

## **COURSES OF INSTRUCTION AND OBJECTIVES**

**All course objectives will be distributed to students  
with individual course syllabi.**

### **MLS 320 GENERAL LABORATORY PRACTICE**

An introduction to laboratory sciences, including laboratory safety, instrumentation, quality control, specimen collection (including phlebotomy techniques) and processing. An emphasis will be placed on urine analysis and the clinical application of urine examination. (2 credits)

### **MLS 350 MANAGEMENT FOR LABORATORY SCIENCE**

An introduction to the principles of laboratory management with a focus on underlying managerial concepts that will assist the learner in application of this information to real-life situations. Learning units will cover four areas of management: Basic Principles and Organizational Structure, Human Resources, Finance, and Operations. (2 credits)

### **MLS 370 PARASITOLOGY AND MYCOLOGY**

A study of the structure, function, and diagnostic characteristics of clinically significant parasites and fungi. Emphasis will include discussion of pathogenicity, transmission, and control of these microbes, along with related host response. (4 credits)

### **MLS 371 PARASITOLOGY AND MYCOLOGY LABORATORY**

Parasitology and Mycology laboratory will focus on the study of the structure, function, and diagnostic characteristics of clinically significant parasites and fungi. Specimen collection, microscopic observation and diagnostic procedures for the identification of pathogenic microbes will be emphasized. Diagnostic microbiology I laboratory will focus on the study of the structure, function, and diagnostic (1 credits)

### **MLS 372 DIAGNOSTIC MICROBIOLOGY**

A study of the epidemiology, pathogenesis, and clinical significance of medically important bacterial agents involved in infectious disease processes. Discussion of diagnostic characteristics and methods used for laboratory identification of these organisms will also be emphasized. (3 credits)

### **MLS 373 DIAGNOSTIC MICROBIOLOGY LABORATORY**

Diagnostic Microbiology Laboratory will focus on medical bacteriology specimen collection and diagnostic testing procedures used for the identification of clinically significant bacteria. Emphasis will be placed on application and integration of theory, practical application, and technical performance of laboratory skills in clinical bacteriology. (1 credit)

### **MLS 400 MOLECULAR DIAGNOSTICS AND VIROLOGY**

This course is a comprehensive introduction to the basic principles, theory, and laboratory techniques of the rapidly expanding field of molecular diagnostics. Laboratory application of molecular testing methods, including DNA extraction and PCR, will be practiced. The course

will also cover the structure, function and diagnostic characteristics of clinically significant viruses.

**MLS 410 CLINICAL IMMUNOLOGY**

This course will examine the principles of the immune response, the mechanisms of immunological disorders and infectious diseases, the methodology used in the detection of immunological conditions, and the correlation of test results to these diseases through lecture material and practical clinical experience. (3 credits)

**MLS 416 HEMATOLOGY**

A study of normal and abnormal blood cell development, morphology, and function. Blood dyscrasias will be studied with emphasis on the biochemical and morphological changes involved in disease. (3 credits)

**MLS 417 CLINICAL HEMATOLOGY LABORATORY**

An introduction to a wide variety of hematology clinical laboratory procedures with an emphasis on accurate performance, theoretical basis of tests, and correlation of data to disease. (1 credit)

**MLS 422 CLINICAL CHEMISTRY**

Biochemical, physiological, and analytic aspects of organic and inorganic substances of clinical interest, including electrolytes, blood gases, proteins, enzymes, lipids, drugs, and hormones are presented through lecture, demonstration, and practical experience. (4 credits)

**MLS 423 CLINICAL CHEMISTRY LABORATORY**

Biochemical, physiological, and analytic aspects of organic and inorganic substances of clinical interest, including electrolytes, blood gases, proteins, enzymes, lipids, drugs, and hormones are presented through demonstration, laboratory exercises, and practical experience. (2 credits)

**MLS 450 CLINICAL PRACTICUM I**

The first of two full-time clinical experiences. Practicing clinical laboratory scientists will supervise and teach students in basic laboratory procedures, including Urinalysis, Immunoserology, Hematology, and Clinical Chemistry. The students will be exposed to patients and usual workload in the hospital laboratory. (1 credit)

**MLS 461 MEDICAL LABORATORY SCIENCE SIMULATION LABORATORY**

This laboratory course is designed to simulate the clinical laboratory setting and provide students with the hands-on experience and practice needed to build their skill and competency in pre-analytical, analytical and post-analytical testing. Emphasis is placed on the following disciplines: hemostasis, transfusion medicine, hematology, urinalysis, clinical chemistry, immunoserology and microbiology. (1 credit)

**MLS 462 TRANSFUSION MEDICINE**

In transfusion medicine, students will study human blood group antigens and antibodies. This lecture and laboratory course will examine cellular antigen systems, and teach the principles and techniques required for compatibility testing for blood transfusion and other important transfusion practices. Blood component collection, processing, and distribution will also be discussed. (3 credits)

**MLS 463 HEMOSTASIS**

This lecture and laboratory course provides an overview of theory and practical application of hemostasis (coagulation), as it relates to the medical laboratory. The coagulation cascade, intrinsic and extrinsic pathways, thrombosis and fibrinolysis will be covered; as well as coagulation laboratory principles and correlation of results with disease states. (2 credits)

**MLS 464 BACTERIOLOGY AND ANTIBIOTICS**

This lecture and laboratory course is an advanced bacteriology course with a focus on antimicrobial susceptibility testing. Medically important pathogens requiring unusual detection and identification methods, as well as contemporary topics in microbiology, will be discussed. (1 credit)

**MLS 490 CLINICAL PRACTICUM II**

The second of two full-time clinical experiences. Practicing clinical laboratory scientists will supervise and teach students in advanced laboratory procedures, including Hemostasis, Clinical Chemistry, Microbiology, and Transfusion Medicine. Students will be exposed to patients and usual workload in the hospital laboratory. (5 credits)

**MLS 495 ISSUES IN CLINICAL LABORATORY SCIENCE (CAPSTONE)**

Exploration of issues that impact health care, particularly the laboratory professional. Includes writings on current issues in the profession, case-study presentations, and practice in teaching methods related to laboratory training and education. Students will work individually and/or in groups to perform literature research and apply it to preparation of a medical laboratory science project including a paper, presentation, and a professional poster. (3 credits)