BIOMEDICAL SCIENCE (BMS)

The Biomedical Science (BMS) major focuses on fundamental concepts in biological sciences as they apply to human and animal health, medicine, and disease. Students attracted to Biomedical Science have a profound interest in human and animal physiology and diseases. The BMS major encompasses three options: Medical Laboratory Sciences (MLS), Medical Microbiology (MM), and Medical and Veterinary Sciences (MVS). Each of the options in the BMS major is based on foundational and advanced courses in chemistry and the biological sciences. BMS:MLS focuses on the laboratory diagnosis of human disease, BMS:MM focuses on infectious agents and host response, and BMS:MVS focuses on health and manifestations of disease in animals, including humans.

Faculty in the BMS major have expertise in many areas of biomedical science, including physiology, cell biology, infectious diseases, veterinary pathology, and laboratory medicine. The biomedical science faculty strongly encourage students to complement their academic courses with experiential learning opportunities through internships, field experience, and independent research projects conducted with biomedical research faculty. On-campus facilities include state-of-the-art research and teaching laboratories and the New Hampshire Veterinary Diagnostic Laboratory (NHVDL) that provide unique learning opportunities for students interested in veterinary medicine, pathobiology, and laboratory diagnostics.

There is high demand for skilled biomedical scientists as research assistants/technicians in biotechnology companies, pharmaceutical companies, government agencies, forensics, academic research laboratories, and hospitals, so BMS majors enjoy excellent job prospects upon graduation. The BMS curriculum also provides graduates with the required and recommended courses for admission to most graduate schools and professional schools of medicine, veterinary medicine, dentistry, public health, and pharmacy, as well as to physician assistant and pathologist's assistant programs. BMS graduates have a knowledge base that is valuable in the fields of sales, marketing, regulatory affairs, technical writing, patent law, and scientific journalism. With additional courses in education, the B.S. in biomedical science also qualifies graduates to teach at the elementary, junior high, or high school levels.

Pre-Professional Health Programs

Students interested in postgraduate careers in the health care professions (e.g., physician, dentist, physician assistant, pharmacist, etc.) should visit the Pre-Professional Health Programs Advising Office. Students interested in veterinary medicine should consult the Pre-Veterinary Medicine Program. While many of the prerequisite courses required by professional schools are also requirements of the biomedical science major, students should consult with their faculty adviser to create a plan of study that best prepares them for pursuing a career in one of these human and animal health professions.

https://colsa.unh.edu/molecular-cellular-biomedical-sciences

Programs

- Biomedical Science Major: Medical and Veterinary Sciences Option (B.S.)
- Biomedical Science Major: Medical Laboratory Sciences Option (B.S.)
- Biomedical Science Major: Medical Microbiology Option (B.S.)
- Biomedical Science Minor

Courses

Biomedical Science (BMS)

BMS 407 - Germs 101
Credits: 4
Societal and technological impact of the invisible microbial world on our lives and on the planet. Weekly extra-class activities enable students to use the scientific method of inquiry to explore topics like bacteria that use sunlight to live or use of bacteria in genetic engineering. Presents germs from different perspectives: as living organisms, as human enemies or friends, and as represented in newspapers or on TV. Especially useful for people with microphobia. No credit for BMS or Biology majors.
Attributes: Biological Science(Discovery)
Equivalent(s): BIOL 407, BMS 408, MICR 407
Grade Mode: Letter Grading

BMS 501 - Microbes in Human Disease
Credits: 4
Identification, pathogenesis, epidemiology, treatment, and prevention of medically important microorganisms. The biology of clinically relevant bacteria, viruses, fungi, and parasites is presented in relation to disease progress and host defense mechanisms. Clinical correlations that indicate microbes are causative agents of disease are emphasized. The laboratory introduces techniques for identification of pathogenic microorganisms to reinforce and expand the theoretical content. Lab.
Attributes: Biological Science(Discovery); Discovery Lab Course
Equivalent(s): BMS 501H, MICR 501, MICR 501H, MICR 502
Grade Mode: Letter Grading
Special Fee: Yes

