

BI - BIOLOGY (BI)

***Course Fees are Per Credit Hour**

BI 1XX. Biology Elective. (2-4 Credits)

BI 100. Pre-Health Professions Orientation. (1 Credit)

An introduction to the health professions for students planning to seek admission to postgraduate health professions programs, including medicine (both M.D. and D.O.), physician assistant (PA), veterinary medicine, dentistry, optometry, pharmacy, and physical or occupational therapy. Not applicable for credit toward a major or minor in biology except within the Pre-Health option of the Biology major. (Fall)
Course Fees: \$60

BI 101. Introductory Biology. (4 Credits)

Cell biology, genetics, evolution, diversity, and ecology, with emphasis on examples that relate to humans. This course may not be used to satisfy the requirements for a major or minor in biology. Three class periods; one 2-hour laboratory period per week. (Fall, Spring, Summer)
Course Fees: \$60

BI 101H. Introductory Biology - Honors. (4 Credits)

Cell biology, genetics, evolution, diversity, and ecology, with emphasis on examples that relate to humans. This course may not be used to satisfy the requirements for a major or minor in biology. Three class periods; one 2-hour laboratory period per week. (Fall, Spring)
Course Fees: \$60

BI 102. Human Biology. (4 Credits)

Structure and function of all organ systems in humans, including associated diseases. Fundamental chemical and biological concepts from the cellular to the organismal level. This course may not be used to satisfy the requirements for a major or minor in biology. Three class periods; one 2-hour laboratory period per week. (Fall, Spring)
Course Fees: \$60

BI 111. Principles of Biology. (4 Credits)

The chemical basis of life, cell structure and function, metabolism, and genetics. Designed for biology and other science majors or minors. Three class periods; one 2-hour laboratory period per week. Prerequisite: ACT Science Subtest score of 20 or above (combined SAT of 950 or above) or BI 101 with grade of C or above. (Fall, Spring)
Course Fees: \$60

BI 111H. Principles of Biology - Honors. (4 Credits)

The chemical basis of life, cell structure and function, metabolism, and genetics. Designed for biology and other science majors or minors. Three class periods; one 2-hour laboratory period per week. Prerequisite: ACT Science Subtest score of 20 or above (combined SAT of 950 or above) or BI 101 with grade of C or above. (Fall, Spring)
Course Fees: \$60

BI 112. Principles of Biology. (4 Credits)

Evolution, diversity, and ecology of organisms. Designed for biology and other science majors or minors. Three class periods; one 2-hour laboratory period per week. Prerequisite: BI 111. (Fall, Spring)
Course Fees: \$60

BI 112H. Principles of Biology - Honors. (4 Credits)

This course focuses on the biology of organisms. The course is a study of the evolution, diversity, and ecology of organisms with a focus on form and function of plants and animals. Prerequisite: BI 111 or BI 111H. (Fall, Spring)
Course Fees: \$60

BI 200W. Biological Literature. (2 Credits)

Training in locating and utilizing biological information in the technical literature and in writing a scientific paper. One class period per week plus additional library assignments. Prerequisites: BI 112 or BI 112H and EN 112 or EN 112H. (Fall, Spring, Summer)
Course Fees: \$60

BI 205. Marine Technical Methods. (2 Credits)

An introduction to the hardware of marine science, sampling procedures, processing, station location and field equipment maintenance and operation. This Biology course is offered at the Dauphin Island Sea Lab of the Marine Environmental Sciences Consortium located on Dauphin Island, Alabama. Course fees and frequency of offering for each course are determined by the Consortium. Prerequisite: basic science major. (Summer)
Course Fees: \$60

BI 228. Ocean Science. (4 Credits)

An introduction to the study of oceans, their physical and chemical parameters, the life within them, and their relationship to man. This Biology course is offered at the Dauphin Island Sea Lab of the Marine Environmental Sciences Consortium located on Dauphin Island, Alabama. Course fees and frequency of offering for each course are determined by the Consortium. (Summer)
Course Fees: \$60

BI 241. Human Anatomy and Physiology I. (4 Credits)

