

BIOLOGICAL SCIENCES

Program Purpose: Students who complete Biological Science courses will examine and assess the place of various organisms in the natural world. They will understand how evolutionary principles provide a comprehensive model for understanding the origins of living organisms and the changes they undergo. They will be able to interpret statements about the relationships between living organisms, identify the evidence appropriate for discussing these statements and determine the validity of these statements.

Study in Biology leads to a wide range of careers upon the attainment of the baccalaureate degree. Many students prepare for entry into graduate or professional schools upon graduation; programs in dentistry, medicine, nursing, pharmacy, and similar professions depend upon an emphasis in biological sciences. Careers are found in teaching, research, and government service.

Most careers require additional degrees. To explore specific career options, check the software and online resources available in the Career Transfer Center located in Fountain Hall, (805) 378-1536.

Transfer Information

Students planning to transfer need to consult with a counselor, prepare a Student Education Plan, and take advantage of the support services available in the Career Transfer Center located in Fountain Hall, (805) 378-1536.

Anatomy Courses

ANAT M01 Human Anatomy 4 Units

In-Class Hours: 35 lecture, 105 laboratory

Advisories/Rec Prep: BIOL M01 or BIOL M02A or BIOL M02AH and ENGL M02 and MATH M03

C-ID: BIOL 110B

Examines the anatomy of human organs and organ systems from a functional perspective that focuses on an understanding of the design of the human body. Teaches, in the laboratory setting, how to distinguish tissue types through histological specimens. Studies the three-dimensional relationship of body structures through required non-human mammalian dissection. Demonstrates, using human cadavers, the gross anatomy of the human body.

Grade Modes: Letter Graded, Student Option- Letter/Credit, Pass/No Pass Grading

Field Trips: May be required

Degree Applicability: Applies to Associate Degree

AA/AS GE: A1

Transfer Credit: CSU, UC

UC Credit Limitations: None

CSU GE-Breadth: B2, B3

IGETC: 5B, 5C

ANAT M122 Independent Study - Anatomy 0.5-3 Units

In-Class Hours: 26.25-157.5 laboratory

Prerequisites: Completion of one course in Anatomy and instructor approval

Allows independent study for students who wish to extend their knowledge of a particular area of Anatomy through research and study. Utilizes an approved independent project. Includes one-on-one work with instructor. Interested students should contact an Anatomy instructor for assistance in developing a contract for learning about a specific topic.

Grade Modes: Letter Graded, Student Option- Letter/Credit, Pass/No Pass Grading

Field Trips: May be required

Degree Applicability: Applies to Associate Degree

AA/AS GE: None

Transfer Credit: CSU

UC Credit Limitations: None

CSU GE-Breadth: None

IGETC: None

Anatomy/Physiology Courses

ANPH M01 Human Anatomy and Physiology 6 Units

In-Class Hours: 70 lecture, 105 laboratory

Advisories/Rec Prep: BIOL M02A or BIOL M02AH or CHEM M11

Introduces the structures and the relationships of human body parts. Explores how the functioning of human body parts are related to their structures. Combines the study of anatomy and physiology which allows students to effectively integrate the study of structure with functioning of the system. Utilizes themes of hierarchical structural organization and the maintenance of homeostasis to form the framework for the study of the human system at both macroscopic and microscopic levels. Examines the structure/function relationship through the required dissection of a fetal pig in the laboratory portion. Utilizes a human cadaver to demonstrate the principles of the anatomy of the human body. Course credit limitation: MC, CSU, and UC - ANPH M01 and ANAT M01 combined: maximum credit, one course. ANPH M01 and PHSO M01 (or PHSO M01H) combined: maximum credit, one course.

