

MLS: Medical Laboratory Science Courses

Courses

MLS 3194 Clinical Genetics

College of Health, Department of Medical Lab Sciences

3 sh (may not be repeated for credit)

Prerequisite: BSC 1085 AND BSC 1086 AND BSC 2010 AND CHM 2046

This course introduces the student to prokaryotic and eukaryotic genomes and their genetic analysis. The course include content on human diseases and principles of inheritance as well as mechanisms of antibiotic resistance in bacteria. The course introduces methodologies used in clinical laboratories to evaluate disease.

MLS 3621 Clinical Biochemistry

College of Health, Department of Medical Lab Sciences

3 sh (may not be repeated for credit)

Prerequisite: CHM 2210

The course is a first in a series of Clinical Chemistry courses for the Medical Laboratory Sciences student. The course is divided into 4 major sections. Nucleic acids, their composition and production; Carbohydrates, their composition and production; Lipids, their composition and function; Proteins, their composition and function. Each macromolecule section will include discussions about diseases associated with deficiencies or derangements. The methods section deals with principles of instrumentation used in the clinical laboratory, such as spectrophotometry, fluorescence, nephelometry, HPLC, electrophoresis, immunoassay, PCR, and mass spectroscopy.

MLS 3905 Directed Study

College of Health, Department of Medical Lab Sciences

1-12 sh (may be repeated indefinitely for credit)

MLS 4191 Molecular Diagnostics

College of Health, Department of Medical Lab Sciences

3 sh (may not be repeated for credit)

Prerequisite: (BCH 3033/L OR BCH 3033C) AND (PCB 3063/L OR PCB 3063C)

This course offers fundamentals of clinical diagnosis and management of disease by molecular biology laboratory methods. Two broad areas in the current state of the art technology will be addressed: molecular diseases/variants and molecular methods to diagnose and monitor disease. Disorders due to inherited or acquired molecular defects such as errors of metabolism, hemoglobinopathies, leukemia, and cystic fibrosis are discussed. Principles and procedures for the diagnosis and management of infectious diseases by molecular methods are also included. The discussion of molecular approaches to diagnosing and monitoring these diseases will span the conventional methods of PCR, gel electrophoresis and Southern Blotting to semi-automated methods of TMA, LCR and Real-time PCR. A survey of molecular diagnostic methods currently available in various sections of a clinical laboratory is included. Permission is required. The laboratory MLS 4191L is required for MLS majors.

MLS 4191L Molecular Diagnostics Laboratory

College of Health, Department of Medical Lab Sciences

1 sh (may not be repeated for credit)

Prerequisite: (BCH 3033/L OR BCH 3033C) AND (PCB 3063/L OR PCB 3063C)

Co-requisite: MLS 4191

This course covers the methods for specimen collection and handling, contamination control, amplification and detection of genetic material from humans and microorganisms. Methodologies include conventional PCR, electrophoresis for DNA and proteins, real time PCR, densitometry, Southern Blot and Western Blot techniques. Permission is required. Material and Supply fees will be assessed. Equipment fees will be assessed.

MLS 4193C Molecular Diagnostics for the MLT to MLS track

College of Health, Department of Medical Lab Sciences

4 sh (may not be repeated for credit)

Prerequisite: MLS 3194 AND MLS 3621

This course covers the fundamentals of clinical diagnosis and management of disease by molecular biology laboratory methods. Two broad areas in the current state of the art are addressed: molecular diseases/variants and molecular methods to diagnose and monitor disease. Disorders due to inherited or acquired molecular defects such as errors of metabolism, hemoglobinopathies, leukemia, and cystic fibrosis are discussed. Principles and procedures for the diagnosis and management of infectious diseases by molecular methods are also included. The discussion of molecular approaches to diagnosing and monitoring these diseases will span the conventional methods of PCR, gel electrophoresis and Southern Blotting to semi-automated methods of TMA, LCR and Real-time PCR. A survey of molecular diagnostic methods currently available in various sections of a clinical laboratory is included. Students will perform virtual laboratory activities and interpret laboratory data. Permission is required.