Structure and physiology of the human body, with emphasis on the integumentary, skeletal, muscular, endocrine, and nervous systems. This course may not be used to satisfy the requirements for a major or minor in biology except within the Pre-Health concentration. Three class periods; one 2-hour laboratory period per week. Additional coursework in biology and/or chemistry and sophomore standing are strongly recommended. Prerequisite: BI 101 or BI 111 with a grade of C or higher. (Fall, Spring, Summer)
Course Fees: \$60

BI 242. Human Anatomy and Physiology II. (4 Credits)

A continuation of Biology 241, with emphasis on the digestive, circulatory, excretory, respiratory, and reproductive systems. This course may not be used to satisfy the requirements for a major or minor in biology except within the Pre-Health concentration. Three class periods; one 2-hour laboratory period per week. Prerequisite: BI 241. (Fall, Spring, Summer)
Course Fees: \$60

BI 299H. Honors Science Symposium. (1 Credit)

A cultural, historical, and technical exploration of natural science by surveying a selection of discoveries and their past, present, and future impacts. BI 299H is open to Honors Program students having more than 48 hours credit or by permission of the instructor. (Spring)
Course Fees: \$60

BI 302. Clinical Microbiology. (4 Credits)

Fundamentals of microbiology including the study of microbiology with emphasis on health and disease transmission. Topics will include microbial cell structure and chemical composition, physiology and growth, clinical significance, microbial identification, host defense mechanisms, vaccines and therapeutics, and common microbes of individual systems. Emphasis will be placed on bacteria and viruses but fungi, protozoans, and helminths will also be discussed. Two 75 minute or three 50 minute class periods and one 2 hour laboratory period per week. Lecture and laboratory may be offered in a virtual format. This course is not intended for Biology majors. Prerequisite: BI 101 or BI 111 or BI 241. (Fall, Spring, Summer)
Course Fees: \$60

BI 306. Genetics. (4 Credits)

The basic principles of heredity and their significance in the development and function of organisms. Three class periods; one 3-hour laboratory period per week, plus additional assignments. CH 311 and 311L are recommended. Prerequisites: BI 112 and CH 111. (Fall, Spring, Summer, Odd-numbered years)
Course Fees: \$60

BI 307. Microbiology. (4 Credits)

Fundamentals of microbiology including a study of the history of microbiology, cell structure and function, metabolism and growth, genetics, diversity, ecology, immunology, and pathology of microorganisms and their effects on humans and their environment. Emphasis will be placed on bacteria, archaea, and viruses, though fungi and protozoans will also be discussed. Three class periods; one 2-hour laboratory period per week. Prerequisites: BI 112 and CH 111. (Fall, Spring, Summer)
Course Fees: \$60

BI 308. Marine Biology. (4 Credits)

A general survey of marine plants, invertebrates and vertebrates, the communities they form, and the physical and chemical factors which influence them. This Biology course is offered at the Dauphin Island Sea Lab of the Marine Environmental Sciences Consortium located on Dauphin Island, Alabama. Course fees and frequency of offering for each course are determined by the Consortium. Prerequisite: BI 112. (Summer)
Course Fees: \$60

BI 309. Biodiversity of Coastal Ecosystems. (4 Credits)

Study of the distribution of common plants and animals along the Gulf of Mexico. Students will learn how to identify organisms, understand the factors that influence their distribution, and quantify biodiversity at different spatial scales. This Biology course is offered at the Dauphin Island Sea Lab of the Marine Environmental Sciences Consortium located on Dauphin Island, Alabama. Course fees and frequency of offering for each course are determined by the Consortium. Prerequisites: BI 111 and 112. (Spring)
Course Fees: \$60

BI 310. Comparative Vertebrate Anatomy. (4 Credits)

Anatomy of selected vertebrates with emphasis on the functional aspects of homologous structures. Two class periods; two 2-hour laboratory periods per week. Prerequisite: BI 112. (Fall, Odd-numbered years)
Course Fees: \$60

BI 311. Animal Physiology. (4 Credits)

