



**BSHS in Medical Laboratory Sciences ONLINE PROGRAM**  
**MLS Course Descriptions:**

**MLS 4114: Clinical Microbiology I.** 2 credits. Principles of clinical microbiology with emphasis on pathogenic characteristics, isolation, and identification of bacteria and viruses related to human disease. The course focuses on the theoretical approach to the current diagnostic techniques and identification systems used in clinical practice. Various topics, including disease causation, specimen collection and handling, laboratory identification and treatment of medically significant bacteria and viruses will be discussed.

**MLS 4115: Clinical Parasitology and Mycology.** 1 credit. This course covers the principles and procedures involved in the diagnosis of parasitic and fungal infections. Various topics, including disease causation, specimen collection and handling, laboratory identification and treatment of medically significant fungi and parasites will be discussed.

**MLS 4118: Laboratory Operations.** 1 credit. Basic concepts applicable to all areas of the clinical laboratory. Quality assurance and quality control, laboratory safety, including federal regulations, and related topics.

**MLS 4120: Urinalysis and Body Fluids.** 1 credit. Evaluation of urine and other body fluids for the presence of disease; clinical correlations.

**MLS 4124: Clinical Microbiology II.** 2 credits. Principles of clinical microbiology, with emphasis on pathogenic characteristics, isolation and identification of organisms related to human disease

**MLS 4128: Hematology I.** 2 credits. Principles of laboratory detection, clinical correlation, and pathophysiology of human blood cell diseases and disorders of hemostasis.

**MLS 4129: Hematology II.** 2 credits. Principles of laboratory detection, clinical correlation, and pathophysiology of human blood cell diseases and disorders of hemostasis.

**MLS 4140: Clinical Laboratory Management.** 3 credits. Basic concepts of laboratory management, including organizational principles, financial management of resources, decision-making and problem-solving skills, human resource management.

**MLS 4141: Immunology and Serology.** 3 credits. Principles of the immune system's components, functions, interactions with microorganisms, and the clinical applications of immunologic assays to human health and disease.

**MLS 4145: Clinical Biochemistry I.** 3 credits. This course studies the methodologies employed in the chemical analysis of human blood and body fluids. This includes an examination of the fundamentals of measurement and the principles of instrumentation as they relate to the assay of each analyte studied. In addition, the laboratory results are correlated with the clinical significance and pathophysiology which may generate changes in the analyte. Throughout the course, the quality assurance measures required to ensure reliability and validity of the laboratory results will also be emphasized.

**MLS 4150: Immunohematology.** 3 credits. This course explores the major blood group systems that impact the practice of transfusion medicine and examines the processing and distribution of blood products supplied by transfusion services. Major topics covered in this one-semester course include: 1- donor selection and the collection, preparation, and storage of blood products, 2 - the prevention of transfusion reactions through identification of unsuspected antibodies and compatibility testing, and 3- the recognition of transfusion-associated conditions and diseases. In addition, quality assurance and compliance measures in blood banking are reviewed.

**MLS 4151: Molecular Diagnostics.** 3 credits. The advances in scientific technology have expanded the interest and applicability of nucleic acid based analysis within clinical diagnostic laboratories and routine screening procedures. The Molecular Diagnostics course is an introduction to the molecular techniques used to diagnose human diseases. The course will emphasize the technology, theory, and methodology of specific molecular protocols that can be utilized within a clinical laboratory setting to aid in disease diagnosis, including those of genetic, oncogenic, and infectious origin.

**MLS 4155: Clinical Biochemistry II.** 2 credits. This second course in clinical biochemistry continues the study of the measurement and interpretation of chemical constituents in human blood and body fluids. The laboratory results of each analyte are correlated with the clinical significance and pathophysiology, which may generate changes in the analyte. Throughout the course, the quality assurance measures required to ensure reliability and validity of the laboratory results will also be emphasized.

**MLS 4159: Capstone Seminar.** 1 credit. Integrative application of content from the didactic and practicum courses within the various laboratory disciplines, including Laboratory Operations, Hematology, Microbiology, Chemistry, Immunology, Immunohematology, Urinalysis and Body Fluids, Molecular Diagnostics and Laboratory Management.

**MLS 4160: Blood Bank Practicum.** 4 credits. The Blood Bank Clinical Practicum is a 3-week, required clinical rotation for students in the BSHS in MLS or the post-baccalaureate MLS or Blood Banking certificate programs. During this practicum course, the student will actively engage in applying the medical knowledge and clinical skills gained in the didactic Immunohematology course (MLS 4150).

**MLS 4161: Clinical Biochemistry Practicum.** 4 credits. The Clinical Biochemistry Practicum is a 4-week, required clinical rotation for students in the BSHS in MLS or the post-baccalaureate MLS and Clinical Chemistry certificate programs. During this practicum course, the student will actively engage in applying the medical knowledge and clinical skills gained in the didactic Clinical Biochemistry I (MLS 4145) and Clinical Biochemistry II (MLS 4155) courses.

**MLS 4162: Hematology Practicum.** 2 credits. The Hematology and Hemostasis Practicum is a 3-week, required rotation for students in the BSHS in MLS or the post-baccalaureate MLS or Hematology certificate programs. During this practicum course, the student will actively engage in applying the medical knowledge and clinical skills gained in the didactic Hematology I (MLS 4128) and Hematology II (MLS 4129) courses.

**MLS 4164: Clinical Microbiology Practicum.** 4 credits. The Clinical Microbiology Practicum is a 4-week, required clinical rotation for students in the BSHS in MLS or the post-baccalaureate MLS and Clinical Microbiology certificate programs. During this practicum course, the student will actively engage in applying the medical knowledge and clinical skills gained in the didactic Clinical Microbiology I (MLS 4114), Clinical Microbiology II (MLS 4124) and Molecular Diagnostics courses (MLS 4151).

**MLS 4165: Urinalysis Practicum.** 1 credit. The Urinalysis and Body Fluids Practicum is a one week, required clinical rotation for students in the BSHS in MLS or post-baccalaureate MLS certificate program. During this practicum course, the student will actively engage in applying the medical knowledge and clinical skills gained in the didactic Urinalysis and Body Fluids course (MLS 4120).

**MLS 4166 Coagulation Practicum.** 1 credit. A hands-on clinical experience where students will actively engage in applying the medical knowledge and clinical skills gained in the didactic MLS Hematology courses.