General Studies - Science 2013-2014

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.

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.

Units required for Major: 40

Associate Degree Requirements:

• English proficiency: ENGL 1A, 1AH, 1S & 1T, ESLL 26 or equivalent.
• Mathematics proficiency: MATH 57, 105, 108 or equivalent.
A minimum of 90 units is required* to include:
• All Foothill General Education requirements (30 Units)
• Core courses (40 Units)

*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 and the student must receive a grade of "C" or higher in these courses.

Program Type:

AS = Associate in Science Degree.

Core Courses: 40 Unit(s)

Select 40 units to represent all FIVE categories listed below.

Biology (20 units)
At least one course each from Area A and Area B. At least one course in this area must include a laboratory.
Area A:
BIOL 1C* Evolution, Systematics & Ecology (6 units)
BIOL 9 Environmental Biology (may be taken with BIOL 9L to satisfy laboratory requirement) (4 units)
BIOL 9L Environmental Biology Laboratory (only if taken with BIOL 9) (1 unit)
BIOL 10* General Biology: Basic Principles (5 units)
BIOL 14* Human Biology (5 units)
*Course includes a laboratory component.

Area B:
BIOL 1A* Principles of Cell Biology (6 units)
BIOL 1B* Form & Function in Plants & Animals (6 units)
BIOL 8 Basic Nutrition (5 units)
BIOL 12 Human Genetics (4 units)
BIOL 13* Marine Biology (5 units)
BIOL 23 Introduction to Biotechnology (5 units)
BIOL 40A* Human Anatomy & Physiology I (5 units)
BIOL 40B* Human Anatomy & Physiology II (5 units)
BIOL 40C* Human Anatomy & Physiology III (5 units)
BIOL 41* Microbiology (6 units)
BIOL 45 Introduction to Human Nutrition (4 units)
*Course includes a laboratory component.

Chemistry (5 units)
CHEM 1A General Chemistry (5 units)
CHEM 1B General Chemistry (5 units)
CHEM 1C General Chemistry & Qualitative Analysis (5 units)
CHEM 12A Organic Chemistry (6 units)
CHEM 12B Organic Chemistry (6 units)
CHEM 12C Organic Chemistry (6 units)
CHEM 20 I Matter: Introduction to Green Technology & the Environment (5 units)
CHEM 25 Fundamentals of Chemistry (5 units)
CHEM 30A Survey of Inorganic & Organic Chemistry (5 units)
CHEM 30B Survey of Organic & Biochemistry (5 units)

Engineering/Computer Science/Astronomy (5 units)
ASTR 10A General Astronomy: Solar System (5 units)
ASTR 10B General Astronomy: Star, Galaxies, Cosmology (5 units)
or ASTR 10BH Honors General Astronomy: Stars, Galaxies, Cosmology (5 units)
ASTR 10L Astronomy Laboratory (1 unit)
ASTR 77 Seminar on Exciting Topics in Astronomy (1 unit)
C S 1A Object-Oriented Programming Methodologies in Java (5 units)
C S 1B Intermediate Software Design in Java (5 units)
C S 1C Advanced Data Structures & Algorithms in Java (5 units)
C S 2A Object-Oriented Programming Methodologies in C++ (5 units)
C S 2B Intermediate Software Design in C++ (5 units)
C S 2C Advanced Data Structures & Algorithms in C++ (5 units)
C S 10 Computer Architecture & Organization (5 units)
C S 49 Foundations of Computer Programming (2.5 units)
ENGR 6 Engineering Graphics (4 units)
ENGR 10 Introduction to Engineering (5 units)
ENGR 25 Introduction to Fresh Water (5 units)
ENGR 28 Introduction to Bioengineering (4 units)

or BIOL 28 Introduction to Bioengineering (4 units)
ENGR 35 Statics (5 units)
ENGR 37 Introduction to Circuit Analysis (5 units)
ENGR 39 Energy, Society & the Environment (5 units)
ENGR 40 Introduction to Clean Energy Technology (5 units)
ENGR 45 Properties of Materials (5 units)
ENGR 49 Engineering Profession (1 unit)
ENGR 81 Electric Power Systems (5 units)
ENGR 82 Photo Voltaic & Solar Cell Design (5 units)
ENGR 83 Smart Energy Systems (5 units)
ENGR 102 Building Science & Performance Engineering (5 units)

Mathematics (5 units)
MATH 1A Calculus (5 units)
MATH 1B Calculus (5 units)
MATH 1C Calculus (5 units)
MATH 1D Calculus (5 units)
MATH 2A Differential Equations (5 units)
MATH 2B Linear Algebra (5 units)
MATH 10 Elementary Statistics (5 units)
MATH 11 Finite Mathematics (5 units)
MATH 12 Calculus for Business & Economics (5 units)
MATH 22 Discrete Mathematics (5 units)
MATH 42 Math for Elementary School Teachers (5 units)
MATH 44 Math for the Liberal Arts (5 units)
MATH 48A Precalculus I (5 units)
MATH 48B Precalculus II (5 units)
MATH 48C Precalculus III (5 units)
MATH 54H Honors Institute Seminar in Mathematics (1 unit)

Physics (5 units)
PHYS 2A General Physics (5 units)
PHYS 2AM General Physics - Calculus Supplement (1 unit)
PHYS 2B General Physics (5 units)
PHYS 2BM General Physics - Calculus Supplement (1 unit)
PHYS 2C General Physics (5 units)
PHYS 2CM General Physics - Calculus Supplement (1 unit)
PHYS 4A General Physics (Calculus) (6 units)
PHYS 4B General Physics (Calculus) (6 units)
PHYS 4C General Physics (Calculus) (6 units)
PHYS 4D General Physics (Calculus) (6 units)
PHYS 5A** General Physics (Calculus) Extended (5 units)
PHYS 5B** General Physics (Calculus) Extended (5 units)
PHYS 5C** General Physics (Calculus) Extended (5 units)
PHYS 6 Introductory Physics (5 units)
PHYS 12 Introduction to Modern Physics (5 units)
PHYS 34H Honors Institute Seminar in Physics (1 unit)
Note: **The PHYS 5A, 5B & 5C sequence is equivalent to PHYS 4A & 4B.

Courses used to meet major requirements in the above areas MAY be used to satisfy any graduation general education requirement.