

Medical Laboratory Science (MLSC)

MLSC 1001 Introduction to Medical Laboratory Methods (1 credits)

Fundamental concepts in laboratory analysis and data correlation. Topics limited to specific disease entities. Laboratory exercises include certain aspects of clinical chemistry, clinical hematology and clinical microbiology. (Saturdays).

Prerequisite: Enrolled in MLSC Young Scholar Program.

Level of Study: Undergraduate

Schedule of Classes (<https://bulletin.marquette.edu/class-search/?details&code=MLSC%201001>)

MLSC 1100 Guided Study in Medical Laboratory Science (0-2 credits)

Analysis of selected topics under faculty supervision. Primarily for undergraduate students who wish to enhance their knowledge in selected disciplines through guided study. 0 credit is SNC/UNC grade assessment; 1-2 credits is graded.

Prerequisite: MLSC major; or cons. of dept. ch.

Level of Study: Undergraduate

Schedule of Classes (<https://bulletin.marquette.edu/class-search/?details&code=MLSC%201100>)

MLSC 1200 Introductory and Practical Medical Laboratory Science (1 credits)

Introduction to Medical Laboratory Science and the areas of practice within the discipline. Includes hands-on laboratory sessions and guest lecturers who are practicing experts in various fields of the discipline.

Prerequisite: MLSC major.

Level of Study: Undergraduate

Schedule of Classes (<https://bulletin.marquette.edu/class-search/?details&code=MLSC%201200>)

MLSC 2050 Forensic Science (3 credits)

An introduction to the principles of forensic science. An overview of criminal law, the crime scene, evidence collection and processing, forensic medicine (pathology) drugs and toxins, firearms, questioned documents, trace evidence, fingerprints and DNA as evidence. Emphasis on the investigatory role of the forensic scientist. Laboratory sessions reinforce information from lectures and provide hands-on experiences, including homicide scene investigation techniques, molecular biology procedures.

Level of Study: Undergraduate

Schedule of Classes (<https://bulletin.marquette.edu/class-search/?details&code=MLSC%202050>)

MLSC 2060 Public Health (3 credits)

An exploration and overview of public health medicine and its contribution to prevention and control of disease. Provides familiarization with epidemiology surveillance and investigation methods, including statistical tools. Included is an introduction to the following components of public health medicine: communicable and non-communicable disease diagnosis and monitoring, environmental and foodborne health concerns, social and behavioral health issues, community health services, and the bioterrorism response network.

Prerequisite: Soph stdng.

Level of Study: Undergraduate

Marquette Core Curriculum: NSM Basic Needs & Justice

Schedule of Classes (<https://bulletin.marquette.edu/class-search/?details&code=MLSC%202060>)

MLSC 2200 Concepts in Medical Laboratory Science (3 credits)

Introduction to hospital medical laboratory testing in the areas of hematology, clinical chemistry, urinalysis, immunology, microbiology and blood bank. Students learn to analyze patient specimens, interpret patient results and correlate these results with conditions such as anemia, diabetes mellitus, metabolic deficiencies, transfusion reactions and infectious diseases. Weekly laboratory exercises reinforce lecture material.

Prerequisite: BIOL 1001, CHEM 1001 and MLSC major; or cons. of dept. ch.

Level of Study: Undergraduate

Schedule of Classes (<https://bulletin.marquette.edu/class-search/?details&code=MLSC%202200>)

MLSC 4124 Medical Microbiology 1 (4 credits)

Emphasis on the theoretical foundations and methods employed in a medical microbiology laboratory. Topics include: 1) structure (including microscopic techniques), cultivation, selection and differentiation of medically-important microbes; 2) control of microbes (disinfection/antiseptics/sterilization, human immunology, antimicrobial agents); 3) Gram-positive bacteria; 4) obligate intracellular bacteria; 5) spirochetes and curved bacteria; 6) fastidious bacteria (including anaerobic bacteria); 7) acid-fast bacilli; and 8) introductory virology. Taxonomy, epidemiology, pathogenicity and treatment of selected microbes are explored. Weekly laboratory sessions reinforce and augment lecture topics, as well as introduce students to isolation, examination and identification of medically-significant bacteria. Lab fee.

Prerequisite: MLSC major and biochemistry course, which may be taken concurrently.