Grade Modes: Letter Graded, Student Option- Letter/Credit, Pass/No Pass Grading

Degree Applicability: Applies to Associate Degree

AA/AS GE: A1

Transfer Credit: CSU, UC

UC Credit Limitations: None

CSU GE-Breadth: B2, B3

IGETC: 5B, 5C

Biology Courses

BIOL M01 Introduction to Biology 4 Units

In-Class Hours: 52.5 lecture, 52.5 laboratory

Introduces non-majors to science and scientific methodology through a study of the basic principles of biology. Focuses on student understanding of the unity and diversity of life through discussions of topics that include biological chemistry, metabolism, cell biology, molecular biology, genetics, evolution of living systems, and ecology. Examines the implications of the science of biology on human affairs.

Catalog Notes: Course Credit Limitation: MC, CSU and UC - no credit if taken after BIOL M02A or BIOL M02AH.

Grade Modes: Letter Graded, Student Option- Letter/Credit, Pass/No Pass Grading

Field Trips: May be required

Degree Applicability: Applies to Associate Degree

AA/AS GE: A1

Transfer Credit: CSU, UC

UC Credit Limitations: None

CSU GE-Breadth: B2, B3

IGETC: 5B, 5C

BIOL M02A General Biology I 5 Units

In-Class Hours: 70 lecture, 52.5 laboratory

Prerequisites: MATH M03 or 2 years of high school algebra or placement as determined by the college's multiple measures assessment process and CHEM M12 or high school chemistry

C-ID: BIOL 190, BIOL 135S (with BIOL M02B)

Introduces students to major biological themes and principles that are fundamental to an understanding of life processes in any field of biology today. Includes the scientific process, experimental design, biological chemistry, prokaryotic and eukaryotic cell structure and function, cellular metabolism, cell reproduction and its controls, cell communication, genetics, molecular biology, DNA technology and evolutionary processes.

Grade Modes: Letter Graded, Student Option- Letter/Credit, Pass/No Pass Grading

Credit Limitations: 1) Students cannot complete both BIOL M02A and BIOL M02AH. Credit will be awarded only for the first course completed with a grade of "C" or better or "P". MC Honors Program requires a letter grade. 2) No credit will be awarded for BIOL M01 if taken after BIOL M02A or BIOL M02AH.

Degree Applicability: Applies to Associate Degree

AA/AS GE: A1

Transfer Credit: CSU, UC

UC Credit Limitations: None

CSU GE-Breadth: B2, B3

IGETC: 5B, 5C

BIOL M02AH Honors: General Biology I 5 Units

In-Class Hours: 70 lecture, 52.5 laboratory

Prerequisites: MATH M03 or 2 years of high school algebra or placement as determined by the college's multiple measures assessment process and CHEM M12 or high school chemistry

C-ID: BIOL 190, BIOL 190 and BIOL 135S (with BIOL M02B)

Introduces students to major biological themes and principles that are fundamental to an understanding of life processes in any field of biology today. Includes the scientific process, experimental design, biological chemistry, prokaryotic and eukaryotic cell structure and function, cellular metabolism, cell reproduction and its controls, cell communication, genetics, molecular biology, DNA technology and evolutionary processes. Honors work challenges students to be more analytical and creative through expanded assignments, real-world applications, and enrichment opportunities.

Grade Modes: Letter Graded, Student Option- Letter/Credit, Pass/No Pass Grading

Credit Limitations: 1) Students cannot complete both BIOL M02A and BIOL M02AH. Credit will be awarded only for the first course completed with a grade of "C" or better or "P". MC Honors Program requires a letter grade. 2) No credit will be awarded for BIOL M01 if taken after BIOL M02A or BIOL M02AH.

Degree Applicability: Applies to Associate Degree

AA/AS GE: A1

Transfer Credit: CSU, UC

UC Credit Limitations: None

CSU GE-Breadth: B2, B3

IGETC: 5B, 5C

BIOL M02B General Biology II 5 Units

In-Class Hours: 70 lecture, 52.5 laboratory

Prerequisites: BIOL M02A or BIOL M02AH

C-ID: BIOL 140, BIOL 190 and BIOL 135S (with BIOL M02A)

Surveys the basic biology and diversity of unicellular and multicellular organisms. Emphasizes general biological principles, classification, structure, function and evolutionary adaptations of organisms (including plants, fungi, animals, and unicellular organisms) to their environments.

