

# NATURAL SCIENCES EMPHASIS (AA DEGREE A8988)

## Natural Sciences Division A8988

An emphasis in Natural Sciences provides the student with an understanding of living and non-living systems and promotes an appreciation of the methodologies and tools of science. Students may select courses that focus on a specific major and then select complementary courses to strengthen their selected focus or they may select courses that strengthen and broaden their overall understanding of the Natural Sciences.

This degree requires the completion of General Education coursework plus the following:

## Required Courses

Course Prefix	Course Name	Units
Choose a minimum of 18 units from the following with at least one GE lab from each group:		18-22

### Group 1A: Physical Science Lecture Courses

(May take one or more courses from Group 1A)

ASTR 5	Introduction to Astronomy
or ASTR 5H	Introduction to Astronomy - Honors
ASTR 7	Geology of the Solar System
ASTR 8	Introduction to Stars, Galaxies, and the Universe
ASTR 11	Introduction to Astrophysics
CHEM 9	Chemistry of Everyday Life
GEOG 1	Physical Geography
or GEOG 1H	Physical Geography - Honors
GEOG 7	Geology of California
GEOG 8	Earth Science
or GEOG 8H	Earth Science - Honors
GEOG 9	Environmental Geology
GEOG 10	Natural Disasters
GEOG 30	Global Climate Change
METO 3	Weather and the Atmospheric Environment
OCEA 10	Introduction to Oceanography
or OCEA 10H	Introduction to Oceanography - Honors

### Group 1B: Physical Science Lab Courses

(Must take at least one course from either Group 1B or 1C)

ASTR 5L	Astronomical Observing Laboratory
GEOG 1L	Physical Geography Laboratory
or GEOG 1LH	Physical Geography Laboratory - Honors
GEOG 8L	Earth Science Laboratory
GEOG 9L	Environmental Geology Laboratory
METO 3L	Weather and Atmospheric Environment Laboratory
OCEA 10L	Introduction to Oceanography Laboratory

### Group 1C: Physical Science Lecture-Lab Courses

(Must take at least one course from either Group 1B or 1C)

CHEM 10	Chemistry for Allied Health Majors
CHEM 20	Introductory Organic and Biochemistry
CHEM 40	Introduction to General Chemistry
CHEM 50	General Chemistry I
or CHEM 50H	General Chemistry I - Honors

CHEM 51	General Chemistry II
or CHEM 51H	General Chemistry II - Honors
CHEM 55	Chemistry for Engineers
CHEM 80	Organic Chemistry I
CHEM 81	Organic Chemistry II
ENGR 1	Introduction to Engineering
ENGR 1C	Engineering Critical Thinking
ENGR 6	Introduction to Engineering Programming Concepts and Methodologies
ENGR 8	Properties of Materials
GEOG 1	Physical Geology
GEOG 24	Geologic Field Studies: Central California
or GEOG 25	Geologic Field Studies: Southern California
GEOG 29	Special Topics in Field Geology
PHSC 3	Energy Science
PHYS 1	Physics
PHYS 2AG	General Physics
PHYS 2BG	General Physics
PHYS 4A	Engineering Physics
PHYS 4B	Engineering Physics
PHYS 4C	Engineering Physics

### Group 2A: Life Sciences Lecture Courses

(May take one or more courses from Group 2A)

ANTH 1	Biological Anthropology
or ANTH 1H	Biological Anthropology - Honors
BIOL 6	Humans and the Environment
BIOL 17	Neurobiology and Behavior
BIOL 20	Marine Biology
BIOL 34	Fundamentals of Genetics
MICR 26	Introduction to Immunology

### Group 2B: Life Science Lab Courses

(Must take at least one course from either Group 2B or 2C)

Choose at least one from the following:

ANTH 1L	Biological Anthropology Laboratory
BIOL 6L	Humans and the Environment Laboratory
BIOL 21	Marine Biology Laboratory
BIOL 34L	Fundamentals of Genetics Laboratory

### Group 2C: Life Science Lecture-Lab Courses

(Must take at least one course from either Group 2B or 2C)

BIOL 1	General Biology
BIOL 2	Plant and Animal Biology
BIOL 3	Ecology and Field Biology
BIOL 4	Biology for Majors
or BIOL 4H	Biology for Majors - Honors
BIOL 8	Cell and Molecular Biology
BTNY 3	Plant Structures, Functions, and Diversity
MICR 1	Principles of Microbiology
or MICR 22	Microbiology

**Total Units** **18-22**

Natural Sciences Division Website (<http://www.mtsac.edu/sciences/>)

## Program Learning Outcomes

Upon successful completion of this program, a student will be able to:

- Analyze and model chemical, physical, or biological systems using scientific and/or mathematical methods.

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- Critically read, interpret, and analyze a range of complex text and data to make connections and draw meaningful conclusions.
- Identify and model the professional and ethical responsibilities of a scientist.
- Communicate scientific principles and applications effectively, both verbally and in writing.
- Describe the impact of humans and our technology in an environmental and societal context.
- Pursue further study or life-long learning in the sciences.
- Work collaboratively to reach a common goal or solve a problem.

Review Student Learning Outcomes (SLOs) (<http://www.mtsac.edu/instruction/outcomes/sloinfo.html>) for this program.