BIOLOGY (BIOL)

BIOL-141 General Biology  3 Credits
Corequisites: BIOL-142
Prerequisites: None
Terms Offered: Summer, Fall
This course serves as a general biology course. It will cover topics including basic biochemistry, cells, cell division, classification of organisms, populations, communities, and biomes. The life cycles and biology of single-cell and multicellular organisms will also be covered. Lecture: 3, Lab 0, Other 0

BIOL-142 General Biology Lab  1 Credits
Corequisites: BIOL-141
Prerequisites: None
Terms Offered: Summer, Fall
This course serves as a general biology laboratory. It will provide hands-on experience with areas of basic biology including basic biochemistry, cells, cell division, classification of organisms, populations, communities, biomes, and single-cell and multicellular organisms. Lecture: 0, Lab 2, Other 0

BIOL-241 Human Biology  3 Credits
Corequisites: BIOL-242
Prerequisites: (CHEM-135 and CHEM-136) or (CHEM-136 and CHEM-137)
Minimum Class Standing: Freshman 2
Term Offered: Winter, Spring
This course serves as the second general biology course and focuses on humans. It will cover topics including basic biochemistry, cells, cell division, the organization and regulation of biological systems, human genetics and chromosomal inheritance, biotechnology, and various human organ systems. Lecture: 3, Lab 0, Other 1

BIOL-242 Human Biology Lab  1 Credits
Corequisites: BIOL-241
Prerequisites: (CHEM-135 and CHEM-136) or (CHEM-136 and CHEM-137)
Minimum Class Standing: Freshman 2
Term Offered: Winter, Spring
This course serves as the second general biology laboratory. It will cover topics including basic biochemistry, cells, cell division, classification of organisms, populations, communities, biomes, and single-cell and multicellular organisms. Lecture: 0, Lab 2, Other 0

BIOL-311 Ecology  4 Credits
Prerequisites: BIOL-141
Terms Offered: As needed
An introductory ecology course that will examine human interactions and the resulting effects of these actions on plant communities, animal communities, and the physical environment. Areas such as water, energy, agriculture, industry, recreation, and demographics are considered. Emphasis will be placed on conservation, pollution, energy, and other contemporary concerns. Lecture: 4, Lab 0, Other 0

BIOL-321 Biological Techniques I  4 Credits
Prerequisites: BIOL-241
Terms Offered: As needed
An introductory laboratory course that will cover some of the most widely used experimental procedures used in the biological and biotechnological fields. Basic laboratory techniques, sterile technique, electrophoretic techniques, nucleic acid isolation, manipulation, amplification, and cloning will be covered. You will also gain familiarity with types of equipment frequently used in the biological laboratory. Lecture: 1, Lab 3, Other 0

BIOL-331 Biological Techniques II  4 Credits
Prerequisites: BIOL-321
Terms Offered: As needed
This course is the second of the introductory laboratory courses that will cover some of the most widely used experimental procedures used in the biological and biotechnological fields. Basic equipment/instrumentation, laboratory techniques, and sterile techniques will be reviewed. Protein/ enzyme assays, purification, and analysis will be covered in detail. The student will also gain familiarity with the design of experiments. Lecture: 1, Lab 3, Other 0

BIOL-341 Anatomy and Physiology  4 Credits
Corequisites: BIOL-241 and BIOL-242 or MECH-350
Minimum Class Standing: Sophomore
Terms Offered: Summer, Fall
An introduction to Human Anatomy and Physiology. This course will cover topics including the organization and regulation of biological tissues, organs and organ systems as well as human development. Lecture: 4, Lab 0, Other 0

BIOL-361 Microbiology  4 Credits
Corequisites: BIOL-362
Prerequisites: BIOL-242
Terms Offered: Summer, Fall (as needed)
An introductory microbiology course comprised of topics including microbial cell structure and function, metabolism, growth and regulation, diversity, genetics, host-microbe interactions, disease and microbial ecology. This course will cover viruses, archaea, fungi, and protists but the main focus of the course will be on bacteria. Lecture: 4, Lab 0, Other 0