Grade Modes: Letter Graded, Student Option- Letter/Credit, Pass/No Pass Grading

Degree Applicability: Applies to Associate Degree

AA/AS GE: A1

Transfer Credit: CSU, UC

UC Credit Limitations: None

CSU GE-Breadth: B2, B3

IGETC: 5B, 5C

BIOL M02C Genetics and Molecular Biology 5 Units*In-Class Hours:* 70 lecture, 52.5 laboratory*Prerequisites:* BIOL M02A or BIOL M02AH*Advisories/Rec Prep:* CHEM M07A or CHEM M11 or CHEM M13 or equivalent

Focuses on inheritance and macromolecular functioning of the cell. Emphasizes data analysis and problem-solving skills. Includes analysis of inheritance patterns, structure and expression of DNA in viruses, bacteria, and eukaryotes. Covers regulation of gene expression, RNA and protein functioning, and examination of current DNA analysis technologies and their applications.

Grade Modes: Letter Graded, Student Option- Letter/Credit, Pass/No Pass Grading**Degree Applicability:** Applies to Associate Degree**AA/AS GE:** A1**Transfer Credit:** CSU, UC**UC Credit Limitations:** None**CSU GE-Breadth:** B2, B3**IGETC:** 5B, 5C**BIOL M03 Marine Life and Its Environment 4 Units***In-Class Hours:* 52.5 lecture, 52.5 laboratory

Examines marine organisms and their relationships to their environment while emphasizing intertidal and offshore life forms. Includes an investigation of behavior, ecology, morphological and physiological adaptations and environmental relationship to humans.

Grade Modes: Letter Graded, Student Option- Letter/Credit, Pass/No Pass Grading**Field Trips:** May be required**Degree Applicability:** Applies to Associate Degree**AA/AS GE:** A1**Transfer Credit:** CSU, UC**UC Credit Limitations:** None**CSU GE-Breadth:** B2, B3**IGETC:** 5B, 5C**BIOL M05 Field Biology: A Natural History of California 4 Units***In-Class Hours:* 52.5 lecture, 52.5 laboratory

Introduces the ecology, taxonomy, and natural history of plant life in the diverse ecosystems of California. Uses the principles of evolution, ecology, and geology to illustrate the structure of plant communities that form the basis of ecosystems. Includes identification of dominant plant species in each community and visits to desert, salt and fresh water wetlands, chaparral, and mountain habitats to explore plant, animal, and environmental interactions and the impact of humans on these environments.

Grade Modes: Letter Graded, Student Option- Letter/Credit, Pass/No Pass Grading**Field Trips:** Will be required**Degree Applicability:** Applies to Associate Degree**AA/AS GE:** A1**Transfer Credit:** CSU, UC**UC Credit Limitations:** None**CSU GE-Breadth:** B2, B3**IGETC:** 5B, 5C**BIOL M12A Environmental Control and Process Support 2 Units***Same-As:* BIOT M02A*In-Class Hours:* 17.5 lecture, 52.5 laboratory

Provides skills training in manufacturing of biopharmaceuticals and medical devices. Presents an overview of the manufacturing process and introduces environmental control and process support with a focus on Good Laboratory Practices (GLP)/Good Manufacturing Practices (GMP), clean room procedure, monitoring techniques, and required documentation.

Grade Modes: Letter Graded, Student Option- Letter/Credit, Pass/No Pass Grading**Degree Applicability:** Applies to Associate Degree**AA/AS GE:** None**Transfer Credit:** CSU**UC Credit Limitations:** None**CSU GE-Breadth:** None**IGETC:** None**BIOL M12B Manufacturing: Quality Control and Validation 2 Units***Same-As:* BIOT M02B*In-Class Hours:* 17.5 lecture, 52.5 laboratory*C-ID:* BIOT 210X

Provides skills training in industrial biotechnology with emphasis on manufacturing of pharmaceuticals and medical devices. Introduces validation and quality control. Reviews manufacturing process, including formulation, lyophilization, packaging and filling. Focuses on validation, systems evaluations, testing and reporting.

