## BIOL (Biology)

### BIOL 0600 - Essentials of Anatomy and Physiology

**1 Credit**

This five-week, modular, online course prepares students for success in Human Anatomy & Physiology (BIOL 1070); Human Anatomy & Physiology 1 (BIOL 2201); and, Human Anatomy & Physiology 2 (BIOL 2202). The focus of this course is development of basic skills required for success in higher education: study skills, time management, basic math and language skills. Students learn the essential science background necessary to be successful in life science courses: basic concepts in Biology (biological terminology, cellular structure) and basic concepts in Chemistry (ions, chemical bonding, terminology, and chemical notation). Lecture: 3 hours

### BIOL 1000 - Cell Biology for Technology

**4 Credits**

This biology course is designed to introduce basic biological principles while specifically examining life processes at the cellular level. Topics include cell chemistry, the relationship between cell structure and function, metabolism, molecular genetics and cellular communication. Contemporary cell-related technology, as well as its impact and significance, is emphasized. (Prerequisites: ENGL 0890 or 0950 with a grade of C or better or Accuplacer exemption from Reading AND Students must also demonstrate competency in mathematics through required math placement testing: a Math Accuplacer score equivalent to the successful completion of pre-algebra OR successful completion of any of the following courses or their equivalent: MATH 0101, 1200, 1025, 1179, 2111, 2142, 2243 or 2362) Lecture: 3 hours, Lab: 3 hours - Lab Fee: $20

### BIOL 1001 - Introductory Biology: Organismal

**4 Credits**

This course is one part of a two-semester introduction to the fundamentals of biology intended for science majors. However, BIOL 1001 may be taken independently of BIOL 1002. The course investigates the diversity in form and function of the major groups of organisms through the presentation and discussion of biological processes and systems including anatomy, physiology, genetics, evolution, and ecology. (Prerequisites: ENGL 0890 or 0950 with a grade of C or better or Accuplacer exemption from Reading AND MATH 0099 with a grade of C or appropriate placement test score) Lecture: 3 hours, Lab: 2 hours - Lab Fee: $20

### BIOL 1002 - Introductory Biology: Cellular

**4 Credits**

This course is one part of a two-semester introduction to the fundamentals of biology intended for science majors. It may be taken independently of BIOL 1001. The course investigates biology at the cellular level through the presentation of such topics as: the chemistry of the cell, the structure and function of macromolecules and organelles, energy and cell metabolism, photosynthesis, genetics, cell reproduction and differentiation, DNA structure and synthesis, and gene expression. (Prerequisites: ENGL 0890 or 0950 with a grade of C or better or Accuplacer exemption from Reading AND MATH 0099 with a grade of C or appropriate placement test score) Lecture: 3 hours, Lab: 2 hours - Lab Fee: $20

### BIOL 1005 - Biology in the Modern World

**4 Credits**

This course investigates the basic biological principals needed to understand and make informed decision regarding vital biological issues in today's world; for example, global warming, obesity, biodiversity, cancer, race, genetic engineering, and human population growth. Note: This course is designed for non-science majors; not open to science majors. This class fulfills four credits of Math/Science General Education requirements. (Prerequisites: ENGL 0700 and MATH 0099 with grade of C or appropriate placement test score.) Lecture: 3 hours, Lab: 2 hours

### BIOL 1007 - Explorations in Biology

**4 Credits**

Targeted towards Non-Science majors, the course introduces students to core biological concepts and themes including: microorganisms, anatomy and physiology, cellular organization, evolution, and ecology. Using a broad, topical approach, students will gain a greater appreciation of the diversity in form and function of organisms. Linking lectures will tie major concepts together and enable students to apply this knowledge in a practical manner in regards to their health and the environment. Critical thinking in learning and application of principles acquired will be an integral part of this course. (Prerequisites: ENGL 0890 or 0950 with grade of C or better or ACCUPLACER exemption from reading and MATH 0099 with grade of C or appropriate placement test score) Lecture: 3 hours, Lab: 2 hours

