

## GENERAL BIOLOGY (GBIO & BIOL)

**106. Introduction to Biological Principles I.** Credit 3 hours. A survey of the fundamental principles and concepts of biology including biochemistry, cell biology, metabolism, photosynthesis, cell division, reproduction, genetics, molecular biology, development, evolution, and ecology. This would be the first course in a sequence which satisfies the General Education Sequence requirement in the Natural Sciences. Three hours of lecture per week. Persons majoring in Biology may not use this course to fulfill their major requirements. However, it may be used to fulfill an elective requirement and in calculating cumulative averages.

**107. Introduction to Biological Principles II.** Credit 3 hours. Prerequisites: GBIO 106 [111] or permission of the Department Head. A course which relates to the broad biological principles covered in GBIO 106 to specific groups of organisms. Emphasis will be placed on taxonomy, diversity, systems and architecture of these organisms. Three hours of lecture per week. Persons majoring in Biology may not use this course to fulfill their major requirements. However, it may be used to fulfill an elective requirement and in calculating cumulative averages.

**108. Human Reproductive Biology.** Credit 3 hours. Structure, function, coordination and control of the human reproductive organ system. Human heredity, development, birth and sexual differentiation. Biological aspects of sexual abnormalities, and venereal diseases. No credit awarded towards Biology major. This course may not be used to satisfy the General Education sequence requirement in the natural sciences.

**151. General Biology I.** Credit 3 hours. Prerequisites: Must be eligible to enroll in ENGL 101 and MATH 155 or 161. Principles of biology from the cellular level including biochemistry, cell biology, metabolism, photosynthesis, molecular biology, and genetics. This course is designed for students planning to major in biology or related discipline. Three hours lecture per week.

**151H. General Biology I Honors.** Credit 3 hours. Prerequisites: Must be eligible to enroll in ENGL 101, and authorization by the Director of the Honors Program. Principles of biology from the cellular level including biochemistry, cell biology, metabolism, photosynthesis, molecular biology, and genetics. This course is designed for students planning to major in biology or related disciplines. Three hours lecture per week.

**152. General Biology Laboratory I.** Credit 1 hour. Prerequisite: Registration in or prior credit for GBIO 106 or GBIO 151. Laboratory exercises for studying the principles of biology from the cellular level including biochemistry, cell biology, molecular biology, and genetics. Two hours of laboratory per week.

**153. General Biology II.** Credit 3 hours. Prerequisite: Completion of GBIO 151 with a "C" or better. A systematic study of the structure, function, evolution, ecology and relationships of organisms including viruses, bacteria, protists, fungi, plants, and animals. This course is designed for students planning to major in biology or related disciplines. Three hours lecture per week.

**153H. General Biology II Honors.** Credit 3 hours. Prerequisite: Completion of GBIO 151H and authorization by the Director of the Honors Program. A systematic study of the structure, function, evolution, ecology and relationships of organisms including viruses, bacteria, protists, fungi, plants, and animals. This course is designed for students planning to major in biology or related disciplines. Three hours lecture per week.

**154. General Biology Laboratory II.** Credit 1 hour. Prerequisite: Registration in or prior credit for GBIO 107 or GBIO 153. Laboratory exercises for systematically studying the structure, function, evolution, ecology, and relationships of organisms including protists, fungi, plants and animals. Two hours of laboratory per week.

**200. Cell Biology.** Credit 3 hours. Prerequisites: GBIO 151 and 153, MATH 155 or 161 or 165 or 200, and CHEM 121, all with a grade of "C" or better, or permission of the department head. A basic course emphasizing the study of the energetics of biological systems, including the manner in which cells obtain and expend energy: the synthesis and degradation of macromolecules with emphasis on proteins and nucleic acids. Three hours of lecture per week.

**203. Selected Topics in Biology.** Variable credit 1-4 hours. Prerequisite: Permission of the Department Head. Selected topics in biology that are new or unique and are not covered in existing courses. May be repeated more than once if different topics are studied up to a maximum of 4 credit hours. This course may not be used by biology majors as a concentration elective; it may be used as a general elective.

