 204 and BIO 205 with a C+ or higher. Fall.
MLT 223. Clinical Practicum II - Immunohematology. 3 Credits.
This course is the clinical practicum experience in Immunohematology, which takes place in a local hospital. The practicum is scheduled as 3 weeks long, 5 days/week, 40 hours/week by arrangement with MLT clinical coordinator. Students will apply their knowledge and skills using principles and routine blood bank and serology procedures including donor selection, compatibility testing, detection and identification of antibodies, and component preparation and handling. Prerequisites: A C+ or better in MLT 220 and MLT 222. Fall.

MLT 224. Clinical Microbiology. 5 Credits.
This course is designed to introduce students to the role of microbes in the pathology of human infectious diseases. Students will apply their knowledge and skills using conventional microscopic, culture, and biochemical techniques to isolate, differentiate, identify, quantify, and determine the antimicrobial susceptibility of medically relevant pathogenic microorganisms. The course emphasizes bacteria, viruses, parasites, and fungi found in clinical specimens. Prerequisites: C+ or better in MLT 220, MLT 221, MLT 222, MLT 223. Spring.

MLT 225. Clinical Practicum III - Microbiology. 3 Credits.
This course is the clinical practicum experience in Microbiology, which takes place in a local hospital. The practicum is scheduled as 3 weeks long, 5 days/week, 40 hours/week by arrangement with MLT clinical coordinator. Students will apply their knowledge and skills using conventional microscopic, culture, and biochemical techniques to isolate, identify, quantify, differentiate, and determine the antimicrobial susceptibility of medically relevant microbial pathogens including bacteria, a few viruses, parasites, and fungi found in clinical specimens. Prerequisites: C+ or higher in MLT 224 and MLT 226. Spring.

MLT 226. Clinical Chemistry. 5 Credits.
This course is designed to interrelate human disease with the biochemistry of human physiology and metabolism. In addition to learning the chemical principles underlying the laboratory procedures, students will understand the operating principles, sources of error, and routine maintenance of the instrumentation. Prerequisites: C+ or better in MLT 220, MLT 221, MLT 222, MLT 223. Spring.

MLT 227. Clinical Practicum IV - Clinical Chemistry. 3 Credits.
This course is the clinical practicum experience in Clinical Chemistry, which takes place in a local hospital. The practicum is scheduled as 3 weeks long, 5 days/week, 40 hours/week by arrangement with MLT clinical coordinator. Students will apply their knowledge and skills using principles and procedures of clinical chemistry to operate instrumentation that generates results used to detect various diseases. In addition to learning the chemical principles underlying the laboratory procedures, students will understand the operating principles, sources of error, and routine maintenance of the instrumentation. Prerequisite: C+ or better in both MLT 224 and MLT 226. Spring.