MLS 4220 Urinalysis/Body Fluids I

College of Health, Department of Medical Lab Sciences

1 sh (may not be repeated for credit)

Prerequisite: (BSC 1085) AND (BSC 1086) AND (PCB 3063/L OR PCB 3063C) AND (BCH 3033/L OR BCH 3033C)

Entry level clinical laboratory scientists will learn the physiology, routine testing and interpretation for the following body fluids: urine, cerebrospinal fluid, semen, amniotic, and serous fluids (peritoneal, pleural, pericardial, synovial). Correlation of laboratory results interpretations to various disease conditions is stressed. Permission is required. MLS majors are required to take the corresponding laboratory, MLS 4220L, as a co-requisite.

MLS 4220L Urinalysis/Body Fluids I Lab

College of Health, Department of Medical Lab Sciences

1 sh (may not be repeated for credit)

Prerequisite: (BSC 1085) AND (BSC 1086) AND (PCB 3063/L OR PCB 3063C) AND (BCH 3033/L OR BCH 3033C)

Co-requisite: MLS 4220

This class will teach the entry level medical laboratory scientist about the routine testing and interpretation for the following body fluids: urine, cerebrospinal fluid, semen, serous fluids (peritoneal, pleural, pericardial, synovial), amniotic fluid, feces (non-culture), and vaginal secretions. Permission is required.

MLS 4221C Urinalysis/Body Fluids for the MLT to MLS track

College of Health, Department of Medical Lab Sciences

3 sh (may not be repeated for credit)

Prerequisite: (BSC 1085) AND (BSC 1086 OR BSC 2010) AND (MLS 3194) AND (MLS 3621)

This course teaches the physiology, routine testing and interpretation for the following body fluids: urine, cerebrospinal fluid, semen, sweat, serous fluids (peritoneal, pleural, pericardial, synovial), and dialysates. Correlation of lab findings to various disease conditions is stressed. Students will perform virtual laboratory activities and interpret laboratory data. Permission is required.

MLS 4305 Hematology I

College of Health, Department of Medical Lab Sciences

3 sh (may not be repeated for credit)

Prerequisite: (BSC 1086) AND (PCB 3063/L OR PCB 3063C) AND (BCH 3033/L OR BCH 3033C)

This course focuses on the production, maturation and morphology of normal and abnormal human blood cells. Pathological changes in morphology, cytochemistry and distribution of cells in peripheral blood and bone marrow are discussed. Manual and automated methods for blood cell counts, hemoglobin measurement and other hematology parameters are explained. Purpose, principle and clinical value of routine and special procedures are stressed. There is focus on quality control and quality assurance processes in a clinical hematology laboratory. Permission is required. MLS students are required to take the corresponding laboratory, MLS 4305L, as a co-requisite.

MLS 4305L Hematology I Lab

College of Health, Department of Medical Lab Sciences

1 sh (may not be repeated for credit)

Prerequisite: (BSC 1086) AND (PCB 3063/L OR PCB 3063C) AND (BCH 3033/L OR BCH 3033C)

Co-requisite: MLS 4305

This is an introductory study of production, maturation, and morphology of normal and abnormal human blood cells. Pathological changes in morphology, cytochemistry, and distribution of cells in peripheral blood and bone marrow are addressed. Manual and automated methods for blood cell counts, hemoglobin measurement and other hematology parameters are discussed and performed. The 3 phases of testing, preanalytical, analytical and post-analytical are emphasized in the laboratory component. Material and Supply fees will be assessed. Equipment fees will be assessed. Permission is required.

MLS 4306C Hematology for the MLT to MLS track

College of Health, Department of Medical Lab Sciences

4 sh (may not be repeated for credit)

Prerequisite: (BSC 1086 OR BSC 2010) AND (MLS 3194) AND (MLS 3621)

This course studies the production, maturation and morphology of normal and abnormal human blood cells. It describes pathological changes in morphology, cytochemistry and distribution of cells in peripheral blood and bone marrow. Discussion and interpretation of manual and automated methods for blood cell counts, hemoglobin measurement and other hematology parameters are stressed. The purpose, principle, and clinical value of routine and special procedures is stressed. Quality control and quality assurance processes in a clinical hematology laboratory are of importance. Correlation of lab findings to various disease conditions is stressed. Students will perform virtual laboratory activities and interpret laboratory data. Permission is required.