The basic physiological processes of animals. Three class periods; one 3-hour laboratory period per week. Prerequisites: BI 112; CH 112, 112L; BI 310 is recommended. (Spring)
Course Fees: \$60

BI 312. Evolution. (3 Credits)

Principles of evolution, including natural selection, speciation, adaptation, and phylogeny. Three class periods per week. Prerequisites: BI 112, BI 200W. (Fall, Spring)
Course Fees: \$60

BI 340. Invertebrate Zoology. (4 Credits)

The morphology, phylogeny, ecology, and adaptive diversity of invertebrates. Two class periods; two 2-hour laboratory periods per week. Prerequisite: BI 112. (Fall)
Course Fees: \$60

BI 341. Natural History of the Vertebrates. (4 Credits)

A survey of chordates, with emphasis on their phylogeny, classification, general characteristics, life histories, behavior, and distribution. Laboratory will include field work, collection, and identification of local vertebrates. Three class periods; one 3-hour laboratory period per week. Prerequisite: BI 112. (Spring)
Course Fees: \$60

BI 343. Marine Geology. (4 Credits)

Geology of the ocean basins with special emphasis on the continental shelves, their sediments, and the sedimentary processes at work there. Classroom lectures will be supplemented with hands on field exercises and case studies. This Biology course is offered at the Dauphin Island Sea Lab of the Marine Environmental Sciences Consortium located on Dauphin Island, Alabama. Course fees and frequency of offering for each course are determined by the Consortium. Prerequisites: ES 131, Junior or Senior level, and Instructor permit. (Spring, Summer, Summer on sufficient demand)
Course Fees: \$60

BI 345. Dolphins and Whales. (2 Credits)

Lectures, audiovisual presentations, and practical exercises to guide students to further study of the classification, anatomy, and ecology of the cetaceans. This Biology course is offered at the Dauphin Island Sea Lab of the Marine Environmental Sciences Consortium located on Dauphin Island, Alabama. Course fees and frequency of offering for each course are determined by the Consortium. Prerequisite: BI 310 or 408. (Summer)
Course Fees: \$60

BI 362. Non-Vascular Plants. (4 Credits)

A survey of algae, fungi, and bryophytes, with emphasis on reproduction, morphology, taxonomy, and evolution. Three class periods; one 3-hour laboratory period per week. Prerequisite: BI 112. (Spring)
Course Fees: \$60

BI 363. Vascular Plants. (4 Credits)

A survey of ferns, fern allies, gymnosperms, and flowering plants, with emphasis on reproduction, morphology, taxonomy, and evolution. Three class periods; one 2-hour laboratory period per week. Prerequisite: BI 112. (Fall)
Course Fees: \$60

BI 375. Cell Biology. (4 Credits)

Molecular biology of eukaryotic cells, with emphasis on evolutionary origins, metabolism and bioenergetics, membrane structure and function, and mechanisms of biomolecular production and transport. Three class periods; one 3-hour laboratory period per week. Prerequisites: BI 200W, BI 306, CH 112. (Fall, Spring)
Course Fees: \$60

BI 403. Marine Invertebrate Zoology. (4 Credits)

A study of the natural history, systematics and morphology of marine invertebrates from a variety of habitats in the Gulf of Mexico, oriented toward a field and laboratory approach. This Biology course is offered at the Dauphin Island Sea Lab of the Marine Environmental Sciences Consortium located on Dauphin Island, Alabama. Course fees and frequency of offering for each course are determined by the Consortium. Prerequisite: BI 112. (Summer)

BI 405. Advanced Marine Technical Methods. (4 Credits)

Overview of the instrumentation of marine science, including sampling theory, data processing and analysis, and field equipment maintenance and operation. Classroom lectures will be supplemented with hands on field exercises and case studies. This Biology course is offered at the Dauphin Island Sea Lab of the Marine Environmental Sciences Consortium located on Dauphin Island, Alabama. Course fees and frequency of offering for each course are determined by the Consortium. Prerequisite: Junior or Senior standing or instructor permission. (Spring) Course Fees: \$60

BI 406. Microbial Ecology and Evolution. (4 Credits)