Grade Modes: Letter Graded, Student Option- Letter/Credit, Pass/No Pass Grading**Degree Applicability:** Applies to Associate Degree**AA/AS GE:** None**Transfer Credit:** CSU**UC Credit Limitations:** None**CSU GE-Breadth:** None**IGETC:** None**BIOL M12C Manufacturing: Cell Culture and Microbial Fermentation 3 Units***Same-As:* BIOT M02C*In-Class Hours:* 17.5 lecture, 105 laboratory*C-ID:* BIOT 230X

Provides skills training in industrial biotechnology with emphasis on manufacturing pharmaceuticals. Introduces cell culture and microbial fermentation. Focuses on bacterial techniques, microbial assessment, mammalian cell culture, bioreactor fermentation, and media preparation. Compares small and large industrial scale cell culture.

Grade Modes: Letter Graded, Student Option- Letter/Credit, Pass/No Pass Grading**Degree Applicability:** Applies to Associate Degree**AA/AS GE:** None**Transfer Credit:** CSU**UC Credit Limitations:** None**CSU GE-Breadth:** None**IGETC:** None

BIOL M12D Bioprocessing: Recovery and Purification 2 Units*Same-As:* BIOT M02D*In-Class Hours:* 17.5 lecture, 52.5 laboratory*C-ID:* BIOT 220BX

Provides skills training in industrial biotechnology with emphasis on manufacturing pharmaceuticals. Introduces bioprocessing, recovery, and purification techniques. Focuses on protein separation and purification, chromatography, large-scale recovery, and identification of assays. Reviews skills necessary for a successful job search in the field of biotechnology.

Grade Modes: Letter Graded, Student Option- Letter/Credit, Pass/No Pass Grading

Degree Applicability: Applies to Associate Degree

AA/AS GE: None

Transfer Credit: CSU

UC Credit Limitations: None

CSU GE-Breadth: None

IGETC: None

BIOL M12E Business & Government Regulation 2 Units*Same-As:* BIOT M02E*In-Class Hours:* 35 lecture

Provides skills training in industrial biotechnology with emphasis on manufacturing pharmaceuticals. Examines manufacturing from the perspective of company operations involved with the drug or medical device development process. Focuses on business practices and governmental regulations.

Grade Modes: Letter Graded, Student Option- Letter/Credit, Pass/No Pass Grading

Degree Applicability: Applies to Associate Degree

AA/AS GE: None

Transfer Credit: CSU

UC Credit Limitations: None

CSU GE-Breadth: None

IGETC: None

BIOL M13 Introduction to Biotechnology and Molecular Biology 4 Units*Same-As:* BIOT M10*In-Class Hours:* 52.5 lecture, 52.5 laboratory*C-ID:* BIOT 150BX

Examines the role of molecular biology in the manufacturing of commercial pharmaceutical and agricultural products. Introduces basic biotechnology laboratory skills, including documentation, safety, and solution and buffer preparation. Develops student proficiency in aseptic techniques, spectrophotometry, molecular biology techniques, and electrophoresis.

Grade Modes: Letter Graded, Student Option- Letter/Credit, Pass/No Pass Grading

Degree Applicability: Applies to Associate Degree

AA/AS GE: None

Transfer Credit: CSU, UC

UC Credit Limitations: None

CSU GE-Breadth: None

IGETC: None

BIOL M16 Human Biology 3 Units*In-Class Hours:* 52.5 lecture

Introduces the biology of humans covering basic cell structure, organ systems, inheritance, reproduction, development and aging, disease process, and human evolution and ecology. Explores biology as a scientific endeavor and analyzes the functioning of the human body both as an integrated system and as a part of the ecosystem with special attention to physiological structure and function. Emphasizes acquisition of knowledge needed to make intelligent decisions on bioethical issues that face society.