MLS 4334 Hemostasis and Thrombosis

College of Health, Department of Medical Lab Sciences

1 sh (may not be repeated for credit)

Prerequisite: (BSC 1086) AND (PCB 3063/L OR PCB 3063C) AND (BCH 3033/L OR BCH 3033C)

This class studies the role of blood vessels, platelets and coagulation factors in normal hemostasis. Platelet morphology and function, laboratory tests for evaluation of platelets, and platelet disorders are evaluated. The study of coagulation factors, coagulation pathways, and inherited and acquired coagulation disorders allows students to evaluate normal fibrinolysis and disorders of fibrinolysis. Physiologic and pathologic coagulation inhibitors and their role in normal and abnormal hemostasis are taught to understand the diagnosis and management of hemorrhagic diseases. Thrombotic disorders and their management by anticoagulant therapy and fibrinolytic therapy are explained. Permission is required. MLS students are required to take the corresponding laboratory, MLS 4334L, as a co-requisite.

MLS 4334L Hemostasis and Thrombosis Lab

College of Health, Department of Medical Lab Sciences

1 sh (may not be repeated for credit)

Prerequisite: (BSC 1086) AND (PCB 3063/L OR PCB 3063C) AND (BCH 3033/L OR BCH 3033C)

Co-requisite: MLS 4334

This class will teach the entry-level clinical laboratory scientist the role of blood vessels, platelets, and coagulation factors in normal hemostasis. Content will include platelet morphology and function using laboratory tests for evaluation of platelets, and platelet disorders. Students will perform evaluations of coagulation factors, coagulation pathways, and inherited and acquired coagulation disorders through laboratory testing. Current methodologies used in the medical coagulation laboratory are introduced. Permission is required. Material and supply fees will be assessed. Equipment fees will be assessed.

MLS 4335C Hemostasis and Thrombosis for the MLT to MLS track

College of Health, Department of Medical Lab Sciences

3 sh (may not be repeated for credit)

Prerequisite: (BSC 1086 OR BSC 2010) AND (MLS 3194) AND (MLS 3621)

The role of blood vessels, platelets, and coagulation factors in normal hemostasis is explored. An emphasis is placed upon platelet morphology and function, laboratory tests for evaluation of platelets, and platelet disorders. The study of coagulation factors and their pathways allows the student to detect inherited and acquired coagulation disorders. Normal fibrinolysis and disorders of fibrinolysis are covered. Physiologic and pathologic coagulation inhibitors and their role in normal and abnormal hemostasis are evaluated. Diagnosis and management of hemorrhagic diseases, thrombotic disorders and their management by anticoagulant therapy and fibrinolytic therapy, and correlation of lab findings to various disease conditions is stressed. Students will perform virtual laboratory activities and interpret laboratory data. Permission is required.

MLS 4460 Diagnostic Microbiology I

College of Health, Department of Medical Lab Sciences

3 sh (may not be repeated for credit)

Prerequisite: (MCB 3020/L) AND (PCB 3063/L OR PCB 3063C) AND (BCH 3033/L OR BCH 3033C)

Co-requisite: MLS 4460L

This course focuses on the study of bacteria associated with infectious diseases. This includes microbial taxonomy, physiology, genetics and host-parasite relationships as they apply to clinical microbiology. Pathogens of particular organ systems, pathogenesis of infectious disease, clinical manifestations, etiology and epidemiology of disease are covered. Interpretation of test results and clinical relevance are taught utilizing case studies. Permission is required.

MLS 4460L Diagnostic Microbiology I Laboratory

College of Health, Department of Medical Lab Sciences

1 sh (may not be repeated for credit)

Prerequisite: (MCB 3020/L) AND (PCB 3063/L OR PCB 3063C) AND (BCH 3033/L OR BCH 3033C)

Co-requisite: MLS 4460

Methods for specimen collection, handling and processing of human tissues and body fluids for isolation and identification of bacteria are covered. Conventional and rapid identification methods for clinically significant bacteria, principles of automation, susceptibility testing, infection control, and quality assurance procedures are included. Permission is required. Material and Supply fees will be assessed. Equipment fees will be assessed.

