Post-baccalaureate Certificate in Microbiology for Medical Laboratory Science 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 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 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 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 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).