BMS 503 - General Microbiology
Credits: 3
Principles of microbiology; morphology, physiology, genetics, culture, and classification of bacteria and other microorganisms; relationships of microbes to agriculture, environment, industry, sanitation, and infectious diseases.
Co-requisite: BMS 504
Prerequisite(s): (BIOL 411 with a minimum grade of D- or BIOL 411H with a minimum grade of D- or BMS 507 with a minimum grade of D- or BIOL 413 with a minimum grade of D-) and ((CHEM 403 with a minimum grade of D- and (CHEM 404 with a minimum grade of D-) or CHEM 404H with a minimum grade of D-) or CHEM 405 with a minimum grade of D-).
Equivalent(s): MICR 503
Grade Mode: Letter Grading

BMS 504 - General Microbiology Laboratory
Credits: 2
Practical laboratory training in general microbiology. Topics include safe handling, visualization, and physiological identification of microorganisms with special attention given to aseptic technique.
Co-requisite: BMS 503
Grade Mode: Letter Grading
Special Fee: Yes

BMS 507 - Human Anatomy and Physiology I
Credits: 0 or 4
Cellular and systematic aspects of the human body. Laboratory exercises utilize preserved specimens, dissectible models, living tissue and computer-aided instruction. Systems covered include: the cell, chemistry, tissues, integument, osseous tissue and the skeleton, muscular tissue and muscles, nerves, the brain, spinal cord, autonomic nervous system, and special senses. Lab.
Attributes: Biological Science(Discovery); Discovery Lab Course
Mutual Exclusion: No credit for students who have taken ANSC 511.
Grade Mode: Letter Grading
Special Fee: Yes

BMS 508 - Human Anatomy and Physiology II
Credits: 0 or 4
Cellular and systematic aspects of the human body. Laboratory exercises utilize preserved specimens, dissectible models, living tissue and computer-aided instruction. Systems covered include: endocrine, blood, cardiovascular, respiratory, immune, digestive and metabolism, urinary, acid-base and electrolyte balance, reproductive.
Attributes: Biological Science(Discovery); Discovery Lab Course
Prerequisite(s): BIOL 411 with a minimum grade of D- or BIOL 411H with a minimum grade of D- or BMS 507 with a minimum grade of D- or BIOL 413 with a minimum grade of D-.
Mutual Exclusion: No credit for students who have taken ANSC 512.
Grade Mode: Letter Grading
Special Fee: Yes

BMS 560 - Body Fluids
Credits: 3
The study of diseases and disorders through the analysis of extra-vascular body fluids. Emphasizes renal anatomy and physiology, and diseases and metabolic disorders affecting renal function.
Equivalent(s): BMS 660, MEDT 665, MLS 660, MLS 665
Grade Mode: Letter Grading

BMS 561 - Body Fluids Laboratory
Credits: 1
Practical experience in the performance and clinical correlation of urinalysis and selected body fluid procedures.
Co-requisite: BMS 560
Equivalent(s): BMS 661, MEDT 665, MLS 661, MLS 665
Grade Mode: Letter Grading
Special Fee: Yes

BMS 600 - Field Experience
Credits: 1-4
Supervised experience providing the opportunity to apply academic experience in settings associated with future professional employment and/or related graduate opportunities. Must be approved by a faculty advisor selected by the student. Only 4 credits can be used toward the major.
Repeat Rule: May be repeated for a maximum of 8 credits.
Equivalent(s): BMS 600W, MICR 600, MICR 600W
Grade Mode: Credit/Fail Grading

