NATURAL SCIENCE (NS)

NS A112 **4 Units (54 lecture hours; 54 lab hours)**
Survey of Chemistry and Physics
Prerequisite(s): Successful completion of a course at the level of elementary algebra or Appropriate OCC math placement.

Grading Mode: Standard Letter, Pass/No Pass
Transfer Credit: CSU.

An investigation of the basic principles of physics and chemistry including matter, physical and chemical properties, energy, motion, light, atomic structure, bonding, solutions, and chemical reactions. The inter-dependence of chemistry and physics will be emphasized. This course is intended for non-science majors.

NS A115 **3 Units (54 lecture hours)**
Science and Technology in Music
Advisory: Successful completion of a course at the level of elementary algebra or Appropriate OCC math placement.

Grading Mode: Standard Letter, Pass/No Pass
Transfer Credit: CSU.

An introduction to the physics that shapes our natural world through an investigation of the creation, transmission, and perception of sound and music. Fundamentals of oscillations, waves, forces, energy, and electromagnetism are explored through scientific inquiry of musical tones, harmony, timbre, acoustics, and acoustic and electronic instruments. Graded or Pass/No Pass option.

NS A195 **2 Units (18 lecture hours; 54 lab hours)**
Special Topics in Science - Lunar Exploration
Grading Mode: Standard Letter, Pass/No Pass
Transfer Credit: CSU.

Introduction to engineering design while building teamwork and communication skills and examining the engineering major offered and engineering careers. Completion of hands-on engineering design projects, preparation of short reports describing projects, and presentation of results. The specific project challenges students to explore a lunar lava tube with an eye toward its potential for human habitation. The overall goal is to build a rover and develop programs that allow an unmanned autonomous rover to navigate a model lunar lava tube. Graded or Pass/No Pass option.

NS A196 **2 Units (18 lecture hours; 54 lab hours)**
Special Topics in Science - Exploring Mars
Grading Mode: Standard Letter, Pass/No Pass
Transfer Credit: CSU.

Introduction to engineering design while building teamwork and communication skills and examining the engineering major offered and engineering careers. Completion of hands-on engineering design projects, preparation of short reports describing projects, and presentation of results. The specific project challenges students to explore the surface of Mars with an eye toward its potential for human habitation. The overall goal is to build a rover and develop programs that allow an unmanned autonomous rover to navigate the surface. Graded or Pass/No Pass option.

NS A197 **2 Units (18 lecture hours; 54 lab hours)**
Special Topics in Science - Exploring Ocean Worlds of the Outer Solar System
Grading Mode: Standard Letter, Pass/No Pass
Transfer Credit: CSU.

Introduction to engineering design while building teamwork and communication skills and examining the engineering major offered and engineering careers. Completion of hands-on engineering design projects, preparation of short reports describing projects, and presentation of results. The specific project challenges students to explore the ocean worlds of the outer solar system with an eye toward its potential for life. The overall goal is to build an unmanned underwater vehicle (UUV) and develop programs that allow the rover to navigate an underwater environment. Graded or Pass/No Pass option.