Level of Study: Undergraduate

Schedule of Classes (<https://bulletin.marquette.edu/class-search/?details&code=MLSC%204124>)

MLSC 4127 Medical Microbiology 2 (4 credits)

Continuation of concepts presented in MLSC 4124/7124. Topics include: 1) enteric Gram-negative bacilli; 2) non-glucose-fermentative Gram-negative bacilli; 3) medical mycology; 4) medical parasitology; and 5) medical microbiology review (including specimen processing) using a human organ system approach. Taxonomy epidemiology, pathogenicity and treatment of selected microbes are explored. Weekly laboratory sessions reinforce and augment lecture topics, as well as further examine the isolation and identification/detection of medically-significant bacteria, fungi and parasites. Students recognize potential bacterial pathogens in culture settings versus commensal organisms and correlate findings to medical scenarios. Lab fee.

Prerequisite: MLSC major and MLSC 4124.

Level of Study: Undergraduate

Marquette Core Curriculum: NSM Cgntn, Lang, Mmry/Intlgnc, NSM Expanding Our Horizons

Schedule of Classes (<https://bulletin.marquette.edu/class-search/?details&code=MLSC%204127>)

MLSC 4163 Clinical Chemistry and Concepts 1 (4 credits)

Emphasis on the analysis of macromolecules (nucleic acids, lipids, proteins and carbohydrates) in a clinical setting for diagnostic purposes. Lecture and weekly laboratory sessions explore 1) diagnostic molecular testing including PCR and bioinformatics; 2) regulation of lipids, proteins and carbohydrates in healthy versus diseased patients; 3) diagnostic chemistry methodologies; and 4) clinical correlation. Further medical laboratory topics include quality control, quality assurance and specimen collection.

Prerequisite: MLSC major and a course in biochemistry, which can be taken concurrently (BIOL 3101, BISC 2070 or BISC 3213).

Level of Study: Undergraduate

Schedule of Classes (<https://bulletin.marquette.edu/class-search/?details&code=MLSC%204163>)

MLSC 4173 Clinical Chemistry and Concepts 2 (4 credits)

Continuation of concepts presented in MLSC 4163/7163. Emphasis on medical laboratory instrumentation and techniques, and the chemical composition of body fluids. Specific topics of lecture and weekly laboratory include blood pH regulation; electrolytes; hormones; clinical enzymes; therapeutic drugs; drugs of abuse; vitamins; metals; and renal, liver, cardiac and pancreatic function. Further emphasis placed on patient testing and disease correlation.

Prerequisite: MLSC major and MLSC 4163.

Level of Study: Undergraduate

Schedule of Classes (<https://bulletin.marquette.edu/class-search/?details&code=MLSC%204173>)

MLSC 4174 Clinical Hematology 1 (4 credits)

Study of blood cells, blood forming organs and blood cell diseases with emphasis on hematopoiesis, blood cell morphology, blood cell function and pathophysiology. Lecture and weekly laboratory sessions explore identification of blood cells, routine hematology testing, hematology instrumentation, identification of blood parasites and clinical correlation.

Prerequisite: MLSC major and biochemistry course. With cons. of dept. ch., non-majors are required to complete an online biochemistry module.

Level of Study: Undergraduate

Schedule of Classes (<https://bulletin.marquette.edu/class-search/?details&code=MLSC%204174>)

MLSC 4180 Concepts in Clinical Education Methods and Practicum (2 credits)

Educational concepts especially appropriate to instruction in a clinical setting using clinical materials. Concepts discussed include: writing learning objectives, learning styles, testing and evaluation methods and use of audio-visuals.

Prerequisite: MLSC major and MLSC 4173.

Level of Study: Undergraduate

Marquette Core Curriculum: Engage Social Systems & Values 2, Writing Intensive

Schedule of Classes (<https://bulletin.marquette.edu/class-search/?details&code=MLSC%204180>)

MLSC 4181 Modern Management Concepts for the Medical Laboratory and Practicum (2 credits)

Comparison of management theories and styles for effective leadership. Principles and methods of communication essential to the delivery of quality health care. Strategic financial planning ensuring cost effectiveness in the diagnostic laboratory. Statistical analysis comparing alternative methodologies for selection of reliable laboratory procedures. Selected projects relating managerial practices to clinical laboratory organization and use of laboratory data systems for health care delivery.

Prerequisite: MLSC major and MLSC 4173.

Level of Study: Undergraduate

Schedule of Classes (<https://bulletin.marquette.edu/class-search/?details&code=MLSC%204181>)

MLSC 4183 Clinical Chemistry and Practicum (6 credits)

The chemical constituents of blood and other body fluids in health and disease. Principles of the methods used in qualitative and quantitative determination of these constituents. Treatment of the theoretical aspects of instrumentation used in these determinations.

Prerequisite: MLSC major and MLSC 4173.