BMS 602 - Pathogenic Microbiology
Credits: 3
An introduction to microbial disease, with a focus on bacterial and viral diseases in humans and animals. This course examines the clinical presentation, laboratory diagnosis, and treatment of specific microbial pathogens. Molecular aspects of both microbial infection and host immune response are discussed. Case studies based on real clinical and research microbiology problems are presented.
Prerequisite(s): BMS 501 with a minimum grade of D- or (BMS 503 with a minimum grade of D- and BMS 504 with a minimum grade of D-).
Equivalent(s): MICR 602, MICR 700
Grade Mode: Letter Grading

BMS 603 - Pathogenic Microbiology Laboratory
Credits: 2
An introduction to morphologic, cultural, biochemical and pathogenic characteristics of microorganisms causing human and animal diseases. Laboratory exercises focus on both classical and modern laboratory diagnostic testing.
Co-requisite: BMS 602
Prerequisite(s): BMS 501 with a minimum grade of D- or (BMS 503 with a minimum grade of D- and BMS 504 with a minimum grade of D-).
Grade Mode: Letter Grading
Special Fee: Yes

BMS 610 - Biomedical Lab Management
Credits: 4
Overview of biomedical laboratory management, including lab operation, compliance, financial management, personnel management, information systems, and leadership.
Attributes: Writing Intensive Course
Equivalent(s): MEDT 610, MLS 610
Grade Mode: Letter Grading

BMS 623 - Histology: Microscopic Cellular Structure and Function
Credits: 4
Cellular structure, function, and physiology, as well as the interactions between cells in different organ systems, are examined at the microscopic level. Digital microscopic images are utilized to examine the cellular structure of all organ systems and the interactions between cells in these organs. Hybrid course with online lab.
Prerequisite(s): (ANSC 511 with a minimum grade of D- and ANSC 512 with a minimum grade of D-) or ((BIOL 411 with a minimum grade of D- or BIOL 411H with a minimum grade of D- or BMS 507 with a minimum grade of D- or BIOL 413 with a minimum grade of D-) and BMS 508 with a minimum grade of D-).
Grade Mode: Letter Grading

BMS 635 - Preceptorial in Prehospital Care
Credits: 2
Practice and evaluation of prehospital care. Understand the roles of different provider levels in a healthcare setting. Students participate in ambulance activities, then discuss assessment and treatment of patients in the prehospital setting. Licensure by the New Hampshire Bureau of EMS required before course start date.
Prerequisite(s): KIN 684 with a minimum grade of D- and KIN 685 with a minimum grade of D-.
Repeat Rule: May be repeated for a maximum of 4 credits.
Grade Mode: Credit/Fail Grading

BMS 640 - Phlebotomy Theory
Credits: 2
Theory and demonstration of procedures involved in blood collection with an emphasis on safety and professionalism. Hands-on practice of selected techniques.
Equivalent(s): MLS 640, MLS 650A
Grade Mode: Letter Grading
Special Fee: Yes

BMS 641 - Phlebotomy Clinical Internship
Credits: 1-2
Students obtain experience and proficiency in routine blood collection techniques at a health care facility (80 to 120 hours).
Prerequisite(s): BMS 640 with a minimum grade of D-.
Equivalent(s): MLS 641, MLS 650B
Grade Mode: Credit/Fail Grading
Special Fee: Yes

BMS 642 - Clinical Immunology and Serology
Credits: 2
Innate and specific immunity in the context of chemical and cellular responses to antigenic challenge. Also introduces the immunologic basis of autoimmunity, immune proliferation and deficiency, and hypersensitivity. Current clinical analytical methodologies and diagnostic criteria used to identify, differentiate and/or monitor these responses and conditions included.
Prerequisite(s): ((BIOL 411 with a minimum grade of D- or BIOL 411H with a minimum grade of D- or BIOL 413 with a minimum grade of D-) and (BIOL 412 with a minimum grade of D- or BIOL 412H with a minimum grade of D- or BIOL 414 with a minimum grade of D-)) or (BMS 507 with a minimum grade of D- and BMS 508 with a minimum grade of D-) or (ANSC 511 with a minimum grade of D- and ANSC 512 with a minimum grade of D-).
Equivalent(s): MEDT 651, MLS 642, MLS 651
Grade Mode: Letter Grading