Grade Modes: Letter Graded, Student Option- Letter/Credit, Pass/No Pass Grading

Degree Applicability: Applies to Associate Degree

AA/AS GE: A1

Transfer Credit: CSU, UC

UC Credit Limitations: None

CSU GE-Breadth: B2

IGETC: 5B

BIOL M16L Human Biology Lab 1 Unit*In-Class Hours:* 52.5 laboratory*Prerequisites:* BIOL M16 or concurrent enrollment

Provides hands-on laboratory activities to support the understanding of human biology. Explores, through laboratory exercises, human anatomy and physiology, the scientific method and appropriate data analysis.

Grade Modes: Letter Graded, Student Option- Letter/Credit, Pass/No Pass Grading

Degree Applicability: Applies to Associate Degree

AA/AS GE: None

Transfer Credit: CSU, UC

UC Credit Limitations: None

CSU GE-Breadth: B3

IGETC: 5C

BIOL M17 Heredity, Evolution and Society 3 Units*In-Class Hours:* 52.5 lecture

Introduces principles of modern genetics and evolutionary theory with specific reference to the human species. Examines scientific method, biological laws governing heredity in individuals and populations, biological factors that influence health and disease, and the interplay between the human population and the environment. Analyzes the world's economic, demographic, and political problems from a biological perspective and discusses possible solutions.

Grade Modes: Letter Graded, Student Option- Letter/Credit, Pass/No Pass Grading

Field Trips: May be required

Degree Applicability: Applies to Associate Degree

AA/AS GE: A1

Transfer Credit: CSU, UC

UC Credit Limitations: None

CSU GE-Breadth: B2

IGETC: 5B

BIOL M18 Human Biology for Pre-Allied 3 Units

In-Class Hours: 52.5 lecture

Covers major aspects of human biology related to health science careers.

Emphasizes the chemical, molecular, and physiological mechanisms underlying most common disease conditions.

Grade Modes: Letter Graded, Student Option- Letter/Credit, Pass/No Pass Grading

Field Trips: May be required

Credit Limitations: Credit will not be awarded for both BIOL M16 and BIOL M18 courses. Credit will be awarded only for the first course completed with a grade of "C" or better or "P".

Degree Applicability: Applies to Associate Degree

AA/AS GE: A1

Transfer Credit: CSU

UC Credit Limitations: None

CSU GE-Breadth: B2

IGETC: None

BIOL M50A Bridge to Biotechnology 0.5 Units

Same-As: BIOT M50A

In-Class Hours: 26.25 laboratory

Develops practical, hands-on experience with laboratory techniques used in the field of biotechnology. Applies specific techniques that vary depending on the current state of technology. Provides a bridge for entry-level and high school students who are interested in exploring the field of biotechnology.

Grade Modes: Letter Graded, Student Option- Letter/Credit, Pass/No Pass Grading

Degree Applicability: Applies to Associate Degree

AA/AS GE: None

Transfer Credit: None

BIOL M80 Internship in Biology 1-4 Units

In-Class Hours: 60-240 unpaid cooperative, 75-300 paid cooperative

Prerequisites: Completion of or concurrent enrollment in one course in the discipline and instructor approval. Course Credit Limitation: To take this course, contact the Career Transfer Center. Requires orientation session. Students receive one unit of credit for each 60 hours unpaid or 75 hours paid work. May enroll in up to 4 units a semester with a maximum of 16 total units of any type of work experience

Provides on-the-job learning to develop effective work habits, attitudes, and career awareness in paid or unpaid internships that are related to the discipline. Involves the development and documentation of learning objectives and the completion of an internship paper, presentation, or project. Includes both workplace supervisor and faculty adviser feedback and/or written evaluations.

Grade Modes: Letter Graded, Student Option- Letter/Credit, Pass/No Pass Grading

Repeatable for Credit: Course may be taken up to 3 times for credit.