Level of Study: Undergraduate

Schedule of Classes (<https://bulletin.marquette.edu/class-search/?details&code=MLSC%204183>)

MLSC 4184 Clinical Hematology 2 and Practicum (4 credits)

Quantitative and qualitative study of blood, bone marrow and body fluid cells and alterations present in disease. Principles of procedures used. Methods of obtaining and preserving blood specimens with consideration of the theory and practice of aseptic technique.

Prerequisite: MLSC major and MLSC 4173.

Level of Study: Undergraduate

Schedule of Classes (<https://bulletin.marquette.edu/class-search/?details&code=MLSC%204184>)

MLSC 4185 Clinical Hemostasis and Practicum (3 credits)

The components in the blood related to the hemostatic mechanisms, the principles of the procedures involved and their relationship to the diagnosis and treatment of disease.

Prerequisite: MLSC major and MLSC 4173.

Level of Study: Undergraduate

Schedule of Classes (<https://bulletin.marquette.edu/class-search/?details&code=MLSC%204185>)

MLSC 4186 Clinical Immunohematology and Practicum (6 credits)

Therapeutic and diagnostic aspects of immunohematology. Aspects of blood transfusion and of methods used in preservation and selection of properly matched blood for transfusion. Lab fee.

Prerequisite: MLSC major and MLSC 4173.

Level of Study: Undergraduate

Schedule of Classes (<https://bulletin.marquette.edu/class-search/?details&code=MLSC%204186>)

MLSC 4187 Clinical Immunology and Practicum (2 credits)

The diagnostic procedures used to determine immune system status and diagnosing immunodeficiency, autoimmunity and immunoproliferative diseases. The use of immunoassays to diagnose bacterial and viral infections and malignancies. Basic immunology is reviewed.

Prerequisite: MLSC major and MLSC 4173.

Level of Study: Undergraduate

Schedule of Classes (<https://bulletin.marquette.edu/class-search/?details&code=MLSC%204187>)

MLSC 4188 Clinical Microbiology and Practicum (6 credits)

Advanced study of pathogenic and normal flora microorganisms having medical importance. Includes methods for obtaining and handling specimens for culture as well as principles of current instrumentation. Identification protocol include cultural, morphological, biochemical, immunological, and molecular characteristics. Examines pathophysiology of infectious diseases caused by bacteria, fungi, parasites and viruses.

Prerequisite: MLSC major and MLSC 4124, MLSC 4127 and MLSC 4173.

Level of Study: Undergraduate

Schedule of Classes (<https://bulletin.marquette.edu/class-search/?details&code=MLSC%204188>)

MLSC 4189 Clinical Urinology and Practicum (2 credits)

Physical, chemical and microscopic study of urine with emphasis on the changes exhibited in disease with related physiology.

Prerequisite: MLSC major and MLSC 4173.

Level of Study: Undergraduate

Schedule of Classes (<https://bulletin.marquette.edu/class-search/?details&code=MLSC%204189>)

MLSC 4931 Topics in Medical Laboratory Science (1-4 credits)

Selected topics in medical laboratory science. Specific topics determined each term.

Level of Study: Undergraduate

Schedule of Classes (<https://bulletin.marquette.edu/class-search/?details&code=MLSC%204931>)

MLSC 4995 Independent Study in Medical Laboratory Studies (1-4 credits)

Faculty-supervised, independent study/research of a specific area or topic in Medical Lab Science.

Prerequisite: Cons. of dept. ch. Consent required.

Level of Study: Undergraduate

Schedule of Classes (<https://bulletin.marquette.edu/class-search/?details&code=MLSC%204995>)

MLSC 7124 Medical Microbiology 1 (4 credits)

Emphasis on the theoretical foundations and methods employed in a medical microbiology laboratory. Topics include: 1) structure (including microscopic techniques), cultivation, selection and differentiation of medically-important microbes; 2) control of microbes (disinfection/antiseptics/sterilization, human immunology, antimicrobial agents); 3) Gram-positive bacteria; 4) obligate intracellular bacteria; 5) spirochetes and curved bacteria; 6) fastidious bacteria (including anaerobic bacteria); 7) acid-fast bacilli; and 8) introductory virology. Taxonomy, epidemiology, pathogenicity and treatment of selected microbes are explored. Weekly laboratory sessions reinforce and augment lecture topics, as well as introduce students to isolation, examination and identification of medically-significant bacteria. Lab fee.

Prerequisite: Admitted to MLSC certificate program.

Level of Study: Health Sciences Professional

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Level of Study: Health Sciences Professional

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Prerequisite: Admitted to the MLSC certificate program; cons. of dept. ch. Consent required.

Level of Study: Health Sciences Professional

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