

**Biochemistry: Suggested Courses 2019-2020**

Course	Title	Description	Units	Quarter Offered	Prereqs
ANS 126	Equine Nutrition	Includes equine digestion, digestive physiology, diet development and evaluation, and the relationship of the topics to recommended feeding practices and nutritional portfolios.	3	W, EOY even	ANS 15, NUT 115
ANS 136	Techniques and Practices of Fish Culture	Daily care and maintenance of fish in residential aquariums, research and commercial facilities. Biological and environmental factors important to sound management of fish. Laboratories focus on fish culture including growth trials and biochemical assays	3	F	ANS 2, BIS 2ABC, CHE 8AB/118AB
ANS 137	Techniques and Practices of Avian Culture	Daily care and maintenance of birds for research, commercial production and companion or hobby uses. Biological and environmental factors important to sound management of birds. Laboratories focus on bird husbandry, management and care and include growth trials and biochemical assays.	3	S	ANS 2, BIS 2ABC, CHE 8AB/118AB
ANS 146	Dairy Cattle Production	Scientific principles from genetics, nutrition, physiology, and related fields applied to conversion of animal feed to human food through dairy animals. Management and economic decisions are related to animal biology considering the environment and animal well-being.	5	S	ANG 107 rec., NUT 115 or consent.
AVS 115	Raptor Biology	Study of birds of prey: classification, distribution, habits and habitats, migration, unique anatomical and physiological adaptations, natural and captive breeding, health and diseases, environmental concerns, conservation, legal considerations, rehabilitation, and falconry.	3	SuII	BIS 2A
BIS 104	Cell Biology	Membrane receptors and signal transduction; cell trafficking; cell cycle; cell growth and division; extra-cellular matrix and cell-cell junctions; cell development; immune system.	3	All	BIS 101 and ABI 102/BIS 102
CHE 107A	Physical Chemistry for the Life Sciences	Physical chemistry intended for majors in the life science area. Introductory development of classical and statistical thermodynamics including equilibrium processes and solutions of both non-electrolytes and electrolytes. The thermodynamic basis of electro-chemistry and membrane potentials.	3	F, W	CHE 2C and MAT 16C and PHY7A

CHE 107B	Physical Chemistry for the Life Sciences	Kinetic theory of gases and transport processes in liquids. Chemical kinetics, enzyme kinetics and theories of reaction rates. Introduction to quantum theory, atomic and molecular structure, and spectroscopy. Application to problems in the biological sciences.	3	W, S	CHE 107A
EVE 107	Animal Communication	How animals use songs, dances, colors, chemicals, electricity and vibrations to communicate. Mechanisms of signal production and detection (sensory systems), theory of information transfer and signal design, and the role of natural selection in shaping communication.	4	F, EOY odd	BIS 2AB
GDB 103	The Microbiome of People, Animals, Plants	Examination of the structure and function of microbial communities that live inside and on host organisms. Introduction to general concepts of the microbiome and microbiota, and their relationship to host health and disease.	3	W	BIS 2ABC
MCB 120	Molecular Biology and Biochemistry Laboratory Lecture	Introduction to laboratory methods and procedures employed in studying molecular biology and biochemical processes	3	F, W, S	ABI 102/ABI 103
MCB 120L	Molecular Biology and Biochemistry Laboratory	Introduction to laboratory methods and procedures employed in studying molecular biology and biochemical processes. Designed for students who need experience in use of molecular biology and biochemical techniques as research and analytical tools.	3	F, W, S	ABI 102/BIS 102 and MCB 120 (conc. ok)
MCB 121	Advanced Molecular Biology	Structure, expression, and regulation of eukaryotic genes. Chromosome structure and replication; gene structure, transcription, and RNA processing; protein synthesis and translation control; development, immune system, and oncogenes. Not open for credit to students who have completed MCB 161.	3	F, W, S	BIS 101 and ABI 102/BIS 102
MCB 123	Behavior and Analysis of Enzyme and Receptor Systems	Introduction to the principles of enzyme kinetics and receptor-ligand interactions with emphasis on metabolic regulations and data analysis. Topics include simultaneous equilibria, chemical and steady-state kinetics, allosteric enzymes, multireactant systems, enzyme assays, membrane transport and computer-assisted simulations and analyses.	3	F, S	ABI 103
MCB 124	Macromolecular Structure and Function	An in-depth investigation into protein and nucleic acid structure and thermodynamics and how these properties influence their biological functions. Key examples of important functional classes of these molecules will be examined.	4	F	ABI 103/BIS 103, CHE 118C

MCB 143	Cell and Molecular Biophysics	Physical chemical principles by which molecules form living, moving, reproducing cells. Physical nature of cytoplasm; molecular structure/bonding in macromolecules, macromolecular assemblies and protein machines. Physical techniques and modeling of cytoskeletal polymer-motor dynamics and function during intracellular transport, mitosis and motility.	3	S	ABI 102/BIS 102 ABI103/BIS103, BIS 101, 104
MCB 144	Mechanisms of Cell Division	The molecules and mechanisms that allow eukaryotic cells to coordinate cell growth, DNA replication, segregation of chromosomes and cell division.	3	F	ABI 102, BIS 101, 104
NPB 132	Nature vs. Nurture: Physiological Interactions Among Genes, Nutrients and Health	Biochemical, physiological, genetics, and nutritional causes of important medical problems such as obesity, anorexia, heart disease and diabetes.	3	F	BIS 2A or consent of instructor
VMB 101Y	Principles of Pharmacology and Toxicology	This <b>hybrid</b> course provides training in core concepts of pharmacological and toxicological sciences. Develop higher-order problem solving and critical thinking skills.	3	S	Upper Div standing, CHE 8AB, BIS 2ABC
VMB 101V	Principles of Pharmacology and Toxicology	This <b>virtual</b> course provides training in core concepts of pharmacological and toxicological sciences. Develop higher-order problem solving and critical thinking skills.	3	F	Upper Div standing, CHE 8AB, BIS 2ABC