BIOLOGICAL SCIENCES (BIOL_SCI)

BIOL_SCI 115-CN The Human Brain (1 Unit)
Overview of the development, structure and function of the human nervous system; terminology and principles of neuroanatomy, neurochemistry, physiology, and molecular biology. How the brain works and its role in human behavior and psychopathology. Issues raised by new medical technologies.

BIOL_SCI 167-CN Genetics and Evolution (1 Unit)
NPEP course.

BIOL_SCI 170-CN Concepts of Biology (1 Unit)
General biological sciences introduction. Topics include evolution, biomolecules, cell biology, genetics, population biology, and the relationship between structure and function in organisms. The course is geared toward students with an interest in the topic but without a background in biological sciences.

BIOL_SCI 170-DL Concepts of Biology (1 Unit)
General biological sciences introduction. Topics include evolution, biomolecules, cell biology, genetics, population biology, and the relationship between structure and function in organisms. The course is geared toward students with an interest in the topic but without a background in biological sciences.

BIOL_SCI 170-PP Concepts of Biology (1 Unit)
NPEP course.

BIOL_SCI 201-CN Molecular Biology (1 Unit)
Basics of molecular biology, including the structure of macromolecules, DNA replication, transcription, and translation and the mechanisms by which these processes are regulated. Current biotechnology methods used to study molecular biology. Credit not allowed for both BIOL_SCI 201-CN and BIOL_SCI 215-CN.

BIOL_SCI 202-CN Cell Biology (1 Unit)
How an evolutionary perspective informs our understanding of human anatomy, health and disease.Mechanisms the cell uses to compartmentalize and transport proteins, to move, to regulate growth and death, and to communicate with their environments.
Prerequisite: Students must have completed, with a C- or better, BIOL_SCI 201-CN or 215-CN to register for this course. Should be taken concurrently with BIOL_SCI 232-CN. Credit not allowed for both BIOL_SCI 219-CN and BIOL_SCI 202-CN.

BIOL_SCI 203-CN Genetics and Evolution (1 Unit)
Fundamentals of genetics and evolution. From the rules of heredity to the complex genetics of humans, the methods and logic of genetics as applied to inheritance, development, neurobiology, and populations. The process and tempo of evolution, from natural selection to speciation, emphasizing how genetics plays a critical role.
Prerequisite: Students must have completed, with a C- or better, BIOL_SCI 202-CN or BIOL_SCI 219-CN to register for this course.

BIOL_SCI 217-DL Introduction to Human Physiology (1 Unit)
This course offers a foundational overview of human physiology, examining how the body functions at the tissue, organ, and system levels. Emphasis is placed on homeostatic regulation and the interdependence of major organ systems, including how physiological processes are influenced by internal and external factors. Topics include the nervous, cardiovascular, respiratory, and renal systems. Designed for students pursuing non-clinical roles in health sciences.

BIOL_SCI 232-CN Molecular and Cellular Processes Laboratory (0.34 Unit)
Laboratory techniques and experience that investigates relevant scientific research and teaches scientific inquiry skills such as experimental design, writing research proposals, data collection, data analysis/interpretation, and the presentation of results. The experimental model revolves around atherosclerosis and macrophage phagocytosis of apoptotic cells. Various cell and molecular biology techniques. Should be taken concurrently with BIOL_SCI 202-CN Credit not allowed for both BIOL_SCI 221-CN and BIOL_SCI 232-CN.

BIOL_SCI 233-CN Genetics and Molecular Processes Laboratory (0.34 Unit)
Laboratory techniques and experience that investigates relevant scientific research and teaches scientific inquiry skills such as experimental design, writing research proposals, data collection, data analysis/interpretation, and the presentation of results. The experimental model revolves around aggregate prone proteins in nematodes and RNA interference (RNAi) affecting protein folding and the clearance of protein aggregates. Various cell and molecular biology techniques.
Prerequisite: Students must have completed BIOL_SCI 232-CN. Credit not allowed for both BIOL_SCI 220-CN and BIOL_SCI 233-CN.