BMS 643 - Clinical Serology Laboratory
Credits: 2
Performance, interpretation and application of serological techniques for the diagnosis of immune system disorders.
Co-requisite: BMS 642
Equivalent(s): MEDT 651, MLS 643, MLS 651
Grade Mode: Letter Grading
Special Fee: Yes

BMS 644 - Clinical Hematology
Credits: 3
Human blood cell physiology in both health and disease. Includes benign and malignant conditions of red blood cells and white blood cells.
Equivalent(s): MLS 644, MLS 652
Grade Mode: Letter Grading

BMS 645 - Clinical Hematology Laboratory
Credits: 2
Analysis of whole blood for cellular components with special emphasis on differentiating benign from malignant processes, as well as cellular identification by morphologic characteristics and cytochemical staining.
Co-requisite: BMS 644
Equivalent(s): MLS 645, MLS 652L
Grade Mode: Letter Grading
Special Fee: Yes

BMS 646 - Clinical Hemostasis
Credits: 1
Introduction to hemostasis through evaluation of platelets, blood vessels, coagulation factors and fibrinolysis, including dysfunction and disease states.
Prerequisite(s): BMS 644 (may be taken concurrently) with a minimum grade of D-.
Grade Mode: Letter Grading

BMS 650 - Molecular Diagnostics
Credits: 4
Fundamental principles of molecular technology and techniques used in clinical laboratories such as nucleic acid extraction, DNA amplification, sequencing and hybridization, gel electrophoresis, and chromosome analysis. Prediction and detection of human disease (infectious disease, cancer, and other inherited disease), identity testing, molecular epidemiology, pharmacogenetics, and ethical issues. Previous knowledge of genetics and biochemistry lab techniques is highly recommended.
Attributes: Environment,TechSociety(Disc)
Equivalent(s): BMS 755, BSCI 765, MLS 755
Grade Mode: Letter Grading

BMS 655 - Human and Animal Parasites
Credits: 3
Introduction to the parasitic process in humans and different animals indigenous to domestic and foreign areas of the world. Topics include epidemiology, infection, control, genetics, and immunology, as well as global economic consequences.
Prerequisite(s): BMS 503 with a minimum grade of D- and BMS 504 with a minimum grade of D-.
Grade Mode: Letter Grading

BMS 656 - Immunohematology
Credits: 3
The immunology of blood, including blood group systems and the critical role they play in safe transfusion medicine. Additional topics include blood collection, component use, transfusion reactions, and transfusion-transmitted infections.
Equivalent(s): MEDT 653, MLS 653, MLS 656
Grade Mode: Letter Grading

BMS 657 - Blood Banking Laboratory
Credits: 1
Hands-on experience in clinical blood banking practices including blood typing, antibody screening and identification, cross matching, and confirmatory testing.
Co-requisite: BMS 656
Equivalent(s): MEDT 653, MLS 653, MLS 657
Grade Mode: Letter Grading
Special Fee: Yes

BMS 658 - Medical Biochemistry
Credits: 3
Use of body fluids to assess specific disease states including the pathophysiology of the disease, pre-analytical issues, analytical methodologies, and instrumentation. Topics include the biochemistry of analytes (amino acids, proteins, enzymes, tumor markers, non-protein nitrogen metabolites, carbohydrates, lipids, electrolytes, blood gases, etc.), clinical endocrinology, toxicology and therapeutic drug monitoring.
Prerequisite(s): ((BMCB 658 with a minimum grade of D- and BMCB 659 with a minimum grade of D-) or BMCB 751 with a minimum grade of D-) and (BIOL 528 with a minimum grade of D- or PSYC 402 with a minimum grade of D- or SOC 402 with a minimum grade of D- or MATH 439 with a minimum grade of D-).
Equivalent(s): MEDT 654, MLS 654, MLS 658
Grade Mode: Letter Grading