MLS 4461C Diagnostic Microbiology for the MLT to MLS track

College of Health, Department of Medical Lab Sciences

4 sh (may not be repeated for credit)

Prerequisite: (MCB 3020/L) AND (MLS 3194) AND (MLS 3621)

This course focuses on the study of bacteria associated with infectious diseases. Microbial taxonomy, physiology, genetics and host-parasite relationships are associated with pathogens of particular organ systems, pathogenesis of infectious disease, clinical manifestations, and epidemiology. Students will perform virtual laboratory activities and interpret laboratory data. Permission is required.

MLS 4462 Medical Microbiology

College of Health, Department of Medical Lab Sciences

3 sh (may not be repeated for credit)

Prerequisite: (MCB 3020/L) AND (PCB 3063/L OR PCB 3063C) AND (BCH 3033/L OR BCH 3033C)

This course covers the study of clinical parasitology, mycobacteriology, clinical virology, clinical mycology, and miscellaneous and emerging pathogens. Permission is required. MLS students are required to take the corresponding laboratory, MLS 4462L, as a co-requisite.

MLS 4462L Medical Microbiology Lab

College of Health, Department of Medical Lab Sciences

1 sh (may not be repeated for credit)

Prerequisite: (MCB 3020/L) AND (PCB 3063/L OR PCB 3063C) AND (BCH 3033/L OR BCH 3033C)

Co-requisite: MLS 4462

This lab focuses on the microscopic identification of protozoan, helminthic, fungal, mycobacterial, and viral pathogens. Culture and staining are performed on fungal and mycobacterial organisms. Permission is required. Material and supply fees will be assessed. Equipment fees will be assessed.

MLS 4463C Medical Microbiology for the MLT to MLS track

College of Health, Department of Medical Lab Sciences

4 sh (may not be repeated for credit)

Prerequisite: (MCB 3020/L) AND (MLS 3194) AND (MLS 3621)

This course covers the study of clinical parasitology, mycobacteriology, clinical virology, clinical mycology, and miscellaneous and emerging pathogens. Students will perform virtual laboratory activities to identify parasites, fungi, and to interpret laboratory data. Permission is required.

MLS 4505 Clinical Immunology

College of Health, Department of Medical Lab Sciences

3 sh (may not be repeated for credit)

Prerequisite: (BCH 3033/L OR BCH 3033C) AND (PCB 3063/L OR PCB 3063C)

This class will teach the clinical laboratory scientist the role of the immune system and its components, including complement, antibody and antigens, and cellular and humoral immunity. Serology of noninfectious clinical disorders such as hypersensitivity reactions and system and organ/tissue autoimmunity are examined. Immune-mediated diseases, such as primary and acquired immunodeficiencies are discussed. Diseases that are diagnosed using serologic methods for bacterial, fungal and parasitic infections, such as syphilis, infectious mononucleosis, and measles are reviewed. Current methodologies used in the medical serology and immunodiagnostic laboratory are introduced. MLS students are required to take the corresponding laboratory, MLS 4505L as a co-requisite.

MLS 4505L Clinical Immunology Lab

College of Health, Department of Medical Lab Sciences

1 sh (may not be repeated for credit)

Prerequisite: (PCB 3063/L OR PCB 3063C) AND (BCH 3033/L OR BCH 3033C)

Co-requisite: MLS 4505

The laboratory section is a co-requisite to Clinical Immunology. The course reinforces laboratory safety and sample collection and processing, and gives the student practical experience using serologic and immunologic techniques, such as agglutination, precipitation, immunofluorescence, ELISA, and antibody elution and detection methods. Material and Supply fees will be assessed. Equipment fees will be assessed. Permission is required.

MLS 4506C Clinical Immunology for the MLT to MLS track

College of Health, Department of Medical Lab Sciences

4 sh (may not be repeated for credit)

Prerequisite: MLS 3194 AND MLS 3621

The immune system and its components, complement, antibody and antigens, cellular and humoral immunity are described. Immune-mediated diseases, such as AIDS, Hemolytic Disease of the Newborn and Lupus Erythematosus are featured. Diseases that are diagnosed using serologic methods, such as syphilis, infectious mononucleosis, and measles are discussed. Current methodologies used in the medical serology and immunodiagnostic laboratory are reviewed. Students will perform virtual laboratory activities and interpret serologic and immunologic results, such as agglutination, precipitation, immunofluorescence, ELISA, and antibody elution and detection methods. Permission is required.