The study of microbial diversity, ecology, and evolution in the context of microbial community structure and function. The study of microbial evolution in the context of speciation and genetic modes of adaptation. The use of modern computational tools to better understand microbial genomes and population diversity. Three class periods; one 2-hour laboratory per week. Prerequisite: BI 307, BI 306 recommended. (Spring, Even-numbered years) Course Fees: \$60

BI 407. Applied Bacteriology. (4 Credits)

Principles and procedures used in the study of the microbiology of diseases, water, foods, air, soil, sewage, and industrial processes. The bacteria will be emphasized. Three class periods; one 2-hour laboratory period per week. Prerequisite: BI 307. (Offered upon sufficient demand) Course Fees: \$60

BI 408. Marine Vertebrate Zoology. (4 Credits)

Biology of marine vertebrates emphasizing systematics, behavior, physiology, and ecology of local forms. This Biology course is offered at the Dauphin Island Sea Lab of the Marine Environmental Sciences Consortium located on Dauphin Island, Alabama. Course fees and frequency of offering for each course are determined by the Consortium. Prerequisite: BI 112. (Summer) Course Fees: \$60

BI 409. Immunology. (4 Credits)

The immune response, including the chemical nature of antigens and antibodies, the humoral and cellular response to antigens, and the cells of the immune system and their relationship to each other. Three class periods; one 2-hour laboratory period per week. Prerequisite: BI 307; CH 311/311L is recommended. (Odd-numbered years, Spring) Course Fees: \$60

BI 411. Coastal Wetlands Ecology. (4 Credits)

A study of the floral and faunal elements of various marsh communities. This Biology course is offered at the Dauphin Island Sea Lab of the Marine Environmental Sciences Consortium located on Dauphin Island, Alabama. Course fees and frequency of offering for each course are determined by the Consortium. (Summer) Course Fees: \$60

BI 412. Marine Ecology. (4 Credits)

Lecture and laboratory studies of bioenergetics, community structure, population dynamics, predation, competition and speciation in marine ecosystems. This Biology course is offered at the Dauphin Island Sea Lab of the Marine Environmental Sciences Consortium located on Dauphin Island, Alabama. Course fees and frequency of offering for each course are determined by the Consortium. Prerequisite: BI 112. (Summer) Course Fees: \$60

BI 413. Marine Behavioral Ecology. (4 Credits)

Principles of animal behavior as applied to marine organisms. This Biology course is offered at the Dauphin Island Sea Lab of the Marine Environmental Sciences Consortium located on Dauphin Island, Alabama. Course fees and frequency of offering for each course are determined by the Consortium. Prerequisite: BI 112; MA 345 recommended. (Summer) Course Fees: \$60

BI 415. Molecular Biology. (4 Credits)

The molecular basis for gene structure, function and regulation of gene expression. Emphasis on understanding current molecular biology methods, performing laboratory techniques, and data interpretations. Two class periods; two 2-hour laboratory periods per week. Prerequisites: BI 306 and BI 307. (Fall) Course Fees: \$60

BI 419. Tropical Ecology. (2 Credits)

Application of ecological principles to the tropical landscape. Topics include biodiversity, biogeography, and conservation of tropical ecosystems. Topics covered in this course will prepare students for BI 420 Field Experience. Prerequisites: BI 112 and permission of the instructor. (Spring, Even-numbered years) Course Fees: \$60

BI 420. Field Experience: Exploration of an Education Abroad Site. (2 Credits)

Students will gain experience in field research methodologies and organismal identification. Concepts learned in an associated lecture course (such as BI 419) will support the Field Experience course. Prerequisite: BI 419. (Summer, Even-numbered years) Course Fees: \$60

BI 421. Ecology. (4 Credits)

Relationships between organisms and their environment, including the structure and function of populations, communities, and ecosystems. Three class periods; one 3-hour laboratory period per week. Extended laboratory periods, overnight, or weekend field trips may be required. Prerequisite: BI 112, BI 200W and Junior or Senior standing. (Fall, Spring) Course Fees: \$60

BI 423. Aquatic Ecology. (4 Credits)