BMS 659 - Clinical Chemistry Laboratory
Credits: 2
Measurement of blood analytes such as proteins, glucose, electrolytes, and cholesterol, etc. Screening for drugs in urine and evaluation of clinical significance in human specimens. Principles of spectrometry, immunoassay, point-of-care testing, chromatography, mass spectrometry, electrophoresis, automation, and ion selective electrodes, with emphasis on instrumentation, quality control, and pre-analytical and analytical issues.
Co-requisite: BMS 658
Equivalent(s): MLS 654L, MLS 659
Grade Mode: Letter Grading
Special Fee: Yes

BMS 702 - Endocrinology
Credits: 4
Structure and function of vertebrate endocrine systems through the lens of physiology, biochemistry, and cell and molecular biology, with special reference to mammals. Current investigations of the body's major endocrine glands, such as the brain, thyroid, pancreas, adrenals and gonads, as regulators and integrators of biological systems. Principles of Cell Biology recommended prior to taking this course.
Equivalent(s): ANSC 702, BCHM 702
Grade Mode: Letter Grading

BMS 703 - Infectious Disease and Health
Credits: 4
Principles underlying the nature of infectious disease agents, including representative parasites, fungi, bacteria, viruses, and prions. Established pathogens and emerging human and animal disease agents highlighting zoonotic diseases. Epidemiology, pathogenesis, host immune response, disease transmission, treatment, and control. Weekly review and discussion of current world disease events.
Prerequisite(s): BMS 503 with a minimum grade of D- and BMS 504 with a minimum grade of D-.
Equivalent(s): MICR 702
Grade Mode: Letter Grading

BMS 704 - Pathologic Basis of Disease
Credits: 4
Principles and mechanisms of disease at the cellular and tissue levels, including responses to cell injury, death and adaptation, inflammation, circulatory disturbances, disorders of the immune system, and neoplasia. ANSC 511 and ANSC 512, or BMS 507 and BMS 508 recommended.
Equivalent(s): ANSC 704
Grade Mode: Letter Grading

BMS 705 - Immunology
Credits: 3
An introduction to the fundamental mechanisms of immune function. Topics include the cells and organs of the immune system, humoral and cellular immune responses, the generation of immune cells, and how immune cells fight various infectious pathogens. Coreq: BMS 715 for BMS:MM majors only.
Prerequisite(s): BMS 503 with a minimum grade of D- and BMS 504 with a minimum grade of D-.
Equivalent(s): MICR 705
Grade Mode: Letter Grading

BMS 706 - Virology
Credits: 3
Principles of animal and selected plant and bacterial virology in relation to infection and disease. Emphasizes the molecular biology of viruses, viral replication, isolation, propagation, assay, pathogenesis, diagnosis, detection, epidemiology, and control. Coreq: BMS 708 for BMS:MM majors only.
Prerequisite(s): BMS 503 with a minimum grade of D- and BMS 504 with a minimum grade of D-.
Equivalent(s): MICR 706
Grade Mode: Letter Grading

BMS 708 - Virology Laboratory
Credits: 2
Principles and practices of animal, selected plants, and bacterial virological methods for the propagation, detection and enumeration of viruses.
Co-requisite: BMS 706
Prerequisite(s): BMS 503 with a minimum grade of D- and BMS 504 with a minimum grade of D-.
Equivalent(s): MICR 708
Grade Mode: Letter Grading
Special Fee: Yes

BMS 712 - Experiences in Applied Veterinary Diagnostics
Credits: 2
Students interact with different components of a working veterinary diagnostic laboratory. Through group reviews of New Hampshire Veterinary Diagnostic Lab cases, students learn about diseases using cases tailored to individual student interests. Pathologists and NHVDL staff provide information on disease processes, pathogenesis, and testing modalities. Students observe diagnostic techniques and archived gross and digital tissue specimens. Emphasis is on integrating knowledge of anatomy, physiology, microbiology, immunology, etc. within the context of molecular pathogenesis.
Prerequisite(s): (BMS 507 with a minimum grade of D- and BMS 508 with a minimum grade of D-) or (ANSC 511 with a minimum grade of D- and ANSC 512 with a minimum grade of D-).
Repeat Rule: May be repeated for a maximum of 4 credits. May be repeated up to 2 times.
Grade Mode: Letter Grading

