BIOL 1100
Organisms and Evolution
001 Tara Harmer  MWF  09:55AM-11:10AM
002 Staff  MW  03:35PM-05:25PM
003 David Burleigh  MWF  02:10PM-03:25PM
004 Staff  TR 12:30PM-02:20PM
005 Daniel Hernandez  MWF  11:20AM-12:35PM
Fall 2006

Objectives: This is the first of two biology core courses. Lectures will center on the following topics: theories of evolution and sources of variability; the fossil record; origin of life; a phylogenetic survey of organisms (from bacteria to higher vertebrates) and their anatomical, physiological, ecological, developmental, and behavioral adaptations.

Laboratory/Field Experience: BIOL 1105 Organisms and Evolution Lab is a required corequisite.

Readings: The class textbooks will be Biology 6th edition by Campbell Reece and Mitchell.

Evaluation: Student's performance will be determined by a series of in-class exams and quizzes. A separate laboratory grade that will be based on lab reports and lab practical exams will be given for BIOL 1105.
Objectives: Corequisite to BIOL 1100 (Organisms and Evolution), weekly exercises aim to illustrate and amplify the lecture material in an investigatory format as much as possible, so that students can be introduced to a scientist's attitude toward hypothesis testing, data interpretation and report writing.

Course Content: Individual exercises vary from year to year but usually include: (1) examining and interpreting fossils, (2) quantitatively measuring the range of variation of some species characteristics, (3) modeling the process of natural selection, (4) observing and asking questions about live specimens representing phyla/divisions of all six kingdoms, noting both their unities and diversities, (5) making a field survey of botanical species, (6) dissecting some preserved animal specimens to compare their digestive systems, and (7) measuring thermoregulatory capabilities in some live vertebrates.

Prerequisites: BIOL 1100 is a corequisite

Class Format: Lab sections of roughly 20 students

Readings: A manual is available in the bookstore.

Evaluation: In all sections at least three formal reports will be graded. There is a lab practical at the end of the term.
BIOL 1180-001
Functional Human Anatomy
Staff
TR  02:30PM-04:20PM
Fall 2006

Objectives: The course surveys the basic anatomy and physiology of the human body in order that students requiring a foundation in human biology are prepared for further coursework in related fields outside of core biology

Course Content: Students will learn the basic anatomy and physiology of the eleven human body organ systems, their interrelationships and their path physiologies, in order that they acquire a sound survey of how the human organism functions.

Prerequisites: High school biology and chemistry

Attendance: Mandatory


Evaluation: Chapter tests, attendance and participation. Tests are emphasized. Chapter tests are given in lieu of a midterm or final.
BIOL 1200-001
Cells & Molecules
Staff
MWF 02:10PM-03:25PM
Fall 2006

Objectives: Second half of year course in General Biology for science and non-science majors.

Course Content: Biological Molecules, Cell Structure and Function, Metabolism, General and Molecular Genetics

Prerequisites: BIOL 1100 (Organisms & Evolution), CHEM I (CHEM 2100) and CHEM II - 2120 (can be taken concurrently)

Attendance: Required

Class Format: Lecture

Readings: Text: Biology (5th edition) Campbell

Laboratory/Field Experience: Weekly Laboratory Required. (BIOL 1205)

Evaluation: 3 Major Tests, Cumulative Final and Quizzes
BIOL 1205
Cells & Molecules Lab
Staff
001 M 11:20AM-02:00PM
Staff
002 W 11:25AM-02:00PM
Fall 2006

Objectives: Laboratory component of cells and molecules course.

Course Content: Exercises exploring biological molecule cells structure and function, metabolism and enzyme activity.

Prerequisites: BIOL 1100 (Organisms and Evolution) with a grade of “C” or better CHEM I 2100, CHEM II 2120 can be taken concurrently.

Attendance: Required

Class Format: Laboratory

Readings: Cells and Molecules Laboratory manual and Biology 5th edition, Campbell

Papers/Projects: Formal laboratory reports on two or three exercises.

Evaluation: Exercises, laboratory reports, laboratory final, and participation in the lab.
Objectives: A lecture-discussion course introducing the basic principles of ecology.

