

Disciplinary Specialization: Biochemistry

Please Note: All Specializations must be approved by your Faculty Advisor.

<p>Key: <input type="checkbox"/>: Impacted courses <input type="circle"/>: recommended prerequisite **: This course cannot be used towards Specialization if you are freshman student admitted in Fall 2020, or a transfer student admitted Fall 2022 or after. : prerequisite can be taken concurrently</p>	<p>EOY: every other year NCO not currently offered F: Fall Quarter W: Winter quarter S: Spring Quarter SU: Summer Session</p>
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Course	Title	Description	Units	Quarter Offered	Prereqs
ANS 120	Meat Science	Anatomical, physiological, developmental, and biochemical aspects of muscle underlying the conversion of muscle to meat. Includes meat processing, preservation, microbiology, and public health issues associated with meat products.	3	W	ANS 2 <input type="checkbox"/>
ANS 120L	Meat Science Laboratory	Laboratory exercises and student participation in transformation of live animal to carcass and meat, structural and biochemical changes related to meat quality, chemical and sensory evaluation of meat, and field trips to packing plant and processing plant.	2	W	ANS 2 <input type="checkbox"/> ; ANS 120 (can be concurrent).
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 <input type="checkbox"/>
ANS 143	Pig and Poultry Care and Management	Care and management of swine, broilers and turkeys as related to environmental physiology, nutrition and metabolism, disease management and reproduction. Saturday field trips.	4	F, EOY odd	NUT 115 <input type="checkbox"/> ; ANS 100 <input type="checkbox"/> /NPB 101; ANS 41 <input type="checkbox"/> ; or consent of instructor
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	Sull	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 or BIS 102

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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
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□ or 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□

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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 102□ C- or better; BIS 101
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, ABI 103/BIS 103, BIS 101, BIS 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□, 103, BIS 101, 104
NUT 115□**	Animal Nutrition	Comparative differences among animals in digestion and metabolism of nutrients. Nutrient composition of feeds, digestive systems, digestion, absorption, feeding strategies.	4	W, S	CHE 8B or CHE 118B
VMB 101V, VMB 101Y	Principles of Pharmacology and Toxicology	This hybrid(VMB 101Y) or virtual (VMB 101V) course provides training in core concepts of pharmacological and toxicological sciences. Develop higher-order problem solving and critical thinking skills.	3	S	upper-division standing, CHE 8AB, BIS 2ABC