BIOL_SCI 234-CN Investigative Laboratory (0.34 Unit)
A culminating life-science laboratory experience. Students design and generate reagents that can be used in larger experiments. Topics vary from year to year and typically involve sub-cloning of a specific gene fused to a reporter for detection.
Prerequisite: Students must have completed BIOL_SCI 233-CN. Credit not allowed for both BIOL_SCI 222-CN and BIOL_SCI 234-CN.

BIOL_SCI 302-CN Fundamentals of Neurobiology (1 Unit)
Structure and function of the mammalian central nervous system from the molecular to behavioral level. Emphasis on foundational concepts in neurobiology, including neuronal and glial structure and function, neurophysiology of membrane, resting and action potential, synaptic physiology, an introduction to sensory perception, neuronal plasticity in learning and memory.
Prerequisite: BIOL_SCI 215-CN and BIOL_SCI 219-CN. Recommended: BIOL_SCI 308-CN.

BIOL_SCI 302-DL Fundamentals of Neurobiology (1 Unit)
Structure and function of the mammalian central nervous system from the molecular to behavioral level. Emphasis on foundational concepts in neurobiology, including neuronal and glial structure and function, neurophysiology of membrane, resting and action potential, synaptic physiology, an introduction to sensory perception, neuronal plasticity in learning and memory.
Prerequisite: BIOL_SCI 201-CN or BIOL_SCI 215-CN, and BIOL_SCI 202-CN or BIOL_SCI 219-CN. Recommended: BIOL_SCI 308-CN.

BIOL_SCI 308-CN Biochemistry (1 Unit)
Basic concepts in biochemistry, emphasizing the structure and function of biological macromolecules, fundamental cellular biochemical processes, and the chemical logic in metabolic transformations.
Prerequisite: BIOL_SCI 201-CN or BIOL_SCI 215-CN and CHEM 215-A.

BIOL_SCI 310-CN Human Physiology (1 Unit)
An exploration of the functions of the human body at the tissue, organ, and organ system level. Emphasis on homeostatic mechanisms and interdependence within organs and organ systems and the influence of modulatory systems. Topics will include, but are not limited to: nervous, cardiovascular, respiratory, and renal systems.

BIOL_SCI 312-CN The Evolutionary Biology of Human Anatomy, Health and Disease (1 Unit)

Key features of human anatomy, health and disease from an evolutionary perspective. Review of some evolutionary processes, overview of human evolutionary history, consideration of the primary body systems and regions in the human organism. The historical context of selected human structures and their function/dysfunction across these systems.

BIOL_SCI 312-DL The Evolutionary Biology of Human Anatomy, Health, and Disease (1 Unit)
Key features of human anatomy, health and disease from an evolutionary perspective.

BIOL_SCI 313-CN Human Anatomy (1 Unit)
An introduction to human anatomy. Topics include system approach to anatomical organization; sections of the body; musculoskeletal and nervous systems; embryology development. Lectures are supplemented by selected prosections of human cadavers and dry exercises using bones, models, and computer animations.
Prerequisite: BIOL_SCI 170-CN, or equivalent course.

BIOL_SCI 313-DL Human Anatomy (1 Unit)
This is an online course on human anatomy, focusing on morphology and function. It follows both a regional and systems approach. All course content, activities, and assessments will be online learning activities and assessments. The course will also have a broad emphasis on clinical application that is applicable to all health care professions. The course covers gross anatomy of the human body; therefore, images of human cadavers will be presented in your textbook, as well as in other course resources. Readings are assigned from the Marieb, Wilhelm and Mallatt text.
Prerequisite: BIOL_SCI 170-DL, or equivalent course.

BIOL_SCI 315-CN Advanced Cell Biology (1 Unit)
Relationship of shape, structural dynamics, and function with the cellular state and gene expression; cell-to-cell communication.
Prerequisite: BIOL_SCI 202-CN or BIOL_SCI 219-CN.

BIOL_SCI 316-CN Human Structure and Function (1 Unit)
The function of the musculoskeletal system in modern humans. A comparative perspective emphasizing the adaptive contexts of the evolutionary transformations leading to our modern anatomy. Structural, functional, and evolutionary anatomy of humans, with primary focus on the musculoskeletal system of the postcranium. General biomechanical principles of anatomical systems are covered through the regional anatomy of the muscles, bones and joints. Lectures are supplemented by selected prosections of human cadavers, in-class lab sessions examining bones and models, and computer animations and exercises.
Prerequisite: BIOL_SCI 313-CN, equivalent anatomy course, or permission of instructor.