MLS 4550 Immunoematology I

College of Health, Department of Medical Lab Sciences

3 sh (may not be repeated for credit)

Prerequisite: (PCB 3063/L OR PCB 3063C) AND (BCH 3033/L OR BCH 3033C)

This course is an introduction to the basic principles and procedures of Blood Bank and Transfusion Medicine. The course covers the fundamentals of blood group immunology, pre-transfusion testing of patient and donor blood for compatibility. The student will also learn red blood cell antibody/antigen interaction and their properties in clinically significant blood group systems. The course covers testing such as ABO/Rh typing, antibody detection and identification, autoimmune hemolytic anemias, and hemolytic disease of the newborn. The student will learn about the collection of blood products and their use in transfusion medicine, including storage, testing for infectious agents, and utilization. The course will also cover regulations and medical, legal, and ethical aspects of transfusion services. Permission is required. MLS students are required to take the corresponding laboratory, MLS 4550L, as a co-requisite.

MLS 4550L Immunoematology I Lab

College of Health, Department of Medical Lab Sciences

1 sh (may not be repeated for credit)

Prerequisite: (PCB 3063/L OR PCB 3063C) AND (BCH 3033/L OR BCH 3033C)

Co-requisite: MLS 4550

This course is an introduction to the basic principles and procedures of blood bank and transfusion services. Fundamentals of blood group immunology, pre-transfusion testing of patient blood and donor blood for compatibility, and antigens, antibodies and their properties in clinically significant blood group systems are studied. There is a heavy focus on ABO & Rh typing, compatibility testing and special tests, antibody screen and identification, and Autoimmune Hemolytic Anemia and Hemolytic Disease of the Newborn. Transfusion therapy, hazards of transfusion and investigation of transfusion reactions, donor selection, collection of donor blood and testing for infectious agents, and preparation, storage, and utilization of blood components are stressed. Regulations, medico-legal, and ethical aspects of transfusion services are discussed. Material and supply fees will be assessed. Equipment fees will be assessed. Permission is required.

MLS 4552C Immunoematology for the MLT to MLS track

College of Health, Department of Medical Lab Sciences

4 sh (may not be repeated for credit)

Prerequisite: MLS 3194 AND MLS 3621

This course is a review of the basic principles and procedures of blood bank and transfusion services. Fundamentals of blood group immunology and pre-transfusion testing of patient blood and donor blood for compatibility are covered. Antigens, antibodies, and their properties in clinically significant blood group systems allow for ABO & Rh typing, compatibility testing and special tests. Antibody screen and identification are performed. Autoimmune Hemolytic Anemia and Hemolytic Disease of the Newborn are covered. Transfusion therapy, hazards of transfusion and investigation of transfusion reactions are stressed. Donor selection, collection of donor blood, and testing for infectious agents are studied in detail. Preparation, storage, and utilization of blood components along with regulations, medico-legal, and ethical aspects of transfusion services will be discussed. Students will perform virtual laboratory activities and interpret case studies.

MLS 4625 Clinical Chemistry I

College of Health, Department of Medical Lab Sciences

2 sh (may not be repeated for credit)

Prerequisite: (BCH 3033/L OR BCH 3033C) AND (PCB 3063/L OR PCB 3063C)

This course is an introduction to the basic principles and procedures of clinical chemistry. The lecture and lab are devoted to chemical analysis of blood and other body fluids. Lab safety, specimen collection/handling/storage, lab mathematics, basic lab instrumentation and automation, data management, reference range determination, and quality control monitoring will be stressed throughout the course. This class will discuss the pathophysiology and diagnostic testing related to the metabolism of carbohydrates and lipids, assessments of diabetes and diabetic risk, assessments of cardiac risk and monitoring and prognosis following myocardial infarction. Methodologies discussed include spectrophotometry, immunodiagnosics and computer generated analyses. Students will participate in class discussions about recent research in clinical chemistry which will be presented in the forms of abstracts, research papers and figures. Material and Supply fee will be assessed for corresponding lab. Equipment Fee will be assessed. Permission is required. MLS Students are required to take the corresponding laboratory, MLS 4625L, as a co-requisite.

