ORIGINATOR: James Almy
FORMERLY KNOWN AS:
CROSS LISTED COURSE:

SEMESTER UNITS: 4.0
HRS LEC: 54.0  HRS LAB: 54.0  HRS OTHER: 0.0
CONTACT HRS TOTAL: 108.0
STUDY NON-CONTACT HRS RECOMMENDED: 108.0

CATALOG DESCRIPTION:
This course provides an introductory level coverage of the physical sciences, including physics, chemistry, geology, the atmosphere and astronomy. Emphasis is placed on applications of the laws of physical science. A background in the physical sciences is developed starting with physics and chemistry, followed by the application of these fields to the study of geology and meteorology, and finally, to the solar system and universe. Appropriate laboratory activities and mathematical calculations will reinforce the physical, chemical and geological concepts. UC credit limitations: No credit if taken after a college level course in Astronomy, Chemistry, Geology or Physics.

JUSTIFICATION FOR COURSE:
PREREQUISITES:
COREQUISITES:
ADVISORIES:
ASSIGNED DISCIPLINES:
Chemistry
Earth science
Physics/Astronomy

MATERIAL FEE: Yes [X] No [ ] Amount: $3.50
CREDIT STATUS: Noncredit [ ] Credit - Degree Applicable [X] Credit - Not Degree Applicable [ ]
GRADING POLICY: Pass/No Pass [ ] Standard Letter [X] Not Graded [ ] Satisfactory Progress [ ]
OPEN ENTRY/OPEN EXIT: Yes [ ] No [X]
TRANSFER STATUS: CSU Transferable[ ] UC/CSU Transferable[X] Not Transferable[ ]
LEVELS BELOW TRANSFER: Not Applicable
CALIFORNIA CLASSIFICATION CODES: Y - Not Applicable
NON CREDIT COURSE CATEGORY: Y - Not applicable, Credit Course
OCCUPATIONAL (SAM) CODE: E
REPEATABLE ACCORDING TO STATE GUIDELINES: No [X] Yes [ ] NUMBER REPEATS:
REQUIRED FOR DEGREE OR CERTIFICATE: No [ ] Yes [X]
Elementary Teacher Education(Associate in Arts for Transfer)
Elementary Teacher Education(Associate in Arts for Transfer)
Liberal Arts: Emphasis in Science(Associate in Arts)
Liberal Studies for Elementary Education(Associate in Arts)
GE AND TRANSFER REQUIREMENTS MET:
IGETC Area 5: Physical and Biological Sciences
5A: Physical Science

CSU GE Area B: Scientific Inquiry and Quantitative Reasoning
  B1 - Physical Science
  B3 - Laboratory Sciences

COURSE LEVEL STUDENT LEARNING OUTCOME(S) Supported by this course:

1. identify important discoveries in the fields of physics, chemistry, geology, and astronomy.
2. explain the underlying principles which govern the behavior of matter and energy.
3. demonstrate understanding of basic concepts dealing with chemical reactions.
4. evaluate and explain various physical phenomenon (i.e. heat capacity, earthquakes, chemical reactivity, light), given appropriate laboratory equipment.

COURSE OBJECTIVES:

1. Identify and understand the most important discoveries in the fields of physics, chemistry, geology, and astronomy.
2. Be familiar with the underlying principles which govern the behavior of matter and energy.
3. Understand basic concepts dealing with chemical reactions.
4. Given appropriate laboratory equipment--test and explain various physical phenomenon (i.e. heat capacity, earthquakes, chemical reactivity, light).

COURSE CONTENT:

LECTURE CONTENT:

THE NATURE OF SCIENCE

A. The Scientific Method
B. Applications of the Scientific Method
C. Limitations of the Scientific Method
D. The Physical Sciences

PHYSICS

A. Motion and Equilibrium
   1. Velocity and acceleration
   2. Inertia
   3. Net Force
B. Newton's Laws of Motion
C. Momentum and Energy
   1. Work and conservation of energy
   2. Potential energy
   3. Kinetic energy
D. Newton's Law of Universal Gravitation
E. Projectile and Satellite Motion
F. Fluid Mechanics
G. Thermal Energy and Thermodynamics
H. Heat Transfer and Phase Changes
   I. Electricity and Magnetism
   J. Light and Waves

CHEMISTRY

A. The Atom and the Nucleus
B. The Periodic Law
C. Molecular Attractions
D. Chemical Reactions
   1. Kinetics
   2. Equilibrium
   3. Acids and Bases
   4. Oxidation-reduction
   5. Solids and solutions

GEOLOGY
A. Earth Materials
   1. Minerals and mineral resources
   2. Rocks
B. Interior Process
   1. Plate tectonics
   2. Earthquakes and earth’s interior
   3. Volcanism
C. Surface Processes
   1. Weathering and erosion
   2. Surface features and deposits
D. Earth History
   1. Fossil record
   2. Evolution and geologic time

ASTRONOMY
A. Earth - Moon System
B. Solar System
C. Stars
D. Universe
   1. Galaxies
   2. Cosmology

LABORATORY
A. Computers
   1. Internet research
   2. Graphical representation of experimental data
   3. Simulation of laboratory experiments
B. Measurement
   1. Precision and accuracy
   2. Significant digits and scientific notation
C. Physical, chemical and geological experiments
   1. Use of laboratory equipment
   2. Interpretation of results

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METHODS OF INSTRUCTION:

A. Lecture:
B. Lab:
C. Independent Study:

INSTRUCTIONAL TECHNIQUES:

COURSE ASSIGNMENTS:

Reading Assignments

1. Chapter(s) from the textbook
2. One laboratory exercise (introduction, instructions)

Out-of-class Assignments

Optional assignments may be given to students to research and write papers on topics of current interest.

Writing Assignments

1. Write explanations to questions in laboratory exercises
2. Write answers to questions assigned from textbook

METHODS OF STUDENT EVALUATION:

Midterm Exam
Final Exam
Short Quizzes
Skills Demonstration

Demonstration of Critical Thinking:

Critical thinking and problem solving is required in two ways: 1. Problems are assigned from the textbook which require students to use principles and equations covered in the lectures. 2. Laboratory exercises require students to collect data, review data, draw conclusions, and compare to standards.

Required Writing, Problem Solving, Skills Demonstration:

Students will be required to: 1. Write explanations to questions in laboratory exercises 2. Write answers to questions assigned from textbook

TEXTS, READINGS, AND RESOURCES:

TextBooks:


LIBRARY:

Adequate library resources include:

Comments:

Attachments:

Attached Files