Medical Lab Science (MLS)

Courses

**MLS 3310. Immunohematology I. 5 Hours.**
Required course for students in the Bachelor of Science Medical Laboratory Science Professional Program. Comprehensive study of the science and applied concepts of blood banking and transfusion service practices. The study of blood groups, their antigens and antibodies, is discussed in detail as are test methods and transfusion protocols, including donor selection, component preparation, quality management and compliance issues. In lab, students learn to perform a variety of tests that are prerequisite to the transfusion of blood and blood products. Lab fee required. Prerequisite: Admission to the Dixie State University Bachelor of Science in Medical Laboratory Science professional program. SP.

**MLS 3312. Clinical Immunology. 4 Hours.**
Required course for students admitted to the Bachelor of Science in Medical Laboratory Science professional program. A comprehensive study of the human immune system and the medical laboratory techniques used to assess immune responsiveness in health and during times of illness and disease. Lectures focus on innate and adaptive immunity, antibody structure and function, and the role of the complement system and cytokines in immune responsiveness. The immunologic manifestation of infectious disease, hypersensitivity, autoimmune diseases, transplantation immunity, tumor immunology, and immunodeficiency diseases will be discussed in detail. Using serological methods, electrophoresis, and molecular techniques, students test samples and correlate results with states of health and disease. Lab fee required. Prerequisite: Admission to the Dixie State University Bachelor of Science in Medical Laboratory Science professional program. FA.

**MLS 3314. Diagnostic Microbiology I. 5 Hours.**
Required course for students in the BS in Medical Laboratory Science professional program. Comprehensive topical study introduces students to clinically significant bacteria including epidemiology, pathogenicity, and procedures for the traditional laboratory identification and antimicrobial testing. Clinically significant pathogens of interest include: Staphylococcus, Streptococcus, Neisseria, Gram-Positive Bacilli, Enterobacteriaceae, Gram-Negative non-fermentors and other miscellaneous bacteria. The laboratory exercises focus on traditional and evolving methods of identification of bacteria of medical interest. Lab fee required. Prerequisite: Admission to the Dixie State University Bachelor of Science Program in Medical Laboratory Science. FA.

**MLS 3330. Clinical Chemistry. 5 Hours.**
Required course for students in the Bachelor of Science Medical Laboratory Science professional program. : Basic concepts and techniques in clinical chemistry and quality control utilizing manual and automated laboratory procedures. Instrumentation background and use will be discussed. Emphasis on blood and body fluid assessments of carbohydrates, bilirubin, non-protein nitrogen testing, electrolytes, acid/base balance, lipids, hemoglobin, and electrophoresis. Laboratory section will facilitate student learning by students applying theory to laboratory assays. Lab fee required. Prerequisite: Admission to the Dixie State University Bachelor of Science Program in Medical Laboratory Science. SP.

**MLS 3555. Research Seminar. 2 Hours.**
Required course for students in the Bachelor of Science program in Medical Laboratory Science. Addresses research methods in the clinical sciences and reviews accepted policies from the National Institutes of Health on informed consent, institutional review boards, and clinical trials. Students will read and interpret studies in the clinical laboratory sciences, comment on problems with studies, and note the further work needed in the respective area of research. Students will present a study, highlighting the research questions answered, methods employed, and relevance to other studies. Prerequisite: Admission to the Dixie State University Bachelor of Science Program in Medical Laboratory Science. SP.

**MLS 3850. Urinalysis and Body Fluids. 2 Hours.**
Required course for students admitted to the Bachelor of Science in Medical Laboratory Science professional program. In-depth study of the physiology, formation and composition, and medical laboratory analysis of urine and other body fluids including cerebrospinal fluid, seminal fluid, serous fluids, synovial fluid, amniotic fluid, bronchioaveolar lavages and bronchial washings, and vaginal secretions. In lab, students learn to perform macroscopic (physical and chemical) and microscopic analysis on clinical samples, interpret test results, and correlate results with states of human health and disease. Lab fee required. Prerequisite: Admission to the Dixie State University Bachelor of Science in Medical Laboratory Science professional program. FA.

**MLS 4110. Laboratory Management/Edu. 2 Hours.**
Students will learn managerial problem solving, finance, and budgeting, Lean and Six Sigma techniques, leadership styles, and education/training relevant to the clinical laboratory. Prerequisite: Admission to the Dixie State University Bachelor of Science Program in Medical Laboratory Science. FA.