MLS 4625L Clinical Chemistry I Lab

College of Health, Department of Medical Lab Sciences

1 sh (may not be repeated for credit)

Prerequisite: (PCB 3063/L OR PCB 3063C) AND (BCH 3033/L OR BCH 3033C)

Co-requisite: MLS 4625

This lab is devoted to the chemical analysis and interpretation of blood and other bodily fluids. Selected experiments in diabetes and cardiovascular disease risk assessment and monitoring are performed. Safety, instrumentation, and quality control will be stressed. Methodologies discussed include spectrophotometry, immunodiagnosics, and computer generated analyses. Material and supply fee will be assessed. Equipment fees will be assessed. Permission is required.

MLS 4626C Clinical Chemistry I for the MLT to MLS

College of Health, Department of Medical Lab Sciences

3 sh (may not be repeated for credit)

Prerequisite: CHM 2210 AND MLS 3194 AND MLS 3621

This course is a review of the basic principles and procedures of clinical chemistry. The lecture and case studies are devoted to chemical analysis of blood and other body fluids. Lab safety, specimen collection/handling/storage, lab mathematics, basic lab instrumentation and automation, data management, reference range determination and quality control monitoring will be stressed throughout the course. This class will discuss the pathophysiology and diagnostic testing related to the metabolism of carbohydrates and lipids, assessments of diabetes and diabetic risk, assessments of cardiac risk and monitoring and prognosis following myocardial infarction. Methodologies discussed include spectrophotometry, immunodiagnosics and computer generated analyses. Students will participate in class discussions about recent research in clinical chemistry, which will be presented in the forms of abstracts, research papers and figures. Students will perform virtual laboratory activities and interpret laboratory data. Permission is required.

MLS 4630 Clinical Chemistry II

College of Health, Department of Medical Lab Sciences

2 sh (may not be repeated for credit)

Prerequisite: (PCB 3063/L OR PCB 3063C) AND (BCH 3033/L OR BCH 3033C)

This course covers basic chemistry functions, to include: kidney function, blood gases, and pancreatic function assessment. It also includes the more esoteric tests involved in testing endocrine function, therapeutic drug monitoring, toxicology, tumor markers, and testing during pregnancy. Methodology is primarily immunoassay, potentiometry and spectrophotometry. Permission is required. MLS students are required to take the corresponding laboratory, MLS 4630L, as a co-requisite.

MLS 4630L Clinical Chemistry II Lab

College of Health, Department of Medical Lab Sciences

1 sh (may not be repeated for credit)

Prerequisite: (PCB 3063/L OR PCB 3063C) AND (BCH 3033/L OR BCH 3033C)

Co-requisite: MLS 4630

This course covers laboratory procedures evaluating kidney and liver function, electrolytes, acid-base balance, mineral metabolism, enzyme measurements, toxicology and testing during pregnancy. Methodology is primarily immunoassay, potentiometry and spectrophotometry. Permission is required. Material and supply fees will be assessed. Equipment fees will be assessed.

MLS 4631C Clinical Chemistry II for the MLT to MLS

College of Health, Department of Medical Lab Sciences

3 sh (may not be repeated for credit)

Prerequisite: CHM 2210 AND MLS 3194 AND MLS 3621

This course continues where Clinical Chemistry I left off, discussing kidney function, electrolytes, blood gases, acid-base balance, mineral metabolism, enzyme measurement, liver function studies, and pancreatic function assessment. It also includes the more esoteric tests involved in testing endocrine function, therapeutic drug monitoring, toxicology, tumor markers, and testing during pregnancy. Methodology is primarily immunoassay, potentiometry, and spectrophotometry. Reading and disseminating research in the discipline is emphasized in the format of a journal club. Permission is required.

MLS 4704 Clinical Management Portfolio for the MLT to MLS track

College of Health, Department of Medical Lab Sciences

3 sh (may not be repeated for credit)

Fundamentals of clinical laboratory management, research and educational methodologies are covered. Students are introduced to clinical laboratory operations including financial and human resource management, marketing of laboratory services, communication with other health care professionals, laboratory information systems, research design and compliance with regulatory agencies. The student will provide evidence of adequate training or work experience in Hematology, Clinical Chemistry, Microbiology and Blood Bank equivalent to an MLS clinical internship and produce this in a professionally developed portfolio. The student will produce a professionally written case study that is suitable for publication. Meets Gordon Rule Writing Requirement.

