

GENERAL STUDIES: SCIENCE

Program Description

Because of the increasingly technological nature of our society, science majors will find an impressive array of options and exciting opportunities. A science major can provide preparation for a career in fields related to biology, chemistry, mathematics, physics, astronomy, or engineering.

Learn more about the program on the [Science, Technology, Engineering and Math website](#).

Program Learning Outcomes

- Students will be able to integrate the various fields of science in order to critically evaluate and interpret scientific information.
- Students will be able to assess how relevant scientific information could be used to inform their own personal economic, political, and social decisions.

Career Opportunities

There is a need for scientifically trained people in non-traditional areas such as marketing and sales, scientific information, patent law, and health and safety.

Award Type(s)

- AS = Associate in Science Degree

Units Required

- Major: 39.5

Additional Information

Note: Courses used to meet the major requirements may be used to satisfy any graduation general education requirement.

Associate Degree Requirements

Code	Title	Units
English Proficiency		
Select one of the following:		
ENGL 1A	COMPOSITION & READING	5
ENGL 1AH	HONORS COMPOSITION & READING	5
ESLL 26	ADVANCED COMPOSITION & READING	5
or equivalent		
Mathematics Proficiency		
College-level math course at or above the level of Intermediate Algebra		

A minimum of 90 units is required¹ to include:

- Completion of one of the following general education patterns: Foothill General Education, CSU General Education Breadth Requirements or the Intersegmental General Education Transfer Curriculum (IGETC)
- Core courses (39.5 units)

¹ Additional elective course work may be necessary to meet the 90-unit minimum requirement for the associate degree.

Note: All courses pertaining to the major must be taken for a letter grade. In addition, a grade of "C" or better is required for all core and support courses used for the degree.

Core and Support Courses

Select a minimum of 20 units from Category I and a minimum of 19.5 units from Category II, as described below.

Code	Title	Units
Core Courses		
Category I: Biology		
Select at least one course each from Area A and Area B. At least one course in this category must include a laboratory: 20		
<i>Area A</i>		
BIOL 9	ENVIRONMENTAL BIOLOGY ²	
BIOL 9L	ENVIRONMENTAL BIOLOGY LABORATORY ^{1,3}	
BIOL 10	GENERAL BIOLOGY: BASIC PRINCIPLES ¹	
BIOL 14	HUMAN BIOLOGY ¹	
<i>Area B</i>		
BIOL 1A	PRINCIPLES OF CELL BIOLOGY ¹	
BIOL 1B	FORM & FUNCTION IN PLANTS & ANIMALS ¹	
BIOL 1C	EVOLUTION, SYSTEMATICS & ECOLOGY ¹	
BIOL 8	BASIC NUTRITION	
BIOL 12	HUMAN GENETICS	
BIOL 13	MARINE BIOLOGY ¹	
BIOL 40A	HUMAN ANATOMY & PHYSIOLOGY I ¹	
BIOL 40B	HUMAN ANATOMY & PHYSIOLOGY II ¹	
BIOL 40C	HUMAN ANATOMY & PHYSIOLOGY III ¹	
BIOL 41	MICROBIOLOGY ¹	
BIOL 45	INTRODUCTION TO HUMAN NUTRITION	
BIOL 81	LEARNERS ENGAGED IN ADVOCATING FOR DIVERSITY IN SCIENCE	
or CHEM 81	LEARNERS ENGAGED IN ADVOCATING FOR DIVERSITY IN SCIENCE	
or MATH 83	LEARNERS ENGAGED IN ADVOCATING FOR DIVERSITY IN SCIENCE	
Category II: Physical Sciences, Computer Science, Mathematics & Engineering		
Select at least five units from Area A, at least 4.5 units from Area B, at least five units from Area C, and at least five units from Area D: 9.5		
<i>Area A: Chemistry</i>		
CHEM 1A	GENERAL CHEMISTRY	
CHEM 1B	GENERAL CHEMISTRY	
CHEM 1C	GENERAL CHEMISTRY & QUALITATIVE ANALYSIS	
CHEM 12A & 12AL	ORGANIC CHEMISTRY and ORGANIC CHEMISTRY LABORATORY	
CHEM 12B & 12BL	ORGANIC CHEMISTRY and ORGANIC CHEMISTRY LABORATORY	
CHEM 12C & 12CL	ORGANIC CHEMISTRY and ORGANIC CHEMISTRY LABORATORY	
CHEM 25	FUNDAMENTALS OF CHEMISTRY	
CHEM 30A	SURVEY OF INORGANIC & ORGANIC CHEMISTRY	
CHEM 30B	SURVEY OF ORGANIC & BIOCHEMISTRY	
<i>Area B: Engineering/Computer Science/Astronomy/PSE</i>		
ASTR 10A	GENERAL ASTRONOMY: SOLAR SYSTEM	