Freshwater habitats and their biotas. Qualitative and quantitative techniques for studying lakes, streams, and wetlands will be included. Three class periods; one 3-hour laboratory period per week. Extended laboratory periods, overnight, or weekend field trips may be required. Prerequisites: BI 112, BI 200W, CH 112, Junior or Senior standing. (Fall) Course Fees: \$60

BI 424. Marine Conservation Biology. (4 Credits)

An exploration of the major threats to marine biodiversity and potential solutions to these threats through practical application of current principles in marine conservation. This Biology course is offered at the Dauphin Island Sea Lab of the Marine Environmental Sciences Consortium located on Dauphin Island, Alabama. Course fees and frequency of offering for each course are determined by the Consortium. Prerequisites: BI 412 or BI 421 or BI 423 and Department Permit. (Summer) Course Fees: \$60

BI 425. Introduction to Oceanography. (4 Credits)

A general introduction to the physics, chemistry, geology and biology of the ocean. This Biology course is offered at the Dauphin Island Sea Lab of the Marine Environmental Sciences Consortium located on Dauphin Island, Alabama. Course fees and frequency of offering for each course are determined by the Consortium. Prerequisite: general biology, marine biology, or graduate standing. (Summer)

Course Fees: \$60

BI 426. Experimental Oceanography. (3 Credits)

Planning of field and laboratory data collection and experimentation in the local coastal environment. Course covers hypothesis development, experimental design, statistical analysis of data, data interpretation, scientific writing, and presentations. This Biology course is offered at the Dauphin Island Sea Lab of the Marine Environmental Sciences Consortium located on Dauphin Island, Alabama. Course fees and frequency of offering for each course are determined by the Consortium. Prerequisite: Junior or Senior or Instructor Permission. (Spring)

Course Fees: \$60

BI 429. Marine Botany. (4 Credits)

A general survey of marine algae (microscopic and macroscopic), as well as salt marsh vegetation mangroves, seagrasses and maritime forest communities. This Biology course is offered at the Dauphin Island Sea Lab of the Marine Environmental Sciences Consortium located on Dauphin Island, Alabama. Course fees and frequency of offering for each course are determined by the Consortium. Prerequisite: BI 112. (Summer)

Course Fees: \$60

BI 430. Research on Special Topics. (1-3 Credits)

This Biology course is offered at the Dauphin Island Sea Lab of the Marine Environmental Sciences Consortium located on Dauphin Island, Alabama. Course fees and frequency of offering for each course are determined by the Consortium. (Summer)

Course Fees: \$60

BI 433. Embryology. (4 Credits)

Principles of the development of animals including the molecular and cellular basis for differentiation, with selected vertebrates used to illustrate the development of tissues, organs, organ systems, and body form. Three class periods; one 2-hour laboratory period per week. Prerequisites: BI 112, and junior or senior standing. (Spring, Even-numbered years)

Course Fees: \$60

BI 435. Biostatistics. (3 Credits)

Data analysis for biological science majors. The course will utilize real data sets from biological science fields such as medicine, microbiology, and ecology to teach application of statistical analyses. This course will also be an introduction to statistical software(s) that students are likely to encounter in employment or research. Prerequisites: BI 200W, BI 306, and MA 112 or higher with a grade of C or higher. (Fall, Spring)

Course Fees: \$60

BI 440. Special Topics in Marine Science. (1-4 Credits)

This Biology course is offered at the Dauphin Island Sea Lab of the Marine Environmental Sciences Consortium located on Dauphin Island, Alabama. Course fees and frequency of offering for each course are determined by the Consortium. (Summer)

Course Fees: \$60

BI 441. Biochemistry. (3 Credits)

Survey of the chemical basis for: bioenergetics; biomolecular synthesis, structure, and function, including enzymology; and major pathways of cellular and organismal metabolism. Prerequisites: BI 306, CH 311, 311L. (Fall, Spring)

Course Fees: \$60

BI 451. Ornithology. (3 Credits)

Biology and classification of birds with emphasis on field identification of local species. Two class periods; one 3-hour laboratory period per week.