BIOL-362 Microbiology Lab  2 Credits
Corequisites: BIOL-361
Prerequisites: BIOL-242
Terms Offered: Summer, Fall (as needed)
A laboratory course which covers a number of microbiological procedures and topics including microbial cultivation, isolation, and identification utilizing sterile technique. This course will cover microbial pathogenesis, sensitivity to antimicrobial agents, immunity, and the interaction of microbes with their environment. Lecture: 4, Lab 0, Other 0

BIOL-381 Molecular Biology  4 Credits
Corequisites: BIOL-382
Prerequisites: BIOL-141 and BIOL-142
Terms Offered: Summer, Fall (as needed)
The basic theory and methodology of Molecular Biology is covered. Concepts to be examined include how biological structure determines function, mechanisms and regulation of replication, transcription, and translation, processing of mRNA transcripts and proteins, and mechanisms underlying basic cellular activities. Lecture: 4, Lab 0, Other 0
BIOL-382  Molecular Biology Lab  2 Credits
Corequisites: BIOL-381
Prerequisites: BIOL-241 and BIOL-242
Terms Offered: Summer, Fall (as needed)
This laboratory course serves as an introduction to methods utilized to study molecular biology. Laboratory techniques will include molecular cloning, RNA isolation, extraction, purification, and quantification, site-directed mutagenesis, and data interpretation. The course is designed for the junior level and is meant to be taken simultaneously with BIOL 381.
Lecture: 0, Lab 4, Other 0

BIOL-441  Cellular Biology  4 Credits
Corequisites: BIOL-442
Prerequisites: CHEM-351
Minimum Class Standing: Junior
Terms Offered: Summer, Fall (as needed)
An introduction to the structure and function of cells. Topics include cell motility, intracellular transport, cellular chemistry, membranes, organelles, metabolism, reproduction, and signaling.
Lecture: 4, Lab 0, Other 0

BIOL-442  Cellular Biology Lab  2 Credits
Corequisites: BIOL-441
Prerequisites: CHEM-351
Minimum Class Standing: Junior
Terms Offered: Summer, Fall (as needed)
An introduction laboratory utilizing methods to study cell biology and physiology. Laboratory techniques will include microscopy, yeast transformation, cellular assays (luminescence or ELISA), cell fractionation, Western Blotting, tissue culture, DNA transfection, and assays specific to assessment of drug activity or induction of chemical pathways. The course is designed for the senior level and is meant to be taken simultaneously with BIOL 441.
Lecture: 0, Lab 4, Other 0

BIOL-481  Genetics  4 Credits
Prerequisites: BIOL-241 and BIOL-242
Minimum Class Standing: Sophomore
Terms Offered: As needed
An introduction in the study of inheritance in all of its manifestations. Specifically, it introduces theory and problem solving in the three areas of Genetics: Classical Genetics, Molecular Genetics, and Population Genetics. Topics include Mendelian Genetics, sex-linkage and pedigree analysis, non-Mendelian patterns of inheritance, the molecular basis of inheritance and gene expression, the theory of methodology of modern DNA technologies, and population genetics and evolution.
Lecture: 4, Lab 0, Other 0

BIOL-491  Adv. Special Topics in Biology  6 Credits
Prerequisites: None
Terms Offered: As needed
Advanced Topics in Biology & Lab. Usually 6 credits. Offered for Applied Biology Majors as part of the core program.
Lecture: 4, Lab 2, Other 0

BIOL-494  Senior Research/Seminar  2 Credits
Prerequisites: BIOL-381 and BIOL-382
Terms Offered: Summer, Fall, Winter, Spring
A capstone course where students design, execute, analyze and report the results of original research in collaboration with a faculty member. Students are required to give a formal presentation of their findings.
Lecture: 0, Lab 6, Other 0

BIOL-499  Biology Independent Study  6 Credits
Prerequisites: None
Terms Offered: Summer, Fall, Winter, Spring
Advanced Biology Independent Study. Can be 1-4 credits.
Lecture: 4, Lab 2, Other 0