BMS 715 - Immunology Laboratory
Credits: 2
This applied immunology laboratory course highlights both historic and current methodologies important for elucidation and diagnosis of immune function. Techniques used to study phagocytosis, antibody production, immunodiffusion, and T-cell function will be introduced. Applications of the antibody technologies to other scientific disciplines (ELISA, immunofluorescence microscopy, immunoblotting, etc.) will also be covered.
Co-requisite: BMS 705
Prerequisite(s): BMS 503 with a minimum grade of D- and BMS 504 with a minimum grade of D-.
Equivalent(s): MICR 715
Grade Mode: Letter Grading
Special Fee: Yes

BMS 718 - Mammalian Physiology
Credits: 4
Advanced study of the systems that control mammalian functions with emphasis on cellular and molecular mechanisms. Includes the nervous, muscular, cardiovascular, renal, gastrointestinal, and endocrine systems.
Attributes: Writing Intensive Course
Prerequisite(s): BMS 507 with a minimum grade of D- or BMS 508 with a minimum grade of D- or ANSC 511 with a minimum grade of D- or ANSC 512 with a minimum grade of D-.
Equivalent(s): ANSC 718
Grade Mode: Letter Grading

BMS 719 - Host-Microbe Interactions
Credits: 4
An examination of the way microorganisms interact with their hosts, with an emphasis on the pathogenic and commensal organisms of humans. Course material is introduced via reading, analysis and group presentations of primary scientific literature. Students are not only introduced to different types of host-microbe interactions, but different methods, systems and model organisms used to study these interactions.
Prerequisite(s): (BMS 501 with a minimum grade of D- or (BMS 503 with a minimum grade of D- and BMS 504 with a minimum grade of D-)) and GEN 604 with a minimum grade of D-.
Grade Mode: Letter Grading

BMS 720 - Mycology, Parasitology, and Virology
Credits: 3
Theoretical basis of the pathogenesis, epidemiology, and diagnosis of fungal, parasitic, and viral infections.
Prerequisite(s): BMS 602 with a minimum grade of D- and BMS 603 with a minimum grade of D-.
Equivalent(s): MEDT 720, MLS 720
Grade Mode: Letter Grading

BMS 721 - Mycology, Parasitology, and Virology Laboratory
Credits: 2
Practical experience in medical mycology and parasitology diagnostic techniques. Isolation and identification of mycological and parasitological specimens. Principles and practices of proper specimen collections, analysis, and interpretation of results.
Co-requisite: BMS 720
Equivalent(s): MLS 720L, MLS 721
Grade Mode: Letter Grading
Special Fee: Yes

BMS 725 - Cell Phenotyping and Tissue Engineering Laboratory
Credits: 4
Introduction to culture and phenotyping of mammalian cells (cell line models), with applications to bioengineering and biomedical sciences. Skills, techniques, and knowledge covered include sterile technique, cell culture, cell line models, cell proliferation, cell survival, cell migration, cell adhesion, and drug response. Inquiry-based team projects investigate cell proliferation, cell death, transfection, flow cytometry, 3D scaffolds, or cell imaging.
Prerequisite(s): BMS 503 with a minimum grade of D- and BMS 504 with a minimum grade of D-.
Equivalent(s): BMS 620
Grade Mode: Letter Grading
Special Fee: Yes

