Medical Honors Program: Upper-Division Science Electives

AGR3303 Genetics. Credits: 3; Prereq: basic course in biology, botany or zoology.
The science and physical basis of inheritance, genes as units of heredity and development, and the qualitative and quantitative aspects of genetic variation. (B)

ANT 4531 Molecular Genetics of Disease. Credits: 3.; Prereq: BSC2011 or consent of instructor.
Examines molecular genetics of human disease. Discusses a range of diseases from single-gene recessive defects to complex diseases.

BMS3521 Human Physiology in Translation. Credits: 3; Prereq: APK 2105, BSC 2010, MCB 2000 or instructor permission. Human physiology organized into four major physiological systems: cellular/endocrine, cardiovascular, respiratory and renal physiology. For each system, translational topics bridge basic science to contemporary medical issues relevant to undergraduates and society. Designed to be of special interest to those pursuing medically related careers.

BMS4136 Human Histology. Credits: 4; Prereq: PCB 3023 or PCB 3134 or instructor permission. For pre-professional students. Lectures emphasize the biology of cells and extracellular components that underlie tissue function. Laboratories emphasize visualization of corresponding structures by light microscopy, with correlation to images acquired by electron microscopy.

BSC3096 Human Physiology. Credits: 3; Prereq: CHM2046 and either BSC 2011 or APK 2105C. The functioning of human tissues, organs and organ systems, emphasizing the physical, chemical and mechanistic bases of normal physiology and the integrated function of the human body. Also introduces pathophysiological changes associated with human diseases.

MCB3020/L Basic Biology of Microorganisms. Credits: 3; Prereq: BSC 2010 and BSC 2010L, or equivalent, with grade of C or better; BSC 2011 and BSC 2011L, or equivalent, or AGR 3303; CHM 2210 or CHM 2200. Registration restricted to non-microbiology majors only. Introduction to the principles and techniques of microbiology, genetics, taxonomy, biochemistry and ecology and microorganisms. Students will also become familiarized with virology, immunology and the pathogenicity of microorganisms. (B)

MCB3023/L Principles of Microbiology. Credits: 3; Prereq: BSC 2010 and BSC 2010L, or equivalent; BSC 2011 and BSC 2011L, or equivalent, or AGR 3303; CHM 2210 or CHM 2200; must be a microbiology major. Introduction to the principles and techniques of microbiology, genetics, taxonomy, biochemistry and ecology of microorganisms. Required of all majors and students anticipating enrolling in more advanced courses in the Department of Microbiology and Cell Science.

PCB 3023 Essential Cell Biology. Credits: 3. Prereq: BSC 2011 and 2011L with a grade of at least C. Introduction to the basic concepts of molecular cell biology in prokaryotic and eukaryotic systems including experimental strategies and methodology

PCB3063 Genetics. Credits: 4; Prereq: BSC 2011 and BSC 2011L, or equivalent, with minimum grades of C and general chemistry. The fundamental properties of inheritance in eukaryotic organisms emphasizing examples in man. Basic concepts are developed for the nature, organization, transmission, expression, recombination and function of genetic materials and principles are derived for genetically characterizing populations. (B)

Medical Honors Program: Upper-Division Science Electives

PCB3109 Cancer Biology Credits: 3; Prereqs: BSC 2010, BSC 2010L, BSC 2011, and BSC 2011L, all with minimum grades of C. Introduces the dysregulation of cellular processes in cancer cells including the mechanisms of action of anti-cancer drugs.

PCB3134 Eukaryotic Cell Structure. Credits: 3; Prereq: BSC 2010 and BSC 2010L, or equivalent, with grade of C or better; BSC 2011 and BSC 2011L, or equivalent, or AGR 3303 and CHM 2210. Coreq: CHM 2211 and CHM 2211L. Lecture and discussions in the field of cell biology. Emphasis on the interrelation of structure and function, the regulation of metabolism and the specialized activities of plant and animal cells.

PCB 3713C . Cellular and Systems Physiology. Credits: 4; Prereq: BSC 2010 and CHM 2046, CHM 2047, CHM 2051, or CHM 2096 and PHY 2049, PHY 2054 or PHY 2061, all with minimum grades of C. How cells, organs and higher level systems are integrated and coordinated in the functions of humans and other animals. Emphasizes the use of model organisms, mathematical models and the physical sciences to understand the mechanistic basis of normal physiology and dysfunction

PCB4522 Molecular Genetics. Credits: 3; Prereq: BSC 2010 and BSC 2010L with minimum grades of C. Molecular biology of prokaryotes and eukaryotes covering the fundamentals of genome organization and gene structure, regulation of transcription, DNA replication and repair, and RNA processing. Also includes discussion of strategies, vectors and applications of genetic engineering in higher plants and animals.

PCB4553 Population Genetics. Credits: 4; Prereq: BSC 2011 and 2011L with minimum grades of C. Population and quantitative genetics, including the theory of gene frequency dynamics within and between populations, and deterministic and stochastic processes in evolution.

PCB4723C Physiology and Molecular Biology of Animals. Credits: 5; Prereq: BSC 2011 and (CHM 2046 or CHM 2047) and (PHY 2048 or PHY 2053 or PHY 2060), all with minimum grades of C; PCB 3063 and PCB 4674 are also recommended. Discussion of the processes and mechanisms of maintenance, activity and integration in animals with emphasis on vertebrates. Laboratory experience in quantitative methods and techniques of physiological investigation.

PSB 3340 Behavioral Neuroscience. Credits: 3; Prereq: BSC 2010. Neuroanatomatical, chemical, and electrophysiological studies in the biological basis of behavior. Students may not take both PSB 3002 and PSB 3340. PSB 3340 is recommended for IDS majors in Neurobiological Sciences. (B)

ZOO 3603C Evolutionary Developmental Biology. Credits: 4; Prereq: BSC 2011 and 2011L with grades of at least C. Analysis of embryonic development, underlying genetic mechanisms and how these processes have driven the evolutionary diversification of animal body plans.

ZOO 3713C Functional Vertebrate Anatomy. Credits: 4; Prereq: BSC 2011 and 2011L with grades of at least C. The form and function of chordates accompanied by laboratory work dealing with a selected series of chordates.