ASTR 10B	GENERAL ASTRONOMY: STARS, GALAXIES, COSMOLOGY	C S 55G	AWS CLOUD PRACTITIONER CERTIFICATION PREPARATION
or ASTR 10BH	HONORS GENERAL ASTRONOMY: STARS, GALAXIES, COSMOLOGY	C S 55J	AWS CERTIFIED SOLUTIONS ARCHITECT ASSOCIATE PREPARATION
ASTR 10L	ASTRONOMY LABORATORY	C S 56B	IT ESSENTIALS
ASTR 54H	HONORS INSTITUTE SEMINAR IN ASTRONOMY	C S 63A	DEVELOPING APPLICATIONS FOR IOS
C S 1A	OBJECT-ORIENTED PROGRAMMING METHODOLOGIES IN JAVA	C S 64A	WRITING APPS FOR THE ANDROID IN JAVA
C S 1B	INTERMEDIATE SOFTWARE DESIGN IN JAVA	C S 77A	ADVANCED WEB APPLICATION DEVELOPMENT
C S 1C	ADVANCED DATA STRUCTURES & ALGORITHMS IN JAVA	C S 77B	PROJECTS IN WEB APPLICATION DEVELOPMENT
C S 2A	OBJECT-ORIENTED PROGRAMMING METHODOLOGIES IN C++	C S 80A	OPEN SOURCE CONTRIBUTION
C S 2B	INTERMEDIATE SOFTWARE DESIGN IN C++	C S 81A	3-D GRAPHICS PROGRAMMING
C S 2C	ADVANCED DATA STRUCTURES & ALGORITHMS IN C++	C S 84B	DISTRIBUTED DATABASES
C S 3A	OBJECT-ORIENTED PROGRAMMING METHODOLOGIES IN PYTHON	ENGR 6	ENGINEERING GRAPHICS
C S 3B	INTERMEDIATE SOFTWARE DESIGN IN PYTHON	ENGR 10	INTRODUCTION TO ENGINEERING
C S 3C	ADVANCED DATA STRUCTURES & ALGORITHMS IN PYTHON	ENGR 11	PROGRAMMING & PROBLEM-SOLVING IN MATLAB
C S 10	COMPUTER ARCHITECTURE & ORGANIZATION	ENGR 28	INTRODUCTION TO BIOENGINEERING
C S 20A	PROGRAMMING IN C#	or BIOL 28	INTRODUCTION TO BIOENGINEERING
C S 22A	JAVASCRIPT FOR PROGRAMMERS	ENGR 35	STATICS
C S 30A	INTRODUCTION TO LINUX	ENGR 37	INTRODUCTION TO CIRCUIT ANALYSIS
C S 30B	LINUX SHELL PROGRAMMING	ENGR 37L	CIRCUIT ANALYSIS LABORATORY
C S 30C	LINUX SYSTEM ADMINISTRATION	ENGR 45	PROPERTIES OF MATERIALS
C S 30D	ADVANCED LINUX SYSTEM ADMINISTRATION	ENGR 47	DYNAMICS
C S 30E	LINUX SYSTEM ADMINISTRATION: NETWORK SERVICES	PSE 20	INTRODUCTION TO PHYSICAL SCIENCE
C S 31A	INTRODUCTION TO DATABASE MANAGEMENT SYSTEMS	<i>Area C: Mathematics</i>	
C S 40A	SOFTWARE ENGINEERING METHODOLOGIES	MATH 1A	CALCULUS
