BIOLOGICAL SCIENCES (BIOL_SCI)

BIOL_SCI 302-0 Fundamentals of Neurobiology (1 Unit)
Cellular and biochemical approaches to the nervous system, focusing on neuron structure and function.
Prerequisites: Students must have completed BIOL_SCI 201-0, BIOL_SCI 202-0, BIOL_SCI 310-0, and BIOL_SCI 301-0 to register for this course. May not receive credit for both BIOL_SCI 302-0 and NEUROSCI 202-0.

BIOL_SCI 305-0 Neurobiology Laboratory (1 Unit)
Hands-on experience in the performance of experiments in cellular neurophysiology.
Prerequisites: Students must have completed BIOL_SCI 302-0 or NEUROSCI 311-0 and BIOL_SCI 234-0 to register for this course.

BIOL_SCI 315-0 Advanced Cell Biology (1 Unit)
Relationship of shape, structural dynamics, and function with the cellular state and gene expression; cell-to-cell communication.
Prerequisites: Students must have completed BIOL_SCI 201-0, BIOL_SCI 202-0, and BIOL_SCI 301-0 to register for this course.

BIOL_SCI 323-0 Bioinformatics: Sequence and Structure Analysis (1 Unit)
Use of informational and modeling techniques to explore evolutionary and other problems related to the genome.
Prerequisite: Students must have taken BIOL_SCI 241-0 or BIOL_SCI 301-0 in order to register for this class.

BIOL_SCI 327-0 Biology of Aging (1 Unit)
Biological aspects of aging, from molecular to evolutionary.
Prerequisite: Students must have completed BIOL_SCI 201-0 and BIOL_SCI 202-0 to register for this course.

BIOL_SCI 338-0 Modeling Biological Dynamics (1 Unit)
Mathematical and computational techniques for analyzing and predicting biological dynamics. Techniques include statistical models, discrete- and continuous- time dynamical models, and stochastic models. Applications cover a range of scales, with an emphasis on common mathematical concepts and computational techniques, the interpretation of existing data, and making predictions for new experiments.
Prerequisite: at least one of MATH 218-1, MATH 220-1, MATH 240-0, STAT 202-0, BIOL_SCI 337-0, OR equivalent.
Empirical and Deductive Reasoning Foundational Dis Formal Studies Distro Area

BIOL_SCI 341-0 Population Genetics (1 Unit)
Processes that affect allele frequency change and thus cause evolution.
Prerequisites: Students must have completed BIOL_SCI 203-0, and BIOL_SCI 337-0 or another course in statistics to register for this course.

BIOL_SCI 345-0 Topics in Biology (1 Unit)
Topics vary but always deal with an area of advanced study in the life sciences. May include laboratory, depending on topic. May be repeated for credit with different topic.
Prerequisites: Students must have completed BIOL_SCI 202-0, BIOL_SCI 203-0, and BIOL_SCI 234-0 to register for this course.

BIOL_SCI 346-0 Field Ecology (1 Unit)
An intensive experience in field ecological research.
Prerequisites: Students must have completed BIOL_SCI 203-0 and BIOL_SCI 337-0 or another course in statistics to register for this course.

BIOL_SCI 347-0 Conservation Biology (1 Unit)
Evolution, ecology, and conservation of patterns of biological diversity.
Prerequisites: Students must have completed BIOL_SCI 203-0 or ENVR_SCI 202-0, and BIOL_SCI 337-0 or another course in statistics to register for this course.

BIOL_SCI 354-0 Quantitative Analysis of Biology (1 Unit)
Random genetic processes, gene expression, cell adaptation, cell cycle, developmental morphogens, phylgenomics.
Prerequisites: Students must have completed BIOL_SCI 201-0 and BIOL_SCI 202-0 to register for this course.
Natural Sciences Distro Area

BIOL_SCI 355-0 Immunobiology (1 Unit)
Nature of host resistance; characteristics of antigens, antibodies; basis of immune response; hypersensitivity.
Prerequisites: BIOL_SCI 201-0, BIOL_SCI 202-0, and BIOL_SCI 301-0 to register for this course.

BIOL_SCI 356-0 Endocrinology (1 Unit)
Physiology and biochemistry of hormones and glands of internal secretion in vertebrates; endocrine glands.
Prerequisite: Students must have completed BIOL_SCI 325-0 to register for this course.

BIOL_SCI 358-0 Advanced Physiology Laboratory (1 Unit)
Experiments in several physiological systems. Design, techniques, data analysis, and report writing emphasized.
Prerequisites: Students must have completed BIOL_SCI 310-0 and BIOL_SCI 234-0 to register for this course.

BIOL_SCI 361-0 Protein Structure and Function (1 Unit)
Structure and function of proteins; x-ray crystallography and NMR.
Prerequisites: Students must have completed BIOL_SCI 301-0 to register for this course.

BIOL_SCI 378-0 Functional Genomics (1 Unit)
Patterns of gene expression and their causes.
Prerequisites: Students must have completed BIOL_SCI 202-0 and BIOL_SCI 203-0 to register for this course.

BIOL_SCI 390-0 Molecular Biology of Genome Editing and Engineering (1 Unit)
Nucleic acid structure; DNA mutation, repair, recombination, replication, restriction, and modification; translation.
Prerequisites: Students must have completed BIOL_SCI 301-0 to register for this course.

BIOL_SCI 391-0 Developmental Biology (1 Unit)
Molecular mechanisms underlying early embryonic development, including establishment of the body and organogenesis. Discussion of original literature.
Prerequisites: Students must have completed BIOL_SCI 202-0 or BIOL_SCI 240-0, and BIOL_SCI 301-0 or BIOL_SCI 241-0, and BIOL_SCI 203-0 to register for this course.

BIOL_SCI 395-0 Molecular Genetics (1 Unit)
Exploration of recent advances that have revolutionized the fields of gene expression and cell regulation. Discussion of articles and primary research papers.
Prerequisites: Students must have completed BIOL_SCI 202-0, BIOL_SCI 203-0, and BIOL_SCI 301-0 to register for this course.