

Biology Department

DEGREES:

Biology (AS-T)

Biology (AS)

Biomedical Sciences (AS)

CERTIFICATES OF ACHIEVEMENT

Biomedical Sciences

COURSES:

BIO (Biology)

CONTACT INFORMATION:

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P.A.C.E. - SCIENCE, TECHNOLOGY, ENGINEERING, AND MATHEMATICS - A PATHWAY FOR ACADEMIC AND CAREER EXCELLENCE AT SOLANO COMMUNITY COLLEGE

ARE YOU THE KIND OF PERSON WHO...

- ...desires to observe, learn, analyze, evaluate, or solve problems?
- ...enjoys to question and explore physical or biological happenings?
- ...likes to work hands-on with objects, machines, tools, plants, or animals?
- ...is interested in math and/or thinking analytically to solve complex problems?

P.A.C.E. - HEALTH AND HUMAN SERVICES- A PATHWAY FOR ACADEMIC AND CAREER EXCELLENCE AT SOLANO COMMUNITY COLLEGE

ARE YOU THE KIND OF PERSON WHO...

- ...desires to inform, enlighten, help, teach, counsel, or cure people?
- ...enjoys using your skills to serve people?
- ...Likes to work hands-on with objects, machines, and tools and/or use your physical or athletic abilities?
- ...is interested in working in a medical environment?

Guided Pathways:

BIOLOGY AS-T

Associate in Science for Transfer | GE Pattern: IGETC | Program Total Units: 61 - 64.5

This program map represents **one possible pathway**. See a counselor to create a customized education plan. Map is for the 2021-2022 catalog year.

Career Paths

Biological Technician • Biologist • Molecular and Cellular Biologist • Geneticist • Life Scientist • Natural Science Manager • Environmental Restoration • Secondary Education • Post-Secondary Education

What your potential plan could look like...

1 First Semester Total Recommended Units: 15

- ENGL 001 4 units
College Composition (IGETC 1A)
- LR 010 1 unit
Introduction to Library Research
- MATH 020 5 units
Analytic Geometry & Calculus (IGETC 2)
- CHEM 001 5 unit
General Chemistry I (IGETC 5A/5C)

3 Third Semester Total Recommended Units: 16

- PHYS 002 or PHYS 006 5 units
General PHYS I or PHYS for Science/Engineering I*
- BIO 003 5 units
Evolution, Ecology, and Biodiversity
- COMM 001, 002, or 006 3 units
(IGETC 1C)
- HIST 017, 018, 028, 029, or 037 3 units
(IGETC 3B/American Institutions)

*Requires Math 021

Square, darker color:
Required Courses/
Courses in Discipline

Rounded, lighter color:
GE Courses/Categories

2 Second Semester Total Recommended Units: 14

- CHEM 002 5 units
General Chemistry II
- BIO 002 5 units
Cell & Molecular Biology (IGETC 5B)
- ENGL 002 or 004 4 units
(IGETC 1B)

4 Fourth Semester Total Recommended Units: 14

- PHYS 004 or PHYS 007 5 units
General PHYS II or PHYS for Science/Engineering II*
- BIO 003 3 units
Evolution, Ecology, and Biodiversity
- IGETC 3A or 3B 3 units
- IGETC 4 3 units
Suggested: SOC 001 or ANTH 002

*Requires Math 021 & PHYS 006

Courses Below May Be Taken Any Time (Fall, Spring or Summer) Total Recommended Units: 6

- IGETC 3A Suggested 3 units
ART 012, CINA 011, MUSC 013, or THEA 013
- PLSC 001 or 005 3 unit
(IGETC 4/American Institutions)

Note: The University of California transfer pathway for Biology also requires MATH 021, CHEM 003, and CHEM 004, but does NOT require courses in Physics. See a counselor for a personalized education plan.

Biology

Associate in Science in Biology for Transfer (ADT: A.S.-T.)

Program Description

The Associate in Science in Biology for Transfer program prepares students to transfer to the California State University system as a biology major.

The Associate in Science in Biology for Transfer prepares students to seamlessly transfer to the California State University system as a Biology major. This degree gives Biology majors the Biology, Mathematics, Chemistry, and Physics knowledge that allows them to succeed in upper division courses after transfer. In the major, students gain knowledge of biological molecules, cell structure and function, bioenergetics, Mendelian and molecular genetics, microbiology, plant biology, evolution, ecology, biodiversity, and biotechnology. In the laboratory students learn experimental design including data collection and analysis, keeping a legal laboratory notebook, and reporting the results in a standard scientific journal format. The Biology courses give students an extensive laboratory experience where they gain essential skills required to study and manipulate macromolecules, aseptically transfer cells, work with the common model organisms used in Biology research, and carry out a field study.