**241. The Profession of Biology or Getting What You Came For.** Credit 1 hour. Prerequisite: Major in Biology and credits for GBIO 151, 153 and BIOL 152. An Internet-based course designed to guide students in making appropriate and informed career plans in the biological sciences. Two hour of Internet learning per week. The course is graded pass/fail.

**281. Environmental Awareness.** Credit 3 hours. Prerequisite: GBIO 153 and BIOL 154 or equivalent. A broad spectrum study of the ecological problems of our society. Three hours of lecture per week.

**312. Genetics.** Credit 3 hours. Prerequisite: GBIO 200 or permission of the Department Head. Recommend: Completion of Math 161 or 164 and 162 and one course of Organic Chemistry. A study of fundamental hereditary mechanisms and relationships. Emphasis is placed on nucleic acids and the molecular and cytological roles by which genes are distributed and expressed.

**314. Genetics Laboratory.** Credit 2 hours. Prerequisite: Registration in or prior credit for General Biology 312. A series of experiments designed to illustrate the principles of genetics. Four hours of laboratory per week.

**341. Professional Aspects of Biology.** Credit 1 hour. Prerequisite, Major in Biology, Junior status or permission of Department Head. An introduction to learning in biological sciences beyond the usual classroom or laboratory setting. Specific sections may allow students to gain experience in conducting research in designated specialties or focus on aspects of the philosophy, ethics, and history of scientific research. May be repeated for up to two credits. Two hours of field learning per week.

**377. Applied Biostatistics.** Credit 4 hours. Prerequisite: Mathematics 161 or consent of the Department Head. Basic concepts of biostatistics and sampling strategy; measures of central tendency and dispersion; Z, t, chi-square, and F distributions; test of hypothesis, error rates, and maximizing power; analysis of variance and regression. Strong emphasis on, and many examples of, field and laboratory oriented biological research problems. Three hours of lecture and two hours of laboratory per week.

**395. General Ecology.** Credit 3 hours. Prerequisite: GBIO 153, BIOL 154, or permission of the Department Head. Biology majors must additionally be concurrently registered in GBIO 397. The biology of ecosystems: energy, patterns of ecosystems, and populations, interspecies interactions, diversity and development. Three hours of lecture per week.

**397. General Ecology Laboratory.** Credit 2 hours. Prerequisite: Registration in or prior credit for GBIO 395. A series of activities and exercises designed to illustrate ecological concepts and to introduce students to ecology as a scientific discipline. The course will include class excursions to natural habitats both on and off campus. Four hours of laboratory per week.

**404/504. Ecological Methods.** Credit 3 hours. Prerequisite: GBIO 377 and GBIO 395, or permission of the Department Head. An introduction to exploratory and experimental ecology with an emphasis on experimental design, sampling strategy, ecological indices, population dynamics, and simulation modeling. Two hours of lecture and two hours of laboratory per week.

**405/505. Evolutionary Biology.** Credit 4 hours. Prerequisite: GBIO 312, or permission of the Department Head. Knowledge of evolutionary concepts is fundamental to the understanding of biology. The theory of evolution unifies all of the disparate disciplines included within the life sciences. Microevolution explores processes occurring at or below the level of species, including mechanisms of inheritance, reproductive isolation, and speciation. Macroevolutionary concepts operating above the species level include palaeontology, biogeography, systematics, phylogeny, and an understanding of human origins. Four hours of lecture per week.

**406/506. Wetland Ecology.** Credit 4 hours. Prerequisite: GBIO 153, BIOL 154, and Junior standing, or permission of the Department Head. A study of wetland ecosystems considering productivity and salinity variations with an emphasis on the interface of aquatic and terrestrial environments. Two hours of lecture and four hours of laboratory per week.

**407/507. Forensic Biology.** Credit 4 hours. Prerequisite: GBIO 151 and GBIO 153, or permission of the department Head. An introduction to the use of biological information in civil and criminal in civil and criminal investigations of deceased humans and wildlife. Topics will include basic principles of human decomposition, forensic anthropology, botany, entomology, odontology, and pathology. Laboratory component will include mock crime scene scenarios, emphasizing methods and procedures for recovery of crime scene evidence, forensic entomology, and decompositions rates. Three hours of lecture and three hours of laboratory per week.

