

# MLTC - CLINICAL LABORATORY (MLTC)

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## MLTC 1110 - Bacteriology (4 Credits)

The biological aspects of microbial structure, metabolism and growth are presented. Emphasis is on classification of microorganisms, mostly bacteria and identification of disease-producing organisms. Note: Students must be enrolled in the Medical Laboratory Technology program to register.

Lecture: 2 hours, Lab: 4 hours

## MLTC 1120 - Clinical Immunology (3 Credits)

This course covers basic theories of immunology, laboratory diagnosis of infectious diseases and diseases of the immune system. Students learn to perform basic serological techniques. Note: This course is a prerequisite for MLTC 1160. Students must be enrolled in the Medical Laboratory Technology program to register.

Lecture: 2 hours, Lab: 3 hours

## MLTC 1130 - Phlebotomy for Medical Laboratory Technicians I (1 Credit)

This course covers principles of phlebotomy and specimen handling. Students perform venipuncture on training arms, venipuncture on adults, capillary punctures, isolation techniques, blood culture site preparation and specimen processing. Note: This course is a prerequisite for MLTC 1930. Course meets for 2 lecture hours and 2 lab hours a week for 5 weeks.

Lecture: 10 hours, Lab: 10 hours

## MLTC 1150 - Urinalysis (3 Credits)

The formation of urine and the principles of the laboratory procedures used in the physical, chemical and microscopic examination of urines are discussed. Normal values are presented and the significance of abnormal results explained. Complete urinalysis is performed in the training laboratory. Quality control in the urinalysis laboratory is performed and stressed. Note: Students must be enrolled in the Medical Laboratory Technology program to register.

Lecture: 2 hours, Lab: 2 hours

## MLTC 1160 - Immunohematology (3 Credits)

This course covers red cell antigens and antibodies, antibody identification, crossmatching, donor processing and component therapy. Theory is presented in lecture and a laboratory experience enables students to apply these theories to routine laboratory procedures.

Lecture: 5 hours

**Prerequisite(s):** MLTC 1120

**Corequisite(s):** MLTC 1161

## MLTC 1161 - Topics in Immunohematology (1 Credit)

This course is designed to provide the student with the necessary skills for proficiency in Immunohematology techniques and procedures. Emphasis will be placed on laboratory skills, including decision making, interpretation, and quality assurance. Upon completion, the student will show 100% proficiency in type and screen, compatibility testing, antibody identification and other procedures.

Lab: 3 hours

**Corequisite(s):** MLTC 1160

## MLTC 1170 - Quality Assurance for Point of Care Laboratory Testing (1 Credit)

This course is designed for health care workers who perform clinical laboratory tests that are waived tests in a physician's office or medical care center. The course includes laboratory safety (OSHA regulations), quality control procedures to ensure quality assurance, a detailed discussion on CLIA '88 waived tests and instruction on the performance of these tests. Students are provided with the technical knowledge and skills required for competent performance of waived laboratory procedures with increased reproducibility accuracy and precision. Note: Students must be enrolled in the Phlebotomy or Renal Dialysis program or receive permission of department to register. Course meets for 2 lecture hours and 2 lab hours a week for 5 weeks.

Lecture: 2 hours, Lab: 2 hours

## MLTC 1180 - Specimen Collection and Handling for Healthcare Professionals (1 Credit)

This course covers the principles of specimen collection and handling. National standards are presented. Various specimen collection techniques are introduced to the health care professional, with emphasis on the importance of a properly collected specimen. Note: Students must be second-year students enrolled in RESP, XRAY, ADNU, LPNU, or RENL programs or receive permission of department to register. Course meets for 2 lecture hours and 2 lab hours a week for 5 weeks.

Lecture: 2 hours, Lab: 2 hours

**MLTC 1190 - Fundamentals of Clinical Chemistry  
(3 Credits)**

This course introduces the analytical skills needed to correctly perform analytic procedures that yield accurate and precise information. Basic principles and practices of clinical chemistry are emphasized. Laboratory safety, quality control and statistics, analytical techniques and instrumentation are stressed.

Lecture: 3 hours

**MLTC 1210 - Introduction to Clinical Laboratory Science  
(3 Credits)**

This course offers a basic introduction to the clinical laboratory. Current concepts and general principles of all areas connected with the medical laboratory field are explored. Students are introduced to selected basic techniques used in the clinical laboratory. (Note: This course is open to any student interested in the field of Medical laboratory technology or can be used as a general studies elective).

Lecture: 2 hours, Lab: 2 hours

**MLTC 1930 - Phlebotomy for Medical Laboratory Technicians II<sup>^</sup>  
(1 Credit)**

This course provides Medical laboratory technology students with the opportunity to become proficient in phlebotomy in a clinical laboratory setting. In addition, use of laboratory information systems, accessioning and proper record-keeping are demonstrated. Note: Course meets for 40 clinical hours over 1 week.