### BIOL 1020 - Human Physiology

**4 Credits**

This course presents a study of the human organism, including basic chemical composition and function of the cell. The course stresses homeostatic control systems and coordinated body functions. (Prerequisite: BIOL 1010) Lecture: 3 hours, Lab: 3 hours - Lab Fee: $20
BIOL 1050 - Humans and the Environment  
(3 Credits)  
A study of our relation to the ecosystem, this course focuses on environmental issues such as energy supplies, energy alternatives, forms of pollution, food production, population growth and resources management. (Prerequisite: ENGL 0700 with grade of C or appropriate placement test score) Lecture: 3 hours

BIOL 1070 - Human Anatomy and Physiology  
(3 Credits)  
This course introduces students to the basic principles of anatomy and physiology necessary for a general understanding of the human body. The relationship between structure and function is emphasized. (Prerequisite: ENGL 0700 and MATH 0099 with grade of C or appropriate placement test score) Lecture: 3 hours

BIOL 1080 - Introduction to Clinical Procedures  
(3 Credits)  
Lectures provide an understanding of the theoretical basis and physiological implications of clinical procedures in the medical office and prepare students for further professional training. Laboratory experiences in vital signs, asepsis, sterilization, blood studies and urine studies supplement the lecture material. (Prerequisites: BIOL 1070 and ENGL 0700 with grade of C or appropriate placement test score and enrollment in the Medical Secretary/Assistant program). Lecture: 2 hours, Lab: 2 hours - Lab Fee: $20

BIOL 1110 - Introduction to Pharmacology  
(1 Credit)  
This course provides an introduction to basic pharmacology, terminology and mechanism of drug action. Use, adverse response, special cautions, and interactions of drugs commonly used in dental and medical practices are emphasized. (Prerequisites: BIOL 1070 OR 1020 and ENGL 0700 with grade of C or appropriate placement test score and enrollment in the Medical Secretary/Assistant program) Lecture: 1 hour

BIOL 1200 - The Human in Health & Disease  
(3 Credits)  
This course is designed to teach people more about themselves. Topics include cancers, birth defects, birth control, organ transplants, cloning, infectious diseases, heart disease, and diets. (Prerequisites: ENGL 0700 AND MATH 0099 with grade of C or appropriate placement test score) Lecture: 3 hours

BIOL 1300 - Orientation to Biotechnology  
(1 Credit)  
This course provides an overview of the history and fundamental principles necessary to understand the role of biotechnology in our society. Specific topics are selected to provide examples of applications, ethical considerations and career paths in the field of biotechnology. Students are also introduced to the pathway leading from research and development, to production of a biopharmaceutical product, including the regulatory considerations that are involved. (Prerequisites: ENGL 0890 or 0950 with grade of C or better or ACCUPLACER exemption from reading and MATH 0099 with grade of C or appropriate placement test score) Lecture: 1 hour

BIOL 1310 - Introduction to Biotechnology Laboratory Skills  
(3 Credits)  
This course provides an opportunity for students to learn laboratory skills that are fundamental to successful, efficient and safe practices in a biotechnology research, quality control or production laboratory setting. Students are introduced to methods of measurement, data collection and analysis, solution and media preparation, safe laboratory practices and the practical application of mathematics to these processes. In addition, students are introduced to Good Laboratory Practices (GLP), Good Manufacturing Practices (GMP) and related topics that emphasize the significance of maintaining quality in a biological research or production setting. (Prerequisites: MATH 0101 AND CHEM 1030 OR CHMT 1120, CHMT 1121 OR CHMT 8000 OR equivalent OR permission of instructor. Required reading level: Completion of ENGL 0890 or 0950 with grade of C or better or Accuplacer exemption from reading) Lecture: 1 hour, Lab: 3 hours - Lab Fee: $20