BIOL_SCI 317-CN Regional Human Anatomy Lab (0.34 Unit)
Lab course utilizing prosections and demonstrations of human cadavers. It is an advanced anatomy course examining the details of human body systems. Topics include: body wall and cavities, contents and features of the thorax and abdomen (cardiac, pulmonary, and gastrointestinal systems), pelvis (genito-urinary system), spinal cord and back, innervation and blood supply of the upper and lower limbs, cranial cavities and contents, cranial nerves and blood supply of the head and neck. Credit for this course is 0.34 units.
Prerequisite: BIOL_SCI 313-CN or equivalent.

BIOL_SCI 318-CN Advanced Human Physiology (1 Unit)
Builds on concepts covered in BIOL_SCI 217-CN or an equivalent physiology course focusing on the body as an integrated set of systems. A global view of the body, its systems, and the many processes that keep the systems working. Integrated approach to studying all major organ systems including neural, autonomic/somatic motor, endocrine, cardiovascular, respiratory, renal, digestive, and reproductive physiology. The clinical relevance of the organ system that will include abnormal function, disease states, and medications used to bring the system back to normal functioning.
Prerequisite: BIOL_SCI 217-CN or equivalent.

BIOL_SCI 318-DL Advanced Human Physiology (1 Unit)
Builds on concepts covered in BIOL_SCI 217-CN or an equivalent physiology course focusing on the body as an integrated set of systems. A global view of the body, its systems, and the many processes that keep the systems working. Integrated approach to studying all major organ systems including neural, autonomic/somatic motor, endocrine, cardiovascular, respiratory, renal, digestive, and reproductive physiology. The clinical relevance of the organ system that will include abnormal function, disease states, and medications used to bring the system back to normal functioning.
Prerequisite: BIOL_SCI 310-CN or equivalent.

BIOL_SCI 327-CN Biology of Aging (1 Unit)
Biological aspects of aging, from molecular to evolutionary.
Prerequisite: BIOL_SCI 201-CN or BIOL_SCI 215-CN, and BIOL_SCI 202-CN or BIOL_SCI 219-CN.

BIOL_SCI 328-A Microbiology Lab (0 Unit)
Laboratory section for BIOL_SCI 328-CN.

BIOL_SCI 328-CN Microbiology (1 Unit)
How microbes interact with their environments, including with humans.
Prerequisite: BIOL_SCI 201-CN or BIOL_SCI 215-CN, and BIOL_SCI 202-CN or BIOL_SCI 219-CN.

BIOL_SCI 342-CN Evolutionary Processes (1 Unit)
Evolutionary mechanisms (natural selection, genetic drift), evolutionary history (speciation, phylogenetics), and adaptations (sex, cooperation, aging, life history).
Prerequisite: BIOL_SCI 201-CN or BIOL_SCI 215-CN, and BIOL_SCI 202-CN or BIOL_SCI 219-CN.

BIOL_SCI 355-CN Immunobiology (1 Unit)
Nature of host resistance; characteristics of antigens, antibodies; basis of immune response; hypersensitivity.
Prerequisite: BIOL_SCI 217-CN.

BIOL_SCI 355-DL Immunobiology (1 Unit)
Nature of host resistance; characteristics of antigens, antibodies; basis of immune response; hypersensitivity.
Prerequisite: BIOL_SCI 201-CN, BIOL_SCI 202-CN, and BIOL_SCI 308-CN or equivalent.

BIOL_SCI 390-DL Advanced Molecular Biology (1 Unit)
Builds on topics introduced in introductory Molecular Biology. Topics discussed include techniques, transcriptional and translational regulation, epigenetics, replication, regulatory RNAs, DNA repair, and genetic engineering.
Prerequisite: BIOL_SCI 215-CN or BIOL_SCI 201-CN.

BIOL_SCI 399-CN Independent Study (1 Unit)