Course Content: This course is designed for students who have completed one year of basic biology (Organisms & Evolution and Cells & Molecules or their equivalents), and considers biological organization at the organismal population, community, and ecosystem levels. Topics to be discussed will include interactions of physical and biological factors with the organism, energy flow, nutrient cycles, population structure and growth and concepts of community ecology. In addition to presenting the basic principles of ecology, lectures will also consider current applications of ecological theory (e.g., biodiversity, conservation biology).

Prerequisites: Organism and Evolution and Cell and Molecules. Not open to students who have taken ENVL 2200.

Attendance: Mandatory

Class Format: Lecture/Discussion

Reading: Krebs, Ecology: The Experimental Analysis of Distribution and Abundance; and Primer of Population Biology (Wilson and Basser).

Evaluation: Assessment based on class participation, written homework exercises, and performance on tests. This course serves as Plant course for Biology Majors.
BIOL 2110
Genetics
Ekaterina Sedia
001 MWF 9:55AM-11:10AM
Tara Harmer
002 MWF 11:45PM- 02:00PM
Fall 2006

Objectives: This is the 3rd core course required of all biology majors. Goal is mastery of basic Mendelian and molecular genetics.

Course Content: Mendelian and molecular Genetics with examples from bacteria, insects, fungi, plants, and humans.

Prerequisites: BIOL 1100 and BIOL 1105; BIOL 1200, and 1205, CHEM 2110 and CHEM 2115, CHEM 2120 and CHEM 2125, and Math 1100.

Attendance: Highly Recommended

Class Format: Lecture/Discussion/Problems

Laboratory/Field Experience: Co-Requisite: BIOL 2115, Genetics Laboratory.

Readings: Textbook to be announced

Evaluation: Lab grade from BIOL 2115 25%, Lecture Homework, Quizzes and Exams 75%.
BIOL 2115
Genetics Lab
Karen York
001 T 08:30 AM-11:15AM
Ronald Hutchison
002 M 02:10PM-04:50PM
Ronald Hutchison
003 W 02:10PM-04:50AM
Peter Straub
004 R 02:25PM-05:10PM
Fall 2006

Objectives: Hands-on experience in genetics.

Course Content: Problem solving, laboratory exercises using Drosophila (Fruit Flies), bacteria and man. Recombinant DNA exercises.

Prerequisites: BIOL 1200 (Cells & Molecules) and Corequisite BIOL 2110 (Genetics Lecture).

Attendance: Required.

Class Format: Laboratory.

Readings: Lab Manual

Papers/Projects: Lab reports and quizzes; Problems in Lab manual.

Evaluation: Attendance and participation, lab report, quizzes, problems, and lab practical exam. Final grade is submitted to lecture (BIOL 2100) instructor, and comprises 25% of lecture grade.
Objectives: This is a general course in which we explore several aspects of plant science applicable to all plants: cell structure and function; whole plant anatomy, some physiology, and development; reproduction and life cycles, plant ecology, and evolution. This course thus stresses how plants grow and why they are unique, rather than how plants are identified. If you want to key out the local flora, consider taking Field Botany, Marine Plants or Dendrology.

Prerequisites: BIOL 1200-1205

Attendance: Attendance and participation in lab work is mandatory.

Laboratory/Field Experience: We will have three lecture meetings and lab weekly. Grade will be based on lab work, 2 hour exams, and the final exam.
Objectives: This course explores the various systems of the body and their role in maintaining normal life. Emphasis is on human physiology, but we do study other vertebrates in laboratory. The cardiovascular, nervous, musculoskeletal, respiratory, digestive, urinary, reproductive, and endocrine systems are examined from their cellular makeup to their interactions with each other. Practical and clinical aspects are presented to help underscore the relevance of this subject. Each cell, tissue, organ, and system must be working properly and in harmony with each other for an organism to survive.

The laboratory portion of the course is designed to illustrate many of the physiologic principles learned in the classroom. Some experiments may involve the use of live animals. Federal laboratory guidelines are closely followed in the handling, anesthesia, and euthanasia of all animals. In addition, instruction will be given on the proper handling of animals in the laboratory. Generally labs cannot be made up and successful completion of the laboratory portion of the course is necessary to receive a passing grade. If laboratory attendance will be a problem or if there is any objection to the use of laboratory animals this course should not be taken.