**MLS 4200. Clinical Chemistry and Molecular Diagnostics. 4 Hours.**
Required course for students admitted to the BS in Medical Laboratory Science professional program. Second of two courses covering essential practices related to the pre-analytical, analytical, and post-analytical components of the clinical chemistry laboratory service. Lectures focus on the pathophysiology of a variety of diseases including diabetes, liver disease, kidney disease, various endocrine disorders including thyroid disease, and on the specialized services of the clinical chemistry lab including toxicology, therapeutic drug monitoring, and molecular diagnostics. The use of molecular techniques with interest in instrumentation and evolving technology are discussed in detail. Laboratory exercises facilitate student skill development performing assays and correlating test results to states of health and disease. Lab fee required. The course will be taught for the first time fall semester 2018. Prerequisite: Admission to the Dixie State University Bachelor of Science in Medical Laboratory Science professional program. FA.
MLS 4300. Clinical Hematology. 5 Hours.
Required course for students admitted to the Bachelor of Science in Medical Laboratory Science professional program. Lecture and laboratory coverage of the theories, concepts and practical aspects central to the study of blood and blood forming tissues by medical laboratory methods. Lectures topics of focus include hematopoiesis, blood cells' structure, function, kinetics, senescence and destruction. Hematologic diseases including the etiology and pathophysiology of anemia, and neoplastic and nonmalignant leukocyte disorders are discussed in detail. In lab, students use manual methods and automation to analyze clinical samples and correlate results with states of health and disease. Lab fee required. Prerequisite: Admission to the Dixie State University Bachelor of Science in Medical Laboratory Science professional program. SP.

MLS 4320. Hemostasis. 4 Hours.
Required course for students admitted to the Bachelor of Science in Medical Laboratory Science professional program. Theories and concepts of hemostasis are presented, including plasma and cell-based models of normal coagulation and fibrinolysis. Hemorrhagic diseases and thrombotic disorders will be covered and laboratory tests critical to the diagnosis, prognosis, and to monitoring treatment of these conditions are discussed in detail. In the lab, students use manual methods and technology to analyze clinical samples to detect, differentiate, and quantify coagulation abnormalities. Lab fee required. Prerequisite: Admission to the Dixie State University Bachelor of Science in Medical Laboratory Science professional program. FA.

MLS 4330. Clinical Chemistry Practice. 4 Hours.
Required course for students admitted to the Bachelor of Science in Medical Laboratory Science professional program. Practical experience emphasizing application of knowledge and skills to perform a wide variety of testing in a contemporary clinical chemistry/immunology laboratory and further develop discipline-specific competency. Prerequisite: Admission to the Dixie State University Bachelor of Science Program in Medical Laboratory Science. SP.

MLS 4400. Immunohematology II. 4 Hours.
Required course for students admitted to the Bachelor of Science in Medical Laboratory Science professional program. Continued study of the science of antigen and antibody reactions and blood group systems, emphasizing decision-making and problem-solving skill development with application to blood banking practices and transfusion therapy services. Lab fee required. Science professional program. This course will be taught for the first time fall 2018. Prerequisite: Admission to the Dixie State University Bachelor of Science in Medical Laboratory Science professional program. FA.

MLS 4410. Blood Banking Practice. 4 Hours.
Required course for students admitted to the Bachelor of Science in Medical Laboratory Science professional program. Practical experience emphasizing application of knowledge and skills to perform a wide variety of testing in a contemporary blood bank and further develop discipline-specific competency. Prerequisite: Admission to the Dixie State University Bachelor of Science Program in Medical Laboratory Science. SP.

MLS 4414. Clinical Microbiology Practice. 4 Hours.
Required course for students admitted to the Bachelor of Science in Medical Laboratory Science professional program. Practical experience emphasizing application of knowledge and skills to perform a wide variety of testing in a contemporary medical microbiology laboratory and further develop discipline-specific competency. Prerequisite: Admission to the Dixie State University Bachelor of Science Program in Medical Laboratory Science. SP.

MLS 4423. Clinical Hematology Practice. 4 Hours.
Required course for students admitted to the Bachelor of Science in Medical Laboratory Science professional program. Practical experience emphasizing application of knowledge and skills to perform a wide variety of testing in a contemporary clinical hematology/hemostasis laboratory and further develop discipline-specific competency. Prerequisite: Admission to the Dixie State University Bachelor of Science Program in Medical Laboratory Science. SP.

MLS 4600. Diagnostic Microbiology II. 4 Hours.
Required course for students admitted to the BS in Medical Laboratory Science professional program. Continued comprehensive study of diagnostic microbiology focusing on clinically significant pathogens including Anaerobes, Spirochetes, Chlamydia, Mycobacteria, medically important fungi, viruses and parasites. Student will further develop competency using traditional manual microbiological methods and evolving techniques, including molecular assays, to identify and aid the diagnosis, prognosis, and therapy monitoring of infections caused by the microbes discussed in this course. Lab fee required. This course will be taught for the first time in fall 2018. Prerequisite: Admission to the Dixie State University Bachelor of Science in Medical Laboratory Science professional program. FA.