

BIOMEDICAL LABORATORY SCIENCE (BLS)

BLS 1000 - The Power of Laboratory Medicine

2 Credits

This course exhibits a distinct expression of inquiry into the Medical Laboratory Science profession and its disciplines. The course will assist students in practicing in the Ignatian pedagogical paradigm rooted in context, experience, reflection, action, and evaluation. Students will discover their passion for their profession and identify with core values for personal and professional growth.

Corequisite(s): BLS 1150

Attributes: UUC:Ignite Seminar

BLS 1100 - Foundations of Medical Sciences

2 Credits

This course introduces students to medical sciences with an emphasis on major sub-specialties including hematology, microbiology, urinalysis, chemistry, immunology, and immunohematology. Identification and exploration of research opportunities and career options are also covered. Teaching modalities include lectures, case studies, and the use of laboratory data in the diagnosis of disease.

Restrictions:

Enrollment is limited to students with a major in Medical Sciences.

BLS 1150 - Foundations of Medical Laboratory Science Lab

1 Credit

This laboratory course is a supplement to The Power of Laboratory Medicine lecture course (BLS 1000) and serves to reinforce the basic concepts through hands-on laboratory testing. Students will perform a variety of routine clinical laboratory tests to solve patient cases. Basic principles of testing methods, laboratory techniques and interpretation of laboratory results will be covered.

Corequisite(s): BLS 1000

BLS 1850 - Research

1-3 Credits (Repeatable for credit)

This experiential course provides the opportunity to familiarize students with basic principles of research design, data collection, data analysis, and hypothesis testing. In consultation with a faculty mentor, the student selects a research project and begins the preliminary activities associated with developing a research question to include searching the literature, participation in grant, IRB and animal control protocols, procedure writing and training in research techniques. Experimentation and data collection may begin as time permits. Students are required to meet with their faculty mentor on a regular basis during the semester.

Attributes: Special Approval Required

BLS 2850 - Research

1-3 Credits (Repeatable for credit)

This experiential course provides the opportunity to apply the basic principles of research design, data collection, data analysis, and hypothesis testing to a research study. In consultation with a faculty mentor, the student will begin performing research technique and data collection on the research project selected. Students are required to meet with their faculty mentor on a regular basis during the semester.

Prerequisite(s): BLS 1850 with a grade of C- or higher

Attributes: Special Approval Required

BLS 3110 - Urinalysis & Body Fluids

2 Credits

This course emphasizes the fundamental physiology of the kidney, mechanisms of urine formation, and urine analysis. Additionally, it covers the formation, function, and assessment of various body fluids, including but not limited to cerebrospinal, pleural, pericardial, peritoneal, synovial, amniotic, and seminal fluids. The content will prioritize understanding the principles and clinical significance of different procedures employed in testing urine and body fluids, exploring their pivotal role in disease diagnosis.

Prerequisite(s): BIOL 3020 with a grade of C- or higher; (PPY 2540 with a grade of C- or higher, (HSCI 3300 with a grade of C- or higher and HSCI 3310 with a grade of C- or higher), (HSCI 3400 with a grade of C- or higher and HSCI 3410 with a grade of C- or higher), or HSCI 3510 with a grade of C- or higher)

Restrictions:

Enrollment is limited to students with a major in Medical Laboratory Science or Medical Sciences.

BLS 3850 - Research

1-3 Credits (Repeatable for credit)

This experiential course provides the opportunity to apply the basic principles of research design, data collection, data analysis, and hypothesis testing to a research study. In consultation with a faculty mentor, the student performs experiments and collects data to test the research hypothesis associated with the research project selected. Students are required to meet with their faculty mentor on a regular basis during the semester.