Degree Applicability: Applies to Associate Degree

AA/AS GE: None

Transfer Credit: CSU

UC Credit Limitations: None

CSU GE-Breadth: None

IGETC: None

BIOL M122 Independent Study - Biology 0.5-3 Units

Formerly: BIOL M22A

In-Class Hours: 26.25-157.5 laboratory

Prerequisites: Completion of one course in Biology and instructor approval

Allows independent study for students who wish to extend their knowledge of a particular area of Biology through research and study. Utilizes an approved independent project. Includes one-on-one work with instructor. Interested students should contact a Biology instructor for assistance in developing a contract for learning about a specific topic.

Grade Modes: Letter Graded, Student Option- Letter/Credit, Pass/No Pass Grading

Degree Applicability: Applies to Associate Degree

AA/AS GE: None

Transfer Credit: CSU

UC Credit Limitations: None

CSU GE-Breadth: None

IGETC: None

Botany Courses

BOT M01 Introduction to Botany 5 Units

In-Class Hours: 52.5 lecture, 105 laboratory

Advisories/Rec Prep: BIOL M02A or BIOL M02AH

Emphasizes the physical and chemical aspects of life as related to plants. Includes cellular organization, metabolism, reproduction, heredity, ecology, evolution, and plant kingdom survey. Examines the anatomy and physiology of representative plants in each of the major plant groupings.

Grade Modes: Letter Graded, Student Option- Letter/Credit, Pass/No Pass Grading

Field Trips: May be required

Degree Applicability: Applies to Associate Degree

AA/AS GE: A1

Transfer Credit: CSU, UC

UC Credit Limitations: None

CSU GE-Breadth: B2, B3

IGETC: 5B, 5C

BOT M06 Plants and Society 4 Units

In-Class Hours: 52.5 lecture, 52.5 laboratory

Introduces basic concepts related to plant structure, function, genetics, evolution, and domestication. Examines the economic, aesthetic, and ecological roles of plants, and considers the role of plants as a force in shaping civilizations. Stresses the importance of plants and plant products in everyday life, as well as their ritualistic and pharmacological uses. Presents basic scientific principles and techniques using examples from plants and their products to gain an understanding of science and its value in today's society.

Grade Modes: Letter Graded, Student Option- Letter/Credit, Pass/No Pass Grading

Field Trips: May be required

Degree Applicability: Applies to Associate Degree

AA/AS GE: A1

Transfer Credit: CSU, UC

UC Credit Limitations: None

CSU GE-Breadth: B2, B3

IGETC: 5B, 5C

BOT M122 Independent Study - Botany 0.5-3 Units*In-Class Hours:* 26.25-157.5 laboratory*Prerequisites:* Completion of one course in Botany and instructor approval

Allows independent study for students who wish to extend their knowledge of a particular area of Botany through research and study. Utilizes an approved independent project. Includes one-on-one work with instructor. Interested students should contact a Botany instructor for assistance in developing a contract for learning about a specific topic.

Grade Modes: Letter Graded, Student Option- Letter/Credit, Pass/No Pass Grading**Field Trips:** May be required**Degree Applicability:** Applies to Associate Degree**AA/AS GE:** None**Transfer Credit:** CSU**UC Credit Limitations:** None**CSU GE-Breadth:** None**IGETC:** None

Microbiology Courses

MICR M01 General Microbiology 5 Units*In-Class Hours:* 52.5 lecture, 105 laboratory*Prerequisites:* BIOL M02A or BIOL M02AH or PHSO M01 or PHSO M01H and CHEM M01A or CHEM M01AH or CHEM M12 or CHEM M11 or high school Chemistry equivalent

Emphasizes microbiological principles and lab techniques related to the morphology, metabolism, genetics, classification, and ecology of bacteria. Characterizes viruses and eukaryotic microorganisms. Focuses on human disease including characteristics of pathogens, immunology, and epidemiology. Practices laboratory exercises including aseptic technique, staining, the determination of bacterial growth conditions and requirements, and the identification of an unknown bacterium. Applies microbiology in clinical applications.

