

# BIOLOGY



Biology is the science that studies the structure, functions, interactions, evolution and distribution of living organisms. Students completing this degree in biology will have a foundation in a wide variety of biological fields, including cell biology, genetics, microbiology, plant and animal systematics, physiology, ecology and evolution.

Common career opportunities with a Bachelor's degree in biology include: biochemist, cytologist, doctor, ecologist, food scientist, geneticist, teacher, professor, entomologist, environmental specialist, fisheries biologist, marina biologist, microbiologist, museum curator, museum technician, biotechnologist, forester, pathologist, pharmacologist, zoologist, science writer, biotechnology investment analyst. Note: Many of these careers require a Master's degree or higher to meet minimum job requirements.

Transfer requirements in Biology are available in the Counseling Department. In all cases, students should consult with a counselor for specific transfer requirements.

## Contact Information

### Science Division Chair

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## Associate Degrees

- Associate of Science in Biology for Transfer (AS-T) (<https://catalog.cos.edu/areas-study/biology/associate-science-biology-transfer-as-t/>)

For a complete list of courses and descriptions visit: COURSES (<https://catalog.cos.edu/course-descriptions/>)

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**BIOL 001 Principles of Biology 1** **5unit(s)**  
Hours: 3 Lecture/Discussion Hours:  
6 Lab

This first semester of a course sequence, intended for majors, covers: major biological principles and applications of prokaryotic and eukaryotic cell structure and function, biological molecules, homeostasis, cell reproduction and its controls, molecular genetics, classical/Mendelian genetics, cell metabolism including photosynthesis and respiration, and cellular communication. It includes a survey of the biology and diversity of organisms and examines the basic principles governing evolution of organisms and interactions between organisms and the environment. The course sequence emphasizes classification, structure and function of organisms, ecological principles, and mechanisms of evolution. The philosophy of science, methods of scientific inquiry and experimental design are foundational. (C-ID BIOL 135S includes BIOL 1 and BIOL 2)  
**Advisory on Recommended Preparation:** CHEM 001 or CHEM 020 or equivalent college course with a minimum grade of C.  
**Prerequisites:** MATH 230 or equivalent college course with a minimum grade of C.

**BIOL 002 Principles of Biology 2** **5unit(s)**  
Hours: 3 Lecture/Discussion Hours:  
6 Lab

This course is the second of a two-course, introductory sequence for biology majors. Topics include the taxonomy and systematics of organisms with an emphasis on prokaryotes, protists, fungi, algae and plants, the principles and governing dynamics of evolution, ecological principles, population genetics, and the structure, biochemistry and ecology of plants. Other topics include biotechnology, field ecology and microbiology. The philosophy of science, methods of scientific inquiry and experimental design are foundational. Field trip experiences are a component of this course. (C-ID BIOL 135S includes BIOL 1 and BIOL 2)  
**Advisory on Recommended Preparation:** CHEM 001 and CHEM 020 or equivalent college course with a minimum grade of C.  
**Prerequisites:** BIOL 001 or equivalent college course with a minimum grade of C.

**BIOL 020 Frontiers in Biology** **4unit(s)**  
Hours: 3 Lecture/Discussion Hours:  
3 Lab

A general principles course for transfer students who are not life-science majors. The principles of homeostasis, genetics, energy flow, evolution, reproduction and ecology will be used to explore contemporary topics in biology. Note: Some four-year institutions will not award credit for this class if it is taken after BIOL 001 (biology majors).

**BIOL 021 Plant Biology**

Hours: 2 Lecture/Discussion Hours:  
3 Lab

This is a general principles course in plant biology for the non-biology major. The principle topics included are general characteristics of plants, plant survey, methods of classification and nomenclature, plant structure and function, growth and development, reproduction and genetics, and ecology. This course is not open to students who have received credit in BIOL 002.

**BIOL 022 Animal Biology**

Hours: 2 Lecture/Discussion Hours:  
3 Lab

This is a general principles course in animal biology designed to help meet a laboratory requirement for transfer students who are not life science majors. The principles of the scientific method, evolution and adaptation, bioenergetics, homeostasis, genetics, and ecology are emphasized in class and field activities. It is not open to students who have received credit for BIOL 001.

**BIOL 025 Human Ecology**

Hours: 3 Lecture/Discussion

A survey of ecological principles and the historic and modern impact of human societies as agents of ecosystem modification. Topics include ecosystem structure and function. Also covered are modern human societies and the short-range and projected long-range results of their activities in such areas as population, food, and agriculture, the survival of plant and animal species, the use of energy and mineral resources, and the pollution of air, water and land are emphasized in classroom and field activities. Field trips are a required part of this course.

**BIOL 030 Human Anatomy**

Hours: 3 Lecture/Discussion Hours:  
3 Lab

BIOL 30 covers the structural organization of the human body: gross and microscopic structures of the integumentary, skeletal, muscular, nervous, sensory, endocrine, cardiovascular, lymphatic, respiratory, digestive, urinary, and reproductive systems. This is a general survey course designed to acquaint the beginning student with the anatomical principles necessary to understand the basic structure and organization of the human body. This course is designed primarily for students entering the allied health fields. (C-ID BIOL110B)

**3unit(s)****3unit(s)****3unit(s)****4unit(s)****BIOL 031 Human Physiology**

Hours: 3 Lecture/Discussion Hours:  
3 Lab

Study of the physiological principles, functions, integration and homeostasis of the human body at the cellular, tissue, organ, organ system and organism level: integumentary system, bone, skeletal, 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. Laboratory experiments and exercises will reinforce theories and processes described in lecture and introduce students to basic physiological scientific investigation. This course is primarily intended for Nursing, Allied Health, and other health related majors. (C-ID BIOL120B)

**Advisory on Recommended Preparation:** CHEM 020 or equivalent college course with a minimum grade of C.

**Prerequisites:** BIOL 030 or equivalent college course with a minimum grade of C.

**BIOL 040 General Microbiology**

Hours: 3 Lecture/Discussion Hours:  
3 Lab

This course is designed for students entering the health sciences, home economics, as well as the life sciences. This course covers microbial diversity, classification, identification, growth, control measures, disease interactions, genetics, and applied microbiology.

**Advisory on Recommended Preparation:** CHEM 020 and BIOL 020 or equivalent college course with a minimum grade of C.

**BIOL 231 Science Primer for Pre-Healthcare Students**

Hours: 2 Lecture/Discussion

This elective course covers the basics of scientific reasoning as well as fundamental concepts underlying all of the prerequisite science courses for pre-healthcare programs (human anatomy, human physiology, and microbiology) to include interpreting and creating scientific graphics, scientific notation, fundamentals of basic chemistry, biochemistry, cell structure, and select cellular functions. The intended audience is students wishing to be prepared better for the science prerequisites of allied health programs (e.g., nursing, physical therapy assistant, etc.).

**4unit(s)****4unit(s)****2unit(s)**

## Biology

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