MLS 4705 Special Clinical Topics

College of Health, Department of Medical Lab Sciences

1 sh (may not be repeated for credit)

Fundamentals of clinical laboratory management, supervision and educational methodologies are covered. Students are introduced to clinical laboratory operations in areas of financial and human resource management, marketing of laboratory services, communication with other health care professionals, laboratory information systems and regulatory compliance with applicable regulatory agencies. This course is designed to cover special clinical laboratory topics that are required for certification and licensure as a Clinical Laboratory Scientist following completion of the Clinical Laboratory Sciences program. Curriculum includes management and educational methodologies. These topics are covered on national board certification examinations. Permission is required. This course is required within 18 months of the clinical internship.

MLS 4820L Clinical Chemistry III

College of Health, Department of Medical Lab Sciences

4 sh (may not be repeated for credit)

Prerequisite: MLS 4191/L AND MLS 4220/L AND MLS 4305/L AND MLS 4334/L AND MLS 4460/L AND MLS 4462/L AND MLS 4505/L AND MLS 4550/L AND MLS 4625/L AND MLS 4630/L AND MLS 4705

This course is an application of clinical chemistry principles and techniques presented in Clinical Chemistry I and II and Urinalysis I. This course allows for supervised practice in the hospital laboratory. Permission is required.

MLS 4821L Diagnostic Microbiology II

College of Health, Department of Medical Lab Sciences

4 sh (may not be repeated for credit)

Prerequisite: MLS 4191/L AND MLS 4220/L AND MLS 4305/L AND MLS 4334/L AND MLS 4460/L AND MLS 4462/L AND MLS 4505/L AND MLS 4550/L AND MLS 4625/L AND MLS 4630/L AND MLS 4705

This course is an application of clinical microbiology principles and techniques presented in Diagnostic Microbiology I. This course allows for supervised practice in an affiliated hospital laboratory. Equipment fee will be assessed. Permission is required.

MLS 4822L Hematology II

College of Health, Department of Medical Lab Sciences

4 sh (may not be repeated for credit)

Prerequisite: MLS 4191/L AND MLS 4220/L AND MLS 4305/L AND MLS 4334/L AND MLS 4460/L AND MLS 4462/L AND MLS 4505/L AND MLS 4550/L AND MLS 4625/L AND MLS 4630/L AND MLS 4705

This course is an application of Hematology I and Hemostasis and Thrombosis. This course allows for supervised practice in the hospital laboratory. Permission is required.

MLS 4823L Immunohematology II

College of Health, Department of Medical Lab Sciences

4 sh (may not be repeated for credit)

Prerequisite: MLS 4191/L AND MLS 4220/L AND MLS 4305/L AND MLS 4334/L AND MLS 4460/L AND MLS 4462/L AND MLS 4505/L AND MLS 4550/L AND MLS 4625/L AND MLS 4630/L AND MLS 4705

This course is a continuation and application of Immunohematology I. This course allows for supervised practice at one of the affiliate hospitals and for more advanced practical training in modern blood banking and transfusion services at the hospital. Permission is required.

MLS 4824L Special Clinical Methods

College of Health, Department of Medical Lab Sciences

2 sh (may not be repeated for credit)

Prerequisite: MLS 4191/L AND MLS 4220/L AND MLS 4305/L AND MLS 4334/L AND MLS 4460/L AND MLS 4462/L AND MLS 4505/L AND MLS 4550/L AND MLS 4625/L AND MLS 4630/L AND MLS 4705

This course is an application of specialty immunodiagnostic and specialty procedures presented in Immunology and Medical Microbiology. This course allows for supervised practice in a hospital laboratory. Permission is required.

MLS 4825L Urinalysis/Body Fluids II

College of Health, Department of Medical Lab Sciences

2 sh (may not be repeated for credit)

Prerequisite: MLS 4191/L AND MLS 4220/L AND MLS 4305/L AND MLS 4334/L AND MLS 4460/L AND MLS 4462/L AND MLS 4505/L AND MLS 4550/L AND MLS 4625/L AND MLS 4630/L AND MLS 4705

This course is an application of urinalysis principles and techniques, and phlebotomy presented in Urinalysis and Body Fluids I and Hematology I. This course allows for supervised practice in a hospital laboratory. Permission is required.

MLS 4905 Directed Study

College of Health, Department of Medical Lab Sciences

1-12 sh (may be repeated indefinitely for credit)