Associate in Science in Biology for Transfer

Students who complete this 35 unit major will be guaranteed admission with junior status to the California State University system, though not to a particular campus or Major.

The Associate in Science in Biology for Transfer requires:

1. Completion of 60 semester units that are eligible for transfer to the California State University, including both of the following:
 - a. The Intersegmental General Education Transfer Curriculum (IGETC) or the California State University General Education – Breadth Requirements.
 - b. Completion of the 35 units of courses in the major.
2. Obtainment of a minimum grade point average of 2.0. Students must earn a C or better in all courses required for the major. A “P” (Pass) grade is not an acceptable grade for courses in the major.

Program Outcomes

Students who complete the Associate in Science in Biology for Transfer will be able to:

1. Design and/or interpret an investigation, including data collection and/or analysis.
2. Describe the molecular basis of genetics and energetics.
3. Explain the principles and mechanisms of microevolution and macroevolution.

REQUIRED COURSES.....Units	List A.....Units
BIO 002 Cell and Molecular Biology 5	PHYS 002 General Physics (Non-Calculus) 5
BIO 003 Evolution, Ecology & Biodiversity 5	PHYS 004 General Physics (Non-Calculus) 5
CHEM 001 General Chemistry I 5	
CHEM 002 General Chemistry II 5	List B.....Units
MATH 020 Analytic Geometry and Calculus I 5	PHYS 006 Physics for Science and Engineering..... 5
Select List A or List B..... 10	PHYS 007 Physics for Science and Engineering..... 5
Required Major Total Units.....35	

Biology

Biology

Associate in Science

Program Description

This program has been designed for students planning on transferring to a campus of the University of California as a Biology, Cell Biology, Molecular Biology, or Biochemistry major. The program incorporates a study of the mathematics, chemistry, and biology required to understand and research biological processes including cell biology, molecular biology, bioenergetics, genetics, population genetics, microbiology, evolution, developmental biology, ecology, biodiversity, and biotechnology.

The Associate in Science can be obtained by completing the 40-unit major, General Education, and electives as needed to complete a minimum of 60 units. All courses in the major must be completed with a minimum grade of C or a P if the course is taken on a Pass/No Pass basis.

Program Outcomes

Students who complete the Biology Associate in Science will be able to:

1. Design and/or interpret an investigation, including data collection and/or analysis.
2. Describe the molecular basis of genetics and energetics.
3. Explain the principles and mechanisms of microevolution and macroevolution.

REQUIRED COURSES	Units
BIO 002 Cell and Molecular Biology	5
BIO 003 Evolution, Ecology & Biodiversity	5
CHEM 001 General Chemistry I	5
CHEM 002 General Chemistry II	5
CHEM 003 Organic Chemistry I	5
CHEM 004 Organic Chemistry II	5
MATH 020 Analytic Geometry and Calculus I	5
MATH 021 Analytic Geometry and Calculus II	5
Required Major Total Units.....	40

Biology

Biomedical Sciences

Certificate of Achievement and Associate in Science

Program Description

The Biomedical Sciences program prepares students to transfer into a health care profession program offered at a community college or a four year institution. These fields include nursing, respiratory therapy, radiological science, physical therapy, occupational health, dental assistant, and dental hygiene. The degree provides basic knowledge in chemistry, microbiology, human anatomy, and human physiology. These are the common prerequisites for community college and university allied health majors.

The Certificate of Achievement can be obtained upon completion of the 18-19-unit major. The Associate in Science can be obtained by completing the 18-19-unit major, General Education, and electives as needed to complete a minimum of 60 units. All courses for the major must be completed with a minimum grade of C or a grade of P if the course is taken on a Pass/No Pass basis.

Program Outcomes

Students who complete the Biomedical Sciences Certificate of Achievement/Associate in Science will be able to:

1. Demonstrate knowledge of the structure and function of the major organ systems of the human body.
2. Demonstrate knowledge of the normal physiological functions of the organ systems and explain how disturbances of normal physiological functions lead to metabolic and physiological disorders (clinical applications).
3. Demonstrate knowledge of how microorganisms interact with the human body and describe how these interactions lead to health or human disease

REQUIRED COURSES	Units
BIO 004 Human Anatomy	5
BIO 005 Human Physiology	5
BIO 014 Principles of Microbiology	4
One course from Chemistry List	4-5
Required Major Total Units	18-19

Chemistry List: (select one course)	Units
CHEM 001 General Chemistry I	5
CHEM 010 Intermediate Chemistry	4
CHEM 012 Chemistry for the Health Sciences.....	5