Prerequisites: BIOL 1100/1105; BIOL 1200/1205; CHEM 2110/2115 and CHEM 2120/2125. Although not required, an anatomy course is very strongly recommended. It is difficult to separate structure (anatomy) from function (physiology).

Objectives: The purpose of this course is to provide an introduction to the gross structure of the human body. Specific objectives: To correlate modern information from cell biology and microanatomy with gross anatomy to provide transition from introductory courses in biology. To understand the basic systems of the body in terms of their structure and interconnections. To learn the “language” of anatomy. To apply knowledge gained of the structural framework of the human body so that learning will be more meaningful in terms of preparing for allied health fields.

Course Content: This course is a comprehensive introduction to the developmental and gross anatomy of the human body that is designed for students planning to continue in the allied health fields. Each section of the course will be devoted to an organ system, although the integration and interrelationships of these systems will be stressed. The required laboratory will include dissections of the cat and other specimens to illustrate structures discussed in class. Histological demonstrations will provide insight on the underlying form of gross anatomical structures. Dissections along with class lecture will form the basis for understanding the basic anatomical structures of humans.

Prerequisites: BIOL 1100, 1200 or equivalent, CHEM 2110 or equivalent

Attendance: Expected at all sessions. Required in laboratory.

Class Format: Lecture, discussions, and review sessions.

Laboratory: Required dissections of cats and other animal structures/organs.

Readings: Human Anatomy, Van de Graaff (Required), Laboratory Book (Required) and Supplemental coloring books, atlases, etc. (Recommended)

Requirements: A student must make a “C” or better in this course to move on to the Physical Therapy program. Keep up with the assigned readings, complete all assigned homework on time, Have a grade for all quizzes, lab practical exams administered. Attendance in laboratory and Complete all assigned laboratory dissections and work sheets.

Evaluation: Four examinations based on readings and the lectures, Announced and unannounced quizzes during lecture. Occasional homework; Laboratory practical tests; Laboratory quizzes; laboratory dissections/homework will be evaluated and Laboratory attendance. Lecture - Exams and quizzes 75%, Lab - Practicals, dissections, and quizzes 25%. Although it may appear that one could choose not to do the labs, the student MUST complete all lab assignments, practicals, and quizzes to pass the course. Failure to participate in laboratory work will result in an “F” for the course; cheating and plagiarism will result in an “F” for the course.
Biol 2185
Human Anatomy Lab
Staff
001 F 11:30AM-11:10AM
002 F 02:10PM-04:50PM
Fall 2006

Objectives: The purpose of this laboratory is to provide an introduction to the gross structure of the human body in combination with BIOL 2180. Specific objectives: To correlate modern information from cell biology and microanatomy with gross anatomy to provide transition from introductory courses in biology. To understand the basic systems of the body in terms of their structure and interconnections. To learn the “language” of anatomy. To apply knowledge gained of the structural framework of the human body so that learning will be more meaningful in terms of preparing for allied health fields.

Course Content: This required laboratory course is designed to accompany BIOL 2180 lecture. The laboratory includes dissections of the cat and other specimens to illustrate specimens discussed in BIOL 2180. Histological specimens will also be examined. See course description for BIOL 2180 for more information. Students MUST enroll and complete BIOL 2180 and BIOL 2185 in the same semester.

Co-requisite: BIOL 2180 must be completed in the same semester

Prerequisite: BIOL 1100, 1200 or equivalent, CHEM 2110 or equivalent.

Attendance: Required as part of the grade of this course.

Class Format: Dissections, examination of prosecution and histological mounts

Readings: Human Anatomy, Van de Graaff (Required); Laboratory Book (Required); Supplemental coloring books, and atlases, etc. (Recommended)

Requirements: Attendance and participation, keep up with the assigned readings, complete all assigned dissections on time, and have a grade for all quizzes and practical exams administered.