BMS 730 - Ethical Issues in Biomedical Science
Credits: 4
An examination of the importance of scientific integrity in the biomedical sciences. Students are introduced to the ethical issues that scientists must be familiar with when conducting research. Issues include scientific record keeping, authorship and peer review, conflicts of interest, use of animals and humans in research, and recombinant DNA technology. Class is discussion-based, encouraging both an appreciation of established guidelines and an opportunity to critically examine them.
Attributes: Writing Intensive Course
Prerequisite(s): (BIOL 411 with a minimum grade of D- or BIOL 411H with a minimum grade of D- or BIOL 413 with a minimum grade of D-) and GEN 604 with a minimum grade of D- and BMS 503 with a minimum grade of D- and BMS 504 with a minimum grade of D-.
Equivalent(s): MICR 718
Grade Mode: Letter Grading

BMS 735 - Molecular and Cellular Parasitology
Credits: 4
Parasites continue to present a major challenge to public health. Despite their significant impact on human health, many aspects of the molecular and cellular biology of these diverse organisms remain unknown. This course explores the latest research on these fascinating organisms through analysis and discussion of original research papers focusing on three of the major human parasites.
Prerequisite(s): BMS 503 with a minimum grade of D- and GEN 604 with a minimum grade of D- and (BMS 655 with a minimum grade of D- or BMS 720 with a minimum grade of D-).
Grade Mode: Letter Grading

BMS 740 - Human Microbiome
Credits: 4
The human microbiome is a new, rapidly growing field of microbiology that has already made important contributions to the understanding of human health. This laboratory course utilizes current research methodology to investigate the microbiome of the human skin. Students gain hands-on experience in PCR, genomics, bioinformatics, and modern clinical identification techniques. They also generate primary data to make their own contribution to this important field of research. Lab.
Prerequisite(s): (BMS 501 with a minimum grade of D- or (BMS 503 with a minimum grade of D- and BMS 504 with a minimum grade of D-) and GEN 604 with a minimum grade of D-).
Grade Mode: Letter Grading
Special Fee: Yes

BMS 747 - Case Studies in Bloodbanking
Credits: 1
Patient case studies are analyzed in immunohematology. Correlation of patient history with clinical presentation and interpretation of clinical laboratory results. Learn to interpret given information, recognize abnormal results and their clinical significance, generate etiologic possibilities, and determine the best diagnosis for the patient condition including appropriate treatment and recommended follow-up testing.
Prerequisite(s): BMS 656 with a minimum grade of D- and BMS 657 with a minimum grade of D-.
Grade Mode: Letter Grading

BMS 748 - Case Studies in Medical Biochemistry
Credits: 1
Patient case studies are analyzed in medical biochemistry. Correlation of patient history with clinical presentation and interpretation of clinical laboratory results. Learn to interpret given information, recognize abnormal results and their clinical significance, generate etiologic possibilities, and determine the best diagnosis for the patient condition including appropriate treatment and recommended follow-up testing.
Prerequisite(s): BMS 658 with a minimum grade of D- and BMS 659 with a minimum grade of D-.
Grade Mode: Letter Grading

BMS 749 - Case Studies in Hematology and Immunology
Credits: 2
Patient case studies are analyzed in hematology and immunology. Correlation of patient history with clinical presentation and interpretation of clinical laboratory results. Learn to interpret given information, recognize abnormal results and their clinical significance, generate etiologic possibilities, and determine the best diagnosis for the patient condition including appropriate treatment and recommended follow-up testing.
Attributes: Writing Intensive Course
Prerequisite(s): BMS 642 with a minimum grade of D- and BMS 643 with a minimum grade of D- and BMS 644 with a minimum grade of D- and BMS 645 with a minimum grade of D-.
Grade Mode: Letter Grading

BMS 750 - Case Studies in Microbiology
Credits: 2
Patient case studies are analyzed in microbiology. Correlation of patient history with clinical presentation and interpretation of clinical laboratory results. Learn to interpret given information, recognize abnormal results and their clinical significance, generate etiologic possibilities, and determine the best diagnosis for the patient condition including appropriate treatment and recommended follow-up testing.
Attributes: Writing Intensive Course
Prerequisite(s): BMS 602 with a minimum grade of D- and BMS 603 with a minimum grade of D- and BMS 720 with a minimum grade of D- and BMS 721 with a minimum grade of D-.
Grade Mode: Letter Grading