Prerequisite: BI 112. (Offered upon sufficient demand)

Course Fees: \$60

BI 452. Entomology. (3 Credits)

Morphology, physiology, and taxonomy of insects, including collection, preservation, and identification of those occurring in the local area. Two class periods; one 3-hour laboratory period per week. Prerequisite: BI 112. (Spring, Even-numbered years)

Course Fees: \$60

BI 453. Southeastern Fishes. (4 Credits)

Biology and taxonomy of Southeastern fishes, including field collections of local species. Three class periods; one 3-hour laboratory period per week. Prerequisite: BI 112. (Summer)

Course Fees: \$60

BI 455W. Paleobiology. (4 Credits)

Fundamental biological problems, including speciation, systematics, evolution, extinction, functional morphology, paleoecology, and biogeography will be addressed from the perspective of the fossil record. Three class periods; one 2-hour laboratory per week. Field trips and/or term projects may be required. Prerequisite: ES 132 or departmental approval. Also listed as ES 455W, but creditable only in the field for which registered. (Fall, even-numbered years)

Course Fees: \$60

BI 460. Plant Physiology. (4 Credits)

Physiological processes in plants and their relationship to structure and environment with emphasis on vascular plants. Three class periods; one 3-hour laboratory period per week. Prerequisites: BI 200W and BI 306. (Spring, Even-numbered years)

Course Fees: \$60

BI 463. Plant Taxonomy. (3 Credits)

Plant morphology and taxonomic methods for the identification, classification, nomenclature, and phylogeny of higher vascular plants and their distribution and ecology, utilizing all elements of local flora. Two class periods; one 3-hour laboratory period per week. Prerequisite: BI 112. (Spring)

Course Fees: \$60

BI 471. Parasitology. (4 Credits)

Morphology, taxonomy, life history, and ecology of parasites of humans and other animals. Three class periods; one 2-hour laboratory period per week. Prerequisite: BI 112, and junior or senior standing recommended. (Spring, odd-numbered years).

Course Fees: \$60

BI 472. Histology. (4 Credits)

Animal tissues and a survey of the microscopic structure of the various organs of higher vertebrates. Three class periods; one 2-hour laboratory period per week. Prerequisites: BI 112 with a minimum grade of C and Junior or Senior standing. (Fall, Even-numbered years)

Course Fees: \$60

BI 480. Pre-Health Professions Internship. (1 Credit)

Designed to provide pre-health professions (pre-medicine, pre-dentistry, pre-optometry, pre-pharmacy, pre-physical therapy, pre-occupational, pre-podiatry, and pre-veterinary) students direct contact with the health professions and the variety of aspects of health care delivery through supervised observation and instruction at an approved area hospital and/or private practice. Open to junior and senior pre-health professions students with a GPA not less than 3.0 and with the approval of the pre-health professions advisor. Not applicable for credit toward a major or minor in biology; may be used as a general elective. Also listed as CH 480 but creditable only in the field for which registered. International students must receive approval from the Office of International Affairs prior to course registration. (Fall, Spring)

Course Fees: \$60

BI 495. Research/Internship. (1-4 Credits)

Independent research or internship on individual projects under faculty supervision for selected biology majors. Scheduled work and conferences require a minimum average of four hours per week per credit hour. Research or internship may be off-campus at a preapproved site with credit depending on the scope of the project. May be repeated for a maximum of four credit hours. International students must receive approval from the Office of International Affairs prior to course registration. Prerequisite: departmental approval. (Fall, Spring, Summer)

Course Fees: \$60

BI 498. Senior Assessment Seminar. (1 Credit)

Review of the major subject areas of biology, preparation of a professional portfolio, participation in departmental assessment, and completion of a comprehensive examination for the major. Prerequisites: Biology major and senior standing. Corequisite: EXIT 000. (Fall, Spring)

Course Fees: \$60

BI 499. Special Topics in Biology. (1-4 Credits)

A detailed study of a particular topic of special interest. Topics will vary but will be listed in the schedule of classes when offered, and on the students' transcripts. Prerequisite: departmental approval. (Offered on sufficient demand)

Course Fees: \$60