Grade Modes: Letter Graded, Student Option- Letter/Credit, Pass/No Pass Grading**Degree Applicability:** Applies to Associate Degree**AA/AS GE:** A1**Transfer Credit:** CSU, UC**UC Credit Limitations:** None**CSU GE-Breadth:** B2, B3**IGETC:** 5B, 5C**MICR M122 Independent Study-Microbiology 0.5-3 Units***In-Class Hours:* 26.25-157.5 laboratory*Prerequisites:* Completion of one course in Mathematics and instructor approval

Allows independent study for students who wish to extend their knowledge of a particular area of Microbiology through research and study. Utilizes an approved independent project. Includes one-on-one work with instructor. Interested students should contact a Microbiology instructor for assistance in developing a contract for learning about a specific topic.

Grade Modes: Letter Graded, Student Option- Letter/Credit, Pass/No Pass Grading**Degree Applicability:** Applies to Associate Degree**AA/AS GE:** None**Transfer Credit:** CSU**UC Credit Limitations:** None**CSU GE-Breadth:** None**IGETC:** None

Physiology Courses

PHSO M01 Human Physiology 4 Units*In-Class Hours:* 52.5 lecture, 52.5 laboratory*Prerequisites:* ANAT M01 or concurrent enrollment and 1 year of high school Chemistry (or higher)*Advisories/Rec Prep:* BIOL M01 or BIOL M02A or BIOL M02AH and ENGL M02 and MATH M03*C-ID:* BIOL 120B

Studies the physiological principles, function, integration and homeostasis of the human body at the cellular, tissue, organ, organ system and organism level: integumentary system, bone, skeletal system, smooth and cardiac muscles, nervous system, sensory organs, cardiovascular system, lymphatic and immune systems, respiratory system, urinary system, digestive system, endocrine system, and reproductive system. Utilizes laboratory computer simulations and experiments to demonstrate basic principles and introduce physiological techniques and instruments. This course is primarily intended for Nursing, Allied Health, Kinesiology, and other health-related majors.

Grade Modes: Letter Graded, Credit by exam, license etc., Student Option- Letter/Credit, Pass/No Pass Grading**Credit Limitations:** 1. Students cannot complete both PHSO M01 and PHSO M01H. Credit will be awarded only for the first course completed with a grade of "C" or better or "P". MC Honors Program requires a letter grade. 2. MC and CSU - PHSO M01 or PHSO M01H and ANPH M01 combined: maximum credit, one course. 3. UC - ANAT M01, ANPH M01, PHSO M01 and PHSO M01H combined: maximum credit, one course.**Degree Applicability:** Applies to Associate Degree**AA/AS GE:** A1**Transfer Credit:** CSU, UC**UC Credit Limitations:** None**CSU GE-Breadth:** B2, B3**IGETC:** 5B, 5C

PHSO M01H Honors: Human Physiology 4 Units

In-Class Hours: 52.5 lecture, 52.5 laboratory

Prerequisites: ANAT M01 or concurrent enrollment and 1 year of high school Chemistry (or higher)

Advisories/Rec Prep: BIOL M01 or BIOL M02A or BIOL M02AH and ENGL M02 and MATH M03

Studies the physiological principles, function, integration and homeostasis of the human body at the cellular, tissue, organ, organ system and organism level: integumentary system, bone, skeletal system, smooth and cardiac muscles, nervous system, sensory organs, cardiovascular system, lymphatic and immune systems, respiratory system, urinary system, digestive system, endocrine system, and reproductive system. Utilizes laboratory computer simulations and experiments to demonstrate basic principles and introduce physiological techniques and instruments. Honors work challenges students to be more analytical and creative through expanded assignments, real-world applications, and enrichment opportunities. This course is primarily intended for Nursing, Allied Health, Kinesiology, and other health-related majors.