BIOL 2040 - Human Sexuality  
(3 Credits)  
This course offers an exploration of the physiological, psychological and cultural aspects of human sexuality. Topics include reproductive health, forms and evolution of sexual expression, psychosexual development and the role of sex in the individual's life as well as in society. (Prerequisite: ENGL 0700 with grade of C or appropriate placement test score) Lecture: 3 hours
BIOL 2090 - Genetics  
(3 Credits)  
This course covers basic concepts of inheritance, variation and evolution in plants and animals, including a survey of Mendelian, molecular, cellular and population genetics. (Prerequisite: MATH 1200 or 1179 AND ENGL 0890 or 0950 with a grade of C or better or Accuplacer exemption from Reading) Lecture: 3 hours

BIOL 2150 - Laboratory in Genetics  
(2 Credits)  
Selected aspects of genetics are demonstrated using bacteria, fungi, fruit flies and other organisms. Each student must design, carry out and present the result of a project. (Prerequisites: One year of biology and concurrent registration in BIOL 2090 and appropriate Math placement test score AND ENGL 0700 with grade of C or appropriate placement test score) Lab: 4 hours

BIOL 2201 - Human Anatomy & Physiology I  
(4 Credits)  
Human anatomy and physiology of the human body is taught in a two semester sequence, using a systems approach. The relationship between form and function is emphasized, both microscopically and gross, at each level of organization. This course provides basic anatomical terminology and homeostatic concepts beginning at the molecular level of organization and progressing through cell biology, histology, the integument, and skeletal, muscular and nervous systems. Prerequisites: (1) ENGL 0890 or 0950 with grade of C or better or Accuplacer exemption from reading, (2) MATH 0099 with grade of C or appropriate test score. BIOL 1002 strongly recommended. Lecture: 3 hours, Lab: 3 hours - Lab Fee: $20

BIOL 2202 - Human Anatomy & Physiology II  
(4 Credits)  
This course continues basic anatomical and homeostatic concepts beginning with the endocrine system, progressing though the cardiovascular and lymphatic systems, including immunity, the respiratory system, the digestive system and metabolism, the urinary system including acid/base and fluid/electrolyte balance, and reproductive systems. Prerequisite: BIOL 2201 with a grade of C or better. Lecture: 3 hours, Lab: 3 hours - Lab Fee: $20

BIOL 2210 - Introductory Microbiology  
(4 Credits)  
This course involves the study of microorganisms that cause diseases in humans. Topics included are prokaryotic and eukaryotic cell types, growth, control of growth, microbial metabolism, genetics, immunology and microorganisms of medical importance. (Prerequisites: BIOL 1010 and 1020 or BIOL 2201 and 2202) Lecture: 3 hours, Lab: 3 hours - Lab Fee: $20

BIOL 2220 - Introduction to Pathophysiology  
(3 Credits)  
The course begins by examining the disease process in general, from the etiology of disease at the cellular level to the physiologic changes that occur as the disease moves from incipient stage to full expression. The second half of the course examines the pathogenesis of specific diseases system by system. (Prerequisites: BIOL 1010 and 1020) Lecture: 3 hours

BIOL 2480 - General Microbiology  
(4 Credits)  
This course offers a look at microbes and particularly bacteria from a biochemical and molecular perspective. Emphasis is placed on microbial physiology and genetics with applications to biotechnology. (Prerequisites: One year of chemistry and one semester of biology AND ENGL 0700 AND MATH 0101 with grade of C or appropriate placement test score. Biotechnology Certificate program students can fulfill the prerequisites with CHMT 1121, BIOL 1000 and permission of instructor) Lecture: 2 hours, Lab: 4 hours - Lab Fee: $20

BIOL 2500 - Applications in Science and Math  
(1 Credit)  
This capstone course is intended for students in their final semester of the AS in Science program. It will allow students an opportunity to demonstrate an integration of knowledge and abilities acquired in previous science and mathematics courses with the added intent of having students develop new insights. Students will read selected articles, such as those that come from scientific journals, in a variety of fields and then have the opportunity to collaborate with their peers and hone writing, synthesis and presentation skills in a seminar setting. (Prerequisite: Successful completion of a minimum of 21 General Education credits and a minimum of 18 Science credits or permission of instructor - SEE DEPARTMENT CHAIRPERSON FOR PERMISSION OVERRIDE) Lecture: 2 hours