**409. Internship.** Credit 1-3 hours. Prerequisites: Junior/Senior standing and permission of the Department Head. This course is designed to give students practical experience working with professionals in their chosen field. The student is responsible for finding a sponsoring professor and a professional with whom to work. Students earn one credit for 3 hours internship per week averaged over the term, up to a maximum of 3 credits for 9 averaged hours per week. May be repeated more than once for up to a maximum of 3 credit hours. Means of evaluation is determined by the sponsoring professor and the professional.

**418/518. Community Ecology.** Credit 4 hours. Prerequisite: GBIO 395. The study of ecological communities and the interactions of species that co-occur in time and space. The course will include the history of ideas, important examples, methods for data analysis, and casual factors associated with communities. Other topics covered will include succession, ordination, classification, competition, predation and mutualism. Three hours of lecture and three hours of laboratory per week.

**439/539. Introduction to Fresh Water and Estuarine Biology.** Credit 4 hours. Prerequisites: GBIO 153 and BIOL 154 or equivalent and Junior standing or consent of the Department Head. A consideration of fresh water lakes and streams and estuaries as biological habitats and of the organisms which inhabit these environments. Attention will be given to limnology and the ecology of these areas. Two hours of lecture and one four-hour laboratory per week.

**441. Biology Seminar.** Credit 1 hour. Prerequisite: Senior standing in Biology. A review of important concepts and current events in biological sciences. May be repeated for maximum credit of two hours. Additional hours will not be counted towards student's major or in the cumulative GPA average. Meets two hours per week.

**442/542. Marine Biology.** Credit 4 hours. Prerequisites: GBIO 153 and BIOL 154 or equivalent and Junior standing or consent of the Department Head. A consideration of the sea as a biological environment, of the organisms which inhabit the sea, and of the interrelationships existing between marine organisms and the physical, chemical, and biological aspects of their environments. Two hours of lecture and four hours of laboratory per week.

**450. Research Problems.** Credit 1-4 hours. Prerequisite: Junior standing in Biology. May be repeated more than once for up to a maximum of 4 credit hours. Additional hours will not be counted towards student's major or in the cumulative GPA average.

**481/581 Biogeography.** Credit 3 hours. Prerequisites: GBIO 153, BIOL 154, and Junior standing or permission of the Department Head. Examines the distribution of organisms. A study of the patterns and processes of organism distribution from theoretical and empirical perspectives. Three hours of lecture per week.

**485/585. Conservation Biology.** Credit 4 hours. Prerequisites: GBIO 153 and BIOL 154. Recommended: General Biology 312 and 395. An examination of threats and disruptions to biological systems from the level of populations through ecosystems to global systems. Emphasis on basic principles of ecology, evolution, and genetics as they apply to conservation theory and practice. Consideration will also be given to social, economic, and political aspects of biodiversity conservation and the role of various governmental and non-governmental organizations and research institutions. Three hours of lecture and three hours of laboratory per week.

**492/592. History of Biology.** Credit 3 hours. Prerequisite: GBIO 153, BIOL 154, and Junior Standing, or permission of the Department Head. A general survey of the historical development theories of biological sciences from early man to the present.

**493/593. Special Topics in Biology.** Credit 2-4 hours. Selected topics in Biology that are new or unique and are not covered in existing courses. This course may be repeated for credit if different topics are studied.

**495/595. Biological Electron Microscopy.** Credit 4 hours. Prerequisite: Junior standing and consent of the Department Head. Methods of studying biological material with transmission electron microscopes; fixation, ultramicrotomy and cytochemistry; replica and shadowing; and other biological related procedures. Two hours of lecture and four hours of laboratory per week.

**498/598. Biological Science for Teachers.** Credit 3 hours. Prerequisites: GBIO 151, GBIO 153, CHEM 121, and CHEM 122. A capstone course designed for teacher candidates who will be teaching biology at the secondary level. Content includes current issues and research in science and pedagogy that focuses on the development, delivery and assessment of science knowledge in a secondary classroom based on national and state teaching standards. This course is used for the degree requirements in the Biology Education Concentration, but cannot be used for degree requirements in other concentrations in Biology. Six hours of lecture/laboratory per week, including forty hours of participation in secondary science classroom teaching and/or tutoring.