C S 48A	DATA VISUALIZATION	or MATH 1AH	HONORS CALCULUS I
C S 49	FOUNDATIONS OF COMPUTER PROGRAMMING		and HONORS CALCULUS I SEMINAR
C S 50A	NETWORK BASICS (CCNA)	& 1AHP	
C S 50B	ROUTING & SWITCHING ESSENTIALS (CCNA)	MATH 1B	CALCULUS
C S 50C	SCALING LOCAL AREA NETWORKS (CCNA)	or MATH 1BI	HONORS CALCULUS II
C S 52A	ADVANCED IP ROUTING PROTOCOLS & SERVICES (CCNP)		and HONORS CALCULUS II SEMINAR
C S 52B	ADVANCED SWITCHING & CAMPUS LAN DESIGN (CCNP)	& 1BHP	
C S 53A	CYBERSECURITY FUNDAMENTALS	MATH 1C	CALCULUS
C S 53B	FIREWALLS & THREAT MANAGEMENT	MATH 1D	CALCULUS
C S 53C	ETHICAL HACKING	MATH 2A	DIFFERENTIAL EQUATIONS
C S 53D	INTRODUCTION TO COMPUTER FORENSICS	MATH 2B	LINEAR ALGEBRA
C S 54D	CLOUD INFRASTRUCTURE & SERVICES	MATH 10	ELEMENTARY STATISTICS
C S 55A	INTRODUCTION TO CLOUD COMPUTING IN AMAZON WEB SERVICES	MATH 12	CALCULUS FOR BUSINESS & ECONOMICS
C S 55B	DATABASE ESSENTIALS IN AMAZON WEB SERVICES	MATH 17	INTEGRATED STATISTICS II
C S 55C	COMPUTE ENGINES IN AMAZON WEB SERVICES	MATH 22	DISCRETE MATHEMATICS
C S 55D	SECURITY IN AMAZON WEB SERVICES	or C S 18	DISCRETE MATHEMATICS
		MATH 40A	QUANTITATIVE REASONING
		MATH 42	MATH FOR ELEMENTARY SCHOOL TEACHERS
		MATH 44	MATH FOR THE LIBERAL ARTS
		MATH 48A	PRECALCULUS I
		MATH 48B	PRECALCULUS II
		MATH 48C	PRECALCULUS III
		<i>Area D: Physics</i>	
		PHYS 2A	GENERAL PHYSICS
		PHYS 2AM	GENERAL PHYSICS: CALCULUS SUPPLEMENT
		PHYS 2B	GENERAL PHYSICS
		PHYS 2BM	GENERAL PHYSICS: CALCULUS SUPPLEMENT

PHYS 2C	GENERAL PHYSICS
PHYS 2CM	GENERAL PHYSICS: CALCULUS SUPPLEMENT
PHYS 4A	GENERAL PHYSICS (CALCULUS)
PHYS 4B	GENERAL PHYSICS (CALCULUS)
PHYS 4C	GENERAL PHYSICS (CALCULUS)
PHYS 4D	GENERAL PHYSICS (CALCULUS)
PHYS 6	INTRODUCTORY PHYSICS
PHYS 12	INTRODUCTION TO MODERN PHYSICS or PHYS 12HHONORS INTRODUCTION TO MODERN PHYSICS
Total Units	39.5

¹ Course includes a laboratory component.

² May be taken with BIOL 9L to satisfy laboratory requirement.

³ Only if taken with BIOL 9.