Grade Modes: Letter Graded, Student Option- Letter/Credit, Pass/No Pass Grading

Credit Limitations: 1) Students cannot complete both PHSO M01 and PHSO M01H. Credit will be awarded only for the first course completed with a grade of "C" or better or "P". MC Honors Program requires a letter grade. 2) MC and CSU - PHSO M01 or PHSO M01H and ANPH M01 combined: maximum credit, one course. 3) UC - ANAT M01, ANPH M01, PHSO M01 and PHSO M01H combined: maximum credit, one course.

Degree Applicability: Applies to Associate Degree

AA/AS GE: A1

Transfer Credit: CSU, UC

UC Credit Limitations: None

CSU GE-Breadth: B2, B3

IGETC: 5B, 5C

PHSO M122 Independent Study - Physiology 0.5-3 Units

In-Class Hours: 26.25-157.5 laboratory

Prerequisites: Completion of one course in Physiology and instructor approval

Allows independent study for students who wish to extend their knowledge of a particular area of Physiology through research and study. Utilizes an approved independent project. Includes one-on-one work with instructor. Interested students should contact a Physiology instructor for assistance in developing a contract for learning about a specific topic.

Grade Modes: Letter Graded, Student Option- Letter/Credit, Pass/No Pass Grading

Degree Applicability: Applies to Associate Degree

AA/AS GE: None

Transfer Credit: CSU

UC Credit Limitations: None

CSU GE-Breadth: None

IGETC: None

Zoology Courses

ZOO M01 Introduction to Zoology 5 Units

In-Class Hours: 52.5 lecture, 105 laboratory

Advisories/Rec Prep: BIOL M02A or BIOL M02AH

Covers the comparative structure, function, evolution, and a survey of animal phyla. Includes development, morphology and physiology, microevolution and macroevolution, taxonomy and systematics, molecular and morphological phylogeny, and animal behavior.

Grade Modes: Letter Graded, Student Option- Letter/Credit, Pass/No Pass Grading

Degree Applicability: Applies to Associate Degree

AA/AS GE: A1

Transfer Credit: CSU, UC

UC Credit Limitations: None

CSU GE-Breadth: B2, B3

IGETC: 5B, 5C

ZOO M122 Independent Study - Zoology 0.5-3 Units

In-Class Hours: 26.25-157.5 laboratory

Prerequisites: Completion of one course in Zoology and instructor approval

Allows independent study for students who wish to extend their knowledge of a particular area of Zoology through research and study. Utilizes an approved independent project. Includes one-on-one work with instructor. Interested students should contact a Zoology instructor for assistance in developing a contract for learning about a specific topic.

Grade Modes: Letter Graded, Student Option- Letter/Credit, Pass/No Pass Grading

Degree Applicability: Applies to Associate Degree

AA/AS GE: None

Transfer Credit: CSU

UC Credit Limitations: None

CSU GE-Breadth: None

IGETC: None

- Biology, Associate in Science for Transfer (<http://catalog.vcccd.edu/moorpark/programs-courses/biological-sciences/biology-ast/>)
- Biological Sciences, Associate in Science (<http://catalog.vcccd.edu/moorpark/programs-courses/biological-sciences/biological-sciences-as/>)
- Pre-Allied Health, Certificate of Achievement (<http://catalog.vcccd.edu/moorpark/programs-courses/biological-sciences/pre-allied-health-coa/>)

Dean

Carol Higashida, Phone (805) 378-1459

Faculty

Sandy Bryant, Audrey Chen, Katherine Courtney, Hovik Gasparian, Carrie Geisbauer, Jazmir Hernandez, Jana Johnson, Subhash Karkare, Nathan Marten, Beth Miller, Eric Shargo, Melia Tabbakhian, Sean Wilcox

Counselors

Daniel Aguilar, Eddie Beltran, Chuck Brinkman, Pablo Diaz, Jodi Dickey, Trevor Hess, Ashley Lajoie, Danita Redd, Samantha Zaldivar