

2022-23 Human Health and Disease Concentration Worksheet

Major in Biological Sciences

To complete this concentration, Biological Sciences Majors may choose any 3 of the following courses:

- BIOL_SCI 302-0** **Fundamentals of Neurobiology** - Cellular and biochemical approaches to the nervous system, focusing on neuron structure and function. May not receive credit for both BIOL_SCI 302-0 and NEUROSCI 202-0. *Prereqs: BIOL_SCI 201-0 OR 215-0; BIOL_SCI 202-0 OR 219-0; BIOL_SCI 217-0 or 310-0, and BIOL_SCI 301-0.*
- BIOL_SCI 310-0** **Human Physiology** - An exploration of the functions of the human body at the tissue, organ and organ system level. *Prereqs: Students must have completed BIOL_SCI 201-0 OR 215-0, BIOL_SCI 202-0 OR 219-0, and CHEM 132-0, 152-0, or 172-0. Credit not allowed for both BIOL_SCI 310-0 and BIOL_SCI 217-0.*
- BIOL_SCI 319-0** **Biology of Animal Viruses** - Virus structure, synthesis of viral nucleic acids and proteins, the interaction of the viral and cellular genomes. *Prereqs: BIOL_SCI 203-0 OR 215-0, BIOL_SCI 202-0 OR 219-0, and BIOL_SCI 301-0.*
- BIOL_SCI 325-0** **Animal Physiology** - Physiological principles and mechanisms responsible for the ability of animals to regulate variables in the steady state. *Prereq: BIOL_SCI 217-0 OR 310-0.*
- BIOL_SCI 327-0** **Biology of Aging** - Biological aspects of aging, from molecular to evolutionary. *Prereq: BIOL_SCI 201-0 OR 215-0, and BIOL_SCI 202-0 OR 219-0.*
- BIOL_SCI 328-0** **Microbiology** - How microbes interact with their environments, including with humans. Lecture and Laboratory. *Prereqs: BIOL_SCI 201-0 OR 215-0, BIOL_SCI 202-0 OR 219-0 and BIOL_SCI 203-0.*
- BIOL_SCI 344-0** **Anatomy of Vertebrates** - Vertebrate phylogeny illustrated via comparative morphology; anatomical/ functional and ontogenetic considerations; dissections. *Prereq: BIOL_SCI 103-0, 203-0, 341-0, OR 342-0.*
- BIOL_SCI 353-0** **Molecular Biology Laboratory** - Project-based approach to learning lab skills in eukaryotic molecular biology. *Prereqs: BIOL_SCI 203-0 OR 215-0, BIOL_SCI 202-0 OR 219-0; BIOL_SCI 234-0 OR 222-0, and BIOL_SCI 301-0.*
- BIOL_SCI 355-0** **Immunobiology** - Nature of host resistance; characteristics of antigens, antibodies; basis of immune response; hypersensitivity. *Prereqs: BIOL_SCI 203-0 OR BIOL_SCI 215-0; BIOL_SCI 202-0 OR 219-0; BIOL_SCI 301-0.*
- BIOL_SCI 358-0** **Advanced Physiology Laboratory** - Experiments in several physiological systems. Design, techniques, data analysis, and report writing emphasized. *Prereqs: BIOL_SCI 310-0 OR 217-0 OR 234-0 OR 222-0.*

- BIOL_SCI 360-0** **Principles of Cell Signaling** - Emphasis on principles, components, and logic that are common to different cell signaling systems. Modern experimental strategies for studying cellular signaling as well as the implications of disrupting cell communication pathways in disease will be described. *Prereqs: BIOL_SCI 203-0 OR 215-0, and BIOL_SCI 202-0 OR 219-0.*
- BIOL_SCI 377-0** **Human Microbiome** - Course explores different communities of microorganisms in the human body – the gut, urogenital, oral, and skin microbiota, and how these communities contribute to or are altered in health and disease. *Prereqs: BIOL_SCI 202-0 OR 219-0, BIOL_SCI 203-0 OR BIOL_SCI 215-0, and BIOL_SCI 301-0.*
- BIOL_SCI 380-0** **Biology of Cancer** - The disease of cancer: causation at the cell and molecular levels; treatment. *Prereqs: BIOL_SCI 203-0 OR 215-0, BIOL_SCI 202-0 OR 219-0, and BIOL_SCI 301-0.*
- BIOL_SCI 381-0** **Stem Cells and Regeneration** - Developmental and molecular biology of tissue regeneration, with regard to regeneration from embryonic or adult stem cells. Discussion of conserved developmental pathways necessary for regeneration. Applications in regenerative medicine. *Prereqs: BIOL_SCI 203-0 OR 215-0 and BIOL_SCI 202-0 OR 219-0.*
- BIOL_SCI 391-0** **Developmental Biology** - Molecular mechanisms underlying early embryonic development, including establishment of the body and organogenesis. Discussion of original literature. *Prereqs: Students must have completed BIOL_SCI 203-0 OR 215-0; BIOL_SCI 202-0 OR 219-0, and BIOL_SCI 301-0.*
- BIOL_SCI 392-0** **Developmental Genetics Laboratory** - Development of independent projects alongside classic readings and experiments exploring key concepts in developmental biology. *Prereqs: BIOL_SCI 203-0 OR 215-0, BIOL_SCI 202-0 OR 219-0, BIOL_SCI 234-0 OR 222-0; BIOL_SCI 301-0.*