Evaluation: Laboratory practical tests, announced and unannounced quizzes, evaluation of dissections homework and laboratory attendance & participation. A grade of “P” or “F” can be earned for this laboratory. The actual number grade earned in the above activities will comprise 25% of your BIOL 2180 grade. Although it may appear that one could choose not to do the labs, the student MUST complete all lab assignments, practical exams, and quizzes to pass the course. Failure to participate in laboratory work will result in an “F” for the course. Failure to complete BIOL 2185 in the same semester will result in an “F” for BIOL 2180. Cheating and plagiarism will result in an “F” for the course.
BIOL 3150
Comparative Anatomy
Roger Wood
001 MWF 11:20AM-12:35PM; M 02:10PM-04:50PM
002 MWF 11:20AM-12:35PM; R 02:10PM-04:50PM
Fall 2006

**Objectives:** A survey of the evolution of vertebrate Structures and their functional and their functional significance. Strong emphasis on lab work. Particularly helpful for pre-med, pre-dental and pre-veterinary student.

**Prerequisites:** BIOL 1100
BIOL 3170-001
Microbiology
Karen York
MWF 12:45PM-02:00PM; R 08:30AM-11:10PM
Fall 2006

Objectives: Introduction to General Biology of Microorganism

Course Content: Structures of prokaryotic and eukaryotic cells, energy metabolism, growth and microbial genetics, various aspects of applied microbiology such as antimicrobial interactions, microbial ecology, microbial diseases and immunology

Prerequisites: BIOL 2110 (Genetics)

Class Format: Lecture/Lab

Laboratory/Field Experience: Laboratory includes basic techniques for handling, isolating characterizing and counting Microorganism. Biotechnology laboratory exercises using bacteria. Includes identification of unknown bacteria.

Papers/Projects: Laboratory report on unknown bacteria

Evaluation: There will be three in-class exams including comprehensive final lab report. There will also be several announced quizzes; some of them take-home.
Course Content: This course covers generally the same material as BIOL 1200 (Cells & Molecules) but at somewhat greater depth. Topics include: cell structure and ultrastructure; evolution; Morphology and function of organelles; enzyme function and regulation; cell movement; the Central Dogma (transcription and translation) and its regulation; gene structure and replication and recombination; cell differentiation; cancer; and mechanisms of aging. The material covered in this course comprises some of the most exciting developments in modern biology, and includes the work of many recent Nobel Prize winners.

Prerequisites: BIOL 1200 and BIOL 2110. This is not a W2 (WAC) course, but some writing will be assigned.

Laboratory/Field Experience: This is not a laboratory course.
Objectives: An introductory course that focuses on the chemistry of living organisms. Topics include amino acids and proteins; enzyme catalysis and kinetics and metabolism which covers both anabolic and catabolic pathways. The mechanisms for regulation are addressed.

Prerequisites: CHEM 2120 and BIOL 1200.
OBJECTIVES AND COURSE CONTENT: A course designed to familiarize the student with aspects of the five extant classes of fishes, with emphasis on taxonomy, ecology, and behavior. Extensive identification of east coast U.S. freshwater and marine fishes in the laboratory sessions will familiarize the student with some of the local and more common species, with external fish anatomy, and with some of the pertinent literature in the field. Indoor laboratory work early in the semester will be supplemented by field trips later in the semester. Two reports are required: (1) One on the species collected on our trips and (2) One on a species or genus or family of your and instructor’s choice.

PREREQUISITES: BIOL 1100 and one BIOL field course or equivalent, or see instructor.

ATTENDANCE: Required and recorded for each meeting.

CLASS FORMAT: Standard faculty lecturing.

LABORATORY/FIELDEXPERIENCE: Laboratory exercises will be a major part of the course. Field trips are required to study local fishes in their natural habitats. Extensive identification in the laboratory of specimens collected, and of other species.

READINGS: To be assigned; two texts and two field guides required.

PAPERS/PROJECTS: Two thorough, well-organized, and well written reports are required.

EVALUATION: Based on a maximum possible total of 1,000 points, as follows: Lecture Test 1 = (200 points); Final Lecture Exam = (200 points); Laboratory practical exam = (200 points); Attendance, Attitude = (200 points); Report 1 = (100 points); Report 2 = (100 Points)
Objective: A project-based laboratory course with the goal of introducing the student to the research process and to teach biochemical laboratory methods.

Prerequisites: BIO 1200, CHEM 2120, and BIO/CHEM 3250.

Attendance: Mandatory.

Class Format: Two labs a week with no lecture.