Prerequisite(s): BLS 2850 with a grade of C- or higher

Attributes: Special Approval Required

BLS 3930 - Special Topics

1-3 Credits (Repeatable for credit)

BLS 4110 - Medical Biochemistry I

3 Credits

Part one of a two-part course to study the biochemical principles as applied to clinical investigation of disease. Topics include but are not limited to: protein structure and function; enzyme kinetics; carbohydrate and lipid metabolism; fluid and electrolyte balance. Medical chemistry testing will be applied to the evaluation of specific organ systems diseases.

Prerequisite(s): BIOL 3020 with a grade of C- or higher; CHEM 2410 with a grade of C- or higher

Restrictions:

Enrollment is limited to students with a major in Investigative Med Sciences, Medical Laboratory Science or Medical Sciences.

BLS 4120 - Medical Biochemistry II

2 Credits

Continuation of BLS-4110 focusing on biochemical principles and their application to the clinical investigation of disease. Topics include but are not limited to: trace elements, acid base balance, liver function, endocrinology, therapeutic drug monitoring and toxicology.

Prerequisite(s): BLS 4110 with a grade of C- or higher

Restrictions:

Enrollment is limited to students with a major in Investigative Med Sciences, Medical Laboratory Science or Medical Sciences.

BLS 4130 - Principles & Techniques in Molecular Biology

2 Credits

Course provides an introduction to principles and applications of molecular biology to include nucleic acid biochemistry as well as basic molecular techniques to include but not limited to isolation and analysis of DNA and RNA, hybridization, amplification, sequence analysis, mutation detection, gel electrophoresis and array technology. Course includes the application of concepts and principles to the diagnosis of human disease.

Prerequisite(s): BIOL 3020 with a grade of C- or higher

Restrictions:

Enrollment is limited to students with a major in Investigative Med Sciences, Medical Laboratory Science or Medical Sciences.

BLS 4210 - Hematology

4 Credits

Content emphasizes the physiology of the blood forming organs and the maturation and function of their cellular products. Routine and confirmatory laboratory testing will be discussed to include purpose of test, performance of test and interpretation of results. Discussions will involve the pathophysiology, evaluation and diagnosis of blood dyscrasias to include anemias, leukemias, lymphomas, myeloproliferative and myelodysplastic conditions and other blood diseases using laboratory test results.

Prerequisite(s): BIOL 3020 with a grade of C- or higher

Restrictions:

Enrollment is limited to students with a major in Investigative Med Sciences, Medical Laboratory Science or Medical Sciences.

BLS 4220 - Hemostasis and Thrombosis

2 Credits

Principles and laboratory analysis of normal hemostasis and fibrinolysis will be presented to include blood vessel, platelet, and coagulation protein function. Discussions will include the pathophysiology of bleeding conditions, thrombotic disorders, and thrombophilia, and their diagnosis using laboratory results. The physiology and laboratory monitoring of anticoagulant therapy will be discussed.

Prerequisite(s): BIOL 3020 with a grade of C- or higher

Restrictions:

Enrollment is limited to students with a major in Investigative Med Sciences, Medical Laboratory Science or Medical Sciences.

BLS 4310 - Immunohematology

3 Credits

This course introduces basic immunologic and genetic principles governing blood groups and blood transfusion practice. Blood group systems, antibody identification, compatibility testing, and transfusion therapy are covered.

Prerequisite(s): BLS 4411 with a grade of C- or higher

Restrictions:

Enrollment is limited to students with a major in Investigative Med Sciences, Medical Laboratory Science or Medical Sciences.

BLS 4411 - Fundamentals of Immunology

2 Credits

Course focuses on the human immune system to include but is not limited to theories of innate, humoral and cellular immunity, development and functions of T-cells and B-cells, the antibody response, the genetics of antibody diversity.

Prerequisite(s): BIOL 3020 with a grade of C- or higher

BLS 4420 - Medical Immunology

2 Credits

The course will apply concepts of basic immunology to human disease to include concepts of hypersensitivity, immune deficiencies, transplantation and tumor immunology. Lecture presentations of the recent advances in immunology that are relevant to transplantation, infectious disease, tumor immunology and nutrition.