**609. Estuarine Ecology.** Credit 4 hours. A study of the estuary as an ecosystem with emphasis on the recent scientific literature on estuaries. Field studies on the Lake Maurepas/Lake Pontchartrain estuary. Two hours of lecture and four hours of laboratory per week.

**610. Biostatistics.** Credit 4 hours. Prerequisites: Math 161 or permission of the Department Head. An introductory course in the concept of biostatistics and sampling strategy. Topics covered include measures of central tendency and dispersion; Z, t, chi-square, and F distributions; experimental design, partitioning of variance, test of hypotheses, and maximizing power; analysis of variance and regression. Emphasis on field and laboratory research problems. Three hours of lecture and two hours of laboratory per week.

**611. Advanced Biostatistics.** Credit 4 hours. Prerequisites: GBIO 377 or 610 or permission of the Department Head. An advanced course in biostatistics that applies concepts, terminology, and notation from basic methods course(s) to advanced statistical techniques. Students will learn the major applications of experimental design, treatment arrangements analysis of covariance multiple regression, factor analysis, discriminant analysis, cluster analysis, and system modeling. Additional concepts will be developed such as blocking, covariables, nesting, pseudoreplication, confounding, repeated measures, types of sums of squares, and optimization. Three hours of lecture and two hours of laboratory per week.

**612. Limnological Methods.** Credit 3 hours. Prerequisites: GBIO 153 and BIOL 154 or equivalent, and Chemistry 122/124, permission of the Department Head. A course designed to acquaint the student with the methods and techniques for the collection and analysis of aquatic and microbiological samples. One hour of lecture and three hours of laboratory per week.

**615. Systematics.** Credit 3 hours. Prerequisites: Must be admitted to Master of Science Program, or permission of the Department Head. Studies in philosophy, theory, and methods employed in studying biodiversity. Phylogenetics is emphasized but alternatives are examined. Extensive computer time is required for the course. Three hours of lecture per week.

**616. Historical Ecology.** Credit 3 hours. Prerequisites: Graduate standing in biological sciences or permission of the Department Head. Currently active behavioral and ecological processes and systems all have a historical component. The historical component obfuscates the study of these processes and systems. This course examines the problem of history in studying contemporary processes and shows how to identify history by several methods. Three hours of lecture per week.

**652. Molecular Biology.** Credit 4 hours. Prerequisites: One year of organic chemistry, General Biology 200 and 312. A study of recent techniques and findings in the field of molecular biology. Practical experience is emphasized. Three hours of lecture and two hours of laboratory per week.

**655. Island Ecology.** Credit 3 hours. A study of oceanic islands as natural laboratories for ecology and evolution. Topics will include the relationships of plants and animals with their environment on continental and volcanic islands and the biological characteristics of species that permit or constrain colonization of islands. Establishment, adaptation, speciation, and extinction on islands are examined. Also included will be a discussion of biogeographic principles and taxonomic patterns of island biota. Three hours lecture per week.

**660. Graduate Research Problems.** Credit 1-2 hours per semester. Maximum credit two hours for thesis students. Additional hours will be graded on "Pass/Fail" basis and will not be counted toward student's major or in the cumulative GPA average. This course cannot be used for credit in the non-thesis option.

**661. Non-Thesis Graduate Research Problems.** Credit 1-4 hours. Research project for non-thesis graduate students. This course is required for all non-thesis graduate students. The course may be taken for variable credit in different semesters, but must be taken until the required four credits hours are earned. Requires prior approval of the Non-Thesis Research Agreement Form by the student's Graduate Faculty advisor and the Non-Thesis Committee.

**690. Special Topics in Biology.** Credit variable, 2-4 hours. Selected topics in Biology that are new or unique and are not covered in existing courses. This course may be repeated for credit if different topics are studied.

**691. Graduate Seminar.** Credit 1 hour. May be repeated for maximum credit of four hours. Additional hours will not be counted toward student's major or in the cumulative GPA average. One-two hours of seminar per week.

**770. Thesis.** Credit 1-6 hours each semester, with 6 hours needed for graduation. The student must enroll in the thesis course each semester the thesis is in progress. The thesis is graded Pass-Fail.