Evaluation: Based on lab reports. A rough and final draft are required, and also quizzes.
BIOL 3426-001  
Freshwater Ecology  
Staff  
S  8:00AM-11:50AM  
Fall 2006

Objective: To provide a basic understanding of the physical, chemical, and biological factors that determine the structure and function of freshwater ecosystems, including lakes, ponds, rivers, streams, and wetlands.

Course Content: Topics presented in *Freshwater Ecology* include the physical structure of aquatic ecosystems (watersheds and stream and lake morphometry), basic ground-water and surface-water hydrology, the properties of water, light, and heat, water movements, sediments, and water chemistry, with emphasis on how these environmental factors influence aquatic and wetland organisms. The major groups of organisms studied include algae, zooplankton, macroinvertebrates, fish, and aquatic and wetland plants. The course addresses both basic and applied aspects of freshwater ecology.

Prerequisites: ENVL 2100 AND 2200 or BIOL 2100 or MARS 2201

Attendance: Students are expected to attend lectures and participate in classroom and field exercises. Make-up exams and make-up assignments are allowed only for valid reasons, such as a documented medical excuse, or with prior permission from the instructor.

Class Format: Each week, lectures are immediately followed by related classroom or field exercises that support the material presented in the lecture. The instructor provides prepared notes for all lectures. Laboratory/Field Experience: Lake Fred and Morsess Mill Stream provide the setting for the study of aquatic-plant zonation, attached and free-floating algae, near-shore and open-water zooplankton, fish communities, and stream hydrology. Campus wetlands provide an opportunity to study the relationship between wetland vegetation, soils, and hydrology. Classroom exercises address water chemistry, primary productivity, and fish and wetland plant identification. Students are expected to dress appropriately for field exercises and to be prepared to deal with insects, ticks, wet feet, and inclement weather.

Lab Manual: The instructor provides written laboratory directions for field and classroom exercises. Papers/Projects: Written reports are required for all field and classroom exercises. Reports are due two weeks after completing each exercise. All written assignments must be typed and, unless noted otherwise, all graphics must be computer generated.

Evaluation: Performance evaluations are based on two exams that cover both lecture and field/classroom activities and the assigned reports.
Objectives: Mostly, these courses develop competence in the use of a Research Library. Intended for juniors in the life sciences, they help students prepare for professional careers and to begin work on a senior project. The following sessions are planned for Spring, 2002, on alternate Mondays and Wednesdays starting in the second week of Spring classes.

Course Content: 1. Session in which Stockton faculty describe the kinds of research areas in which they have been active, and/or are willing to sponsor student projects. Students select a sponsor and a topic for library research. Also: diagnostic quiz in understanding graphs & charts, & reading comprehension. 2. Two sessions on library research methods. 3. Two tutorial sessions, with the faculty sponsor of the library research project. 4. Session on services provided by the Colleges career Planning Office, including the writing of a resume. 5. The course incorporates The opportunity for students to attend seminars offered as BIOL 4600 (biology senior).

Prerequisites: enrollment in BIOL 4600 (seminar) is possible and recommended

Attendance: Required.

Class Format: Classes, plus (requirement of opportunity for) personal assistance with library searching.

Readings: Three Articles or Book Chapters from the scientific literature.

Papers/Projects: 1. Reports on library research: annotated bibliography and three summaries of articles read; 2. Resume; and, 3. Possible use of skills center for practice.

Evaluation: Grading will be based on an exam (on library techniques) on the quality of the library research bibliography, on performance in the two tutorials on the three summaries, on the diagnostic quit, and on the care taken in producing you resume. The course carries one unit of credit.
Objec{tives}: To expose students to a variety of speakers presenting their research, in order to increase awareness of the diversity of the biological sciences, and of research, graduate, and professional opportunities available.

Course Content: Topics covered span the breadth of the biological sciences, from botany to zoology, from ecology to psychopharmacology, from molecular genetics to paleobiology.

Attendance: Attendance is required.

Class Format: Lecture/Seminar

Readings: None required.

Papers/Projects: Each student will prepare an abstract of one of the seminars presented during the semester (250 words).

Laboratory/Field Experience: Does not include lab work.

Evaluation: There are no grades assigned for Biology seminar. However, this course is required for graduation by Biology majors, and will not appear on the transcript unless the above requirements are met.