Other: 40 hours

**Prerequisite(s):** MLTC 1130

**MLTC 1940 - Clinical Immunohematology<sup>^</sup>  
(3 Credits)**

This clinical internship provides the student with opportunity to implement skills learned in MLTC 1160 and MLTC 1161 in a clinical laboratory environment. Students attend for 40 hours per week for 2.5 weeks. There is ample opportunity for additional practice of blood bank principles and procedures and to gain experience with automated instruments. Note: Course meets 40 hours a week for 3 weeks.

Other: 40 hours

**Prerequisite(s):** MLTC 1160 and MLTC 1161

**MLTC 1950 - Clinical Urinalysis<sup>^</sup>  
(1 Credit)**

This clinical experience will provide the student with theory and practice in performing urinalysis, with the examination of the physical, chemical and microscopic components of urine. Analysis of other body fluid, including serous, amniotic, synovial, seminal and vaginal are included. Students attend for 40 hours per week for 1.5 weeks. Note: Course meets 40 hours over 1.5 weeks.

Other: 40 hours

**Prerequisite(s):** MLTC 1150

**MLTC 1960 - Clinical Laboratory Information Systems  
(1 Credit)**

Workflow in the laboratory has been adjusted due to the introduction of the computer. This course is an introduction to data entry processing and retrieval of laboratory information. Specimen tracking is emphasized in this hands-on environment.

Lecture: 2 hours

**Corequisite(s):**PHLE 1010

**MLTC 1970 - Information Technology for Medical Lab Technicians  
(2 Credits)**

This course provides students with the knowledge to perform laboratory procedures that require the use of a computer. Students learn to understand the basics of a system that delivers rapid and accurate reporting to caregivers and to understand the role that the regulatory agencies play in the laboratory information system. Note: Course meets for 2 Lecture and 2 Lab hours daily for 2 weeks.

Lecture: 2 hours, Lab: 2 hours

**Prerequisite(s):** COMI 1100

**MLTC 2110 - Clinical Microbiology I  
(4 Credits)**

Procedures for cultivation and identification of pathogenic microorganisms from clinical material are covered in this course. Additional topics such as antimicrobial susceptibility tests, quality control and automation in microbiology are also included.

Lecture: 2 hours, Lab: 4 hours

**Prerequisite(s):** MLTC 1110

**MLTC 2120 - Hematology  
(4 Credits)**

The study of the structure and function of blood and its role in health and disease is presented. Red blood cells, white blood cells and coagulation factors including platelets are observed and discussed. The classification of leukemias, anemias and other hematological disorders is studied. Development of skills in manual and automated laboratory procedures is stressed. Laboratory procedures include coagulation studies, manual and automated red blood cell, white blood cell and platelet counting and enumeration of special cells. Films of normal and abnormal peripheral blood are examined. Note: Students must be enrolled in the Medical Laboratory Technology program to register for this course.

Lecture: 2 hours, Lab: 6 hours

**MLTC 2190 - Clinical Chemistry I  
(5 Credits)**

The basic principles of spectrophotometry and the diagnostic methods of analysis are presented. The study of protein, fat and carbohydrate metabolism, electrolyte and acid-base balance PCR, molecular methods enzymes and renal function procedures as they relate to diagnostic testing is stressed. Laboratory mathematics and quality control are discussed. Selected laboratory procedures including manual and automated quantitative analysis of serum, plasma and urine are performed.

Lecture: 3 hours, Lab: 6 hours

**Prerequisite(s):** MLTC 1190

**MLTC 2910 - Clinical Microbiology II  
(4 Credits)**

This course provides practical application of principles and techniques that have been previously learned. Students learn by doing actual testing at the bench with the same exposure to realistic conditions under which a technician works. Coursework involves skill development of clinical bacteriology, mycology and parasitology. Note: Course meets for 32 hours a week for 4 weeks.

Other: 32 hours

**Prerequisite(s):** MLTC 2110

**MLTC 2920 - Clinical Hematology II  
(4 Credits)**

This course provides practical application of principles and techniques that have been previously learned. Students learn by doing actual testing at the bench with the same exposure to realistic conditions under which a technician works. Note: Course meets for 32 hours a week for 4 weeks.

Other: 32 hours

**Prerequisite(s):** MLTC 2120

**MLTC 2930 - Clinical Laboratory Science Seminar  
(2 Credits)**

The course examines case studies as they relate to hematology, clinical chemistry, microbiology, urinalysis, immunohematology and immunology. Self-Assessments are used as a review to enhance the students' knowledge base. A capstone presentation is required as a culmination of the students' understanding of clinical laboratory diseases and disorders.

Lecture: 3 hours

**Corequisite(s):** MLTC 2910, MLTC 2920, MLTC 2990

**MLTC 2990 - Clinical Chemistry II  
(4 Credits)**

This course provides practical application of principles and techniques that have been previously learned. Students learn by doing actual testing at the bench with the same exposure to realistic conditions under which a technician works. Note: Course meets for 32 hours a week for 4 weeks.

Other: 32 hours

**Prerequisite(s):** MLTC 2190