Prerequisite(s): BLS 4411 with a grade of C- or higher

BLS 4510 - Medical Microbiology

4 Credits

Content focuses on microorganisms of pathologic importance to include bacteria and viruses with an overview of parasites and fungi involved in human disease. Included are discussions on structure, molecular biology, molecular diagnostics, metabolism, growth, replication, food borne illnesses, current topics and emerging concerns. Pathogenicity, epidemiology, diagnosis and laboratory identification of important groups of human pathogenic bacteria along with modes of action of selected antimicrobics and chemotherapeutic agents are also discussed. In addition to the prerequisites, BIOL 3020 is recommended.

Prerequisite(s): (BIOL 1100 with a grade of C- or higher or BIOL 1240 with a grade of C- or higher); CHEM 1120 with a grade of C- or higher

BLS 4610 - Research Design, Critique & Presentation

3 Credits

"This course introduces students to research and includes discussion and assignments relevant to biomedical research design and performance. Topics include but are not limited to critical reasoning, safety and ethical components of research performance, literature review and critique, scientific writing and principles of effective presentations.

Prerequisite(s): (MATH 1300 with a grade of C- or higher or STAT 1300 with a grade of C- or higher)

Restrictions:

Enrollment is limited to students with a major in Investigative Med Sciences, Medical Laboratory Science or Medical Sciences.

BLS 4800 - Medical Sciences Capstone - Integrative Global Health, Ethics, and Community Impact

3 Credits

This capstone course for the medical sciences program is designed to provide students with practical experience in addressing real-world health challenges while developing their ethical responsibility, critical thinking, communication, and teamwork skills. Through the completion of a comprehensive capstone project, students will apply the medical knowledge, skills, and experiences gained during their education at SLU. In addition, students are required to engage in at least 15 hours of volunteering, shadowing, or working within a healthcare setting over the course of the semester. Grounded in the University's "Reflection-in-Action" framework, this course encourages students to actively engage with diverse communities, deepening their understanding of their chosen profession and fostering their capacity to act in solidarity with others.

Prerequisite(s): HSCI 3700 with a grade of C- or higher; BLS 4110 with a grade of C- or higher; BLS 4120 with a grade of C- or higher; BLS 4411 with a grade of C- or higher; BLS 4210 with a grade of C- or higher; BLS 4510 with a grade of C- or higher; CORE 1500^{*}; (CORE 1000 or UUC Ignite Seminar Waiver with a minimum score of S)

^{*} Concurrent enrollment allowed.

Corequisite(s): BLS 3110, BLS 4220, BLS 4310

Restrictions:

Enrollment is limited to students with a major in Investigative Medical Sciences or Medical Sciences.

Attributes: UUC:Reflection-in-Action

BLS 4850 - Research

3 Credits (Repeatable for credit)

This experiential course provides the opportunity for students to apply the basic principles of research design, data collection, data analysis, and hypothesis testing to a research study. In consultation with a faculty mentor, the student performs experiments and collects data to test the research hypothesis associated with the research project selected. The course culminates in a publication ready manuscript. Students are required to meet with their faculty mentor on a regular basis during the semester.

Prerequisite(s): BLS 3850 with a grade of C- or higher

Attributes: Special Approval Required

BLS 5125 - Introduction to Clinical Laboratory Medicine

3 Credits

The purpose of the course is to discuss the most common laboratory tests ordered, performed, and interpreted in the areas of Clinical Chemistry, Hematology, Immunology, Transfusion Medicine (Blood Bank), Hemostasis, Medical Microbiology, and Urinalysis. Discussions will include the purpose of each test, test ordering practices, relationship to disease pathophysiology, result interpretation, and how test results are included in diagnostic algorithms. Physician Assistant majors only.

Restrictions:

Enrollment limited to students in the Master of Medical Science program.

Attributes: Health & Rehab Sciences