BMS 751 - Advanced Clinical Microbiology Internship
Credits: 5
Instruction and clinical practice of microbiology-related techniques and their applications in the medical laboratory setting. Includes the principles and practices of proper specimen collection, clinical diagnosis testing, and interpretation of results.
Equivalent(s): BMS 751W, MEDT 751, MLS 751, MLS 751W
Grade Mode: Letter Grading
Special Fee: Yes

BMS 752 - Advanced Hematology Internship
Credits: 5
Instruction and clinical practice of hematology-related techniques and their applications in the medical laboratory setting. Includes the principles and practices of special hematology procedures including diagnostic staining, advanced hemostasis studies, and evaluation of blood cells in disease states.
Equivalent(s): BMS 752W, MEDT 752, MLS 752, MLS 752W
Grade Mode: Letter Grading

BMS 753 - Advanced Immunohematology Internship
Credits: 5
Introduction and clinical practice of immunohematology-related techniques and their applications in the medical laboratory setting. Includes the principles and practices of advanced blood-banking procedures, including antibody identification, and component therapy.
Equivalent(s): BMS 753W, MEDT 753, MLS 753, MLS 753W
Grade Mode: Letter Grading

BMS 754 - Advanced Clinical Chemistry Internship
Credits: 5
Instruction and clinical practice of clinical chemistry-related techniques and their applications in the medical laboratory setting. Includes the principles and practices of advanced laboratory analysis of body fluid chemistries. Enzymology, isotopes, hormones, blood gases, and toxicology. Theory, operation, evaluation and maintenance of automated chemistry systems.
Equivalent(s): BMS 754W, MEDT 754, MLS 754, MLS 754W
Grade Mode: Letter Grading

BMS 790 - Undergraduate Teaching Experience
Credits: 1-4
Provide academic support to graduate teaching assistants or faculty in preparing, presenting, and executing Biomedical Science lectures or labs.
Repeat Rule: May be repeated for a maximum of 4 credits.
Equivalent(s): MICR 790
Grade Mode: Letter Grading

BMS 795 - Investigations in Biomedical Science
Credits: 1-8
Advanced research or scholarly projects developed and conducted under the supervision of a faculty member. Provides the opportunity to apply knowledge and techniques of the major to a specific problem or question.
Repeat Rule: May be repeated for a maximum of 8 credits.
Equivalent(s): BMS 795W, MICR 795, MICR 795W
Grade Mode: Letter Grading

BMS 795W - Investigations in Biomedical Science
Credits: 1-8
Advanced research or scholarly projects developed and conducted under the supervision of a faculty member. Provides the opportunity to apply knowledge and techniques of the major to a specific problem or question.
Attributes: Writing Intensive Course
Repeat Rule: May be repeated for a maximum of 8 credits.
Equivalent(s): BMS 795, MICR 795W
Grade Mode: Letter Grading

BMS 799 - Senior Thesis
Credits: 1-4
Independent research project under the direction of a faculty sponsor for seniors in biomedical sciences. Final product is a written thesis. One or two semesters.
Attributes: Writing Intensive Course
Repeat Rule: May be repeated for a maximum of 8 credits.
Equivalent(s): BMS 799H
Grade Mode: Letter Grading

BMS 799H - Senior Honors Thesis
Credits: 1-4
Independent research project under the direction of a faculty sponsor for seniors in biomedical sciences and in the Honors Program. Final product is a written thesis. One or two semesters.
Attributes: Honors course; Writing Intensive Course
Repeat Rule: May be repeated for a maximum of 8 credits.
Equivalent(s): BMS 799
Grade Mode: Letter Grading

Faculty

Biomedical Science affiliated faculty.