PHYSC 10 Course Outline as of Fall 1981

CATALOG INFORMATION

Dept and Nbr: PHYSC 10 Title: INTRODUCTION
Full Title: Introduction to Physical Science
Last Reviewed: 12/20/1991

Units		Course Hours per Week		Nbr of Weeks	Course Hours Total	
Maximum	3.00	Lecture Scheduled	3.00	17.5	Lecture Scheduled	52.50
Minimum	3.00	Lab Scheduled	0	1	Lab Scheduled	0
		Contact DHR	0		Contact DHR	0
		Contact Total	3.00		Contact Total	52.50
		Non-contact DHR	0		Non-contact DHR	0

Total Out of Class Hours: 105.00 Total Student Learning Hours: 157.50

Title 5 Category:	AA Degree Applicable
Grading:	Grade or P/NP
Repeatability:	00 - Two Repeats if Grade was D, F, NC, or NP
Also Listed As:	
Formerly:	

Catalog Description:
A descriptive, non-mathematical introduction into many of the major fields of study existing within the physical sciences. Topics include electromagnetic, gravitational, and nuclear energy, the atom, matter in motion, planetary motion, planets and stars, volcanoes and earthquakes, clouds and weather, and dinosaurs. This course is designed to meet the career demands of those pursuing a career in elementary education which requires a descriptive, broad-based science background. (Not open to students who have completed Physical Science 1)

Prerequisites/Corequisites:

Recommended Preparation:
Eligibility for ENGL 100 or ESL 100.

Limits on Enrollment:

Schedule of Classes Information:
Description: Non-math intro into major fields of study within the physical sciences. Includes electromagnetic, gravitational & nuclear energy, the atom, matter in motion, planetary motion, planets & stars, volcanoes & earthquakes, clouds, weather & dinosaurs. Course is designed for

educators requiring a broad-based, descriptive science background. (Grade or P/NP)
Prerequisites/Corequisites:
Recommended: Eligibility for ENGL 100 or ESL 100.
Limits on Enrollment:
Transfer Credit: CSU;UC.
Repeatability: Two Repeats if Grade was D, F, NC, or NP

ARTICULATION, MAJOR, and CERTIFICATION INFORMATION:

AS Degree:	**Area**		Effective:	Inactive:
	C	Natural Sciences	Fall 1981	Summer 2008
CSU GE:	**Transfer Area**		Effective:	Inactive:
	B1	Physical Science	Fall 1981	Summer 2008
IGETC:	**Transfer Area**		Effective:	Inactive:
	5A	Physical Sciences	Fall 1981	Summer 2008

CSU Transfer:	Transferable	Effective:	Fall 1981	Inactive:	Summer 2008
UC Transfer:	Transferable	Effective:	Fall 1981	Inactive:	Summer 2008

CID:

Certificate/Major Applicable:
Not Certificate/Major Applicable

COURSE CONTENT

Outcomes and Objectives:
Physical Science 10 permits the liberal arts major to acquire a general introduction to the descriptive vocabulary, major theoretical constructs, and experimental methods used in Newtonian physics, geology, chemistry, meteorology, and astronomy. Emphasis is placed on preparing the prospective elementary school teacher to instruct in these subject areas at grades levels 1 through 6. Upon completion of the course, students will be able to demonstrate knowledge of the physical sciences through lecture-discussions, reading assignments, written assignments and examinations.

Topics and Scope:

Motion and Force: the difference between acceleration, velocity, and speed. Newton's three laws of motion. Inertia, momentum, and angular momentum.
Gravitation: Galileo's determination of the proportionality of gravity and mass. Newton's law of gravity, gravity and satellite orbits, escape velocity, orbital velocity, hyperbolic velocity, apogee and perigee.
Energy and Work: the four fundamental forces in nature. Kinetic energy and potential energy. The physical definition and calculation of work.
Temperature and Power: heat and friction. The temperature scales of Celsium, Kelvin, and Fahrenheit. The physical definition of power and the calculation of horsepower.

The Atomic Nucleus: atomic number and atomic weight. Reading the periodic table of the elements. Nuclear fission and nuclear fusion. Atomic bombs, hydrogen bombs, and nuclear power plants.
Atomic Electron Structure: the Bohr and the quantum mechanical models of the atom. Ionic and co-valent chemical bonding. The process of excitation and ionization.
Optics: the components of the reflecting, refraction, and Schmidt-Cassegrain telescope. How to calculate telescope magnification, light gathering power, and resolution. The optical components and proper function of binoculars.
Chemistry of Life: the combining capacity of the carbon atom. The molecular structure of fats, proteins, and carbohydrates. The structural differences between methane, propane, butane, actane, and gasoline.
Calories and Nutrition: the difference between the physical and dietary calorie unit. The caloric content of fats, proteins, and carbohydrates. How to calculate the percent of fat content of any given food from its labeled list of ingredients.
Geology: the interior structure of the earth and heat flow from the earth's interior. Faults, earthquakes, and the Richter scale. Plate tectonics and volcanism.
Dinosaurs: the geologica time scale and the process of fossilization. The unique physical characteristic of the dinosaur. Major species of dinosaurs and theories of their extinction.
Meteorology: identification of the 10 major cloud types. Warm fronts and cold fronts. Predicting weather changes by observing clouds. The six major weather elements and the instruments that measure them.
Motions of the Moon: the lunar phases and lunar tides. The three types of lunar exlipses and the three types of solar exlipses. The moon's synodic and sidereal periods of revolution.
Kepler's Laws: the properties of the ellipse, semi-major axis, semi-minor axis, focus distance, and eccentricity. The ellipse law, the law of equal areas, and the harmonic law.
The Solar System: the properties of the Terrestrial and Jovian planets with respect to planetary atmospheres, planetary surfaces, and planetary interiors. Triton, Titan, and the 4 Galilean satellites of Jupiter.
Stars and Nebulae: the difference between a star and a planet. Main sequence (sun-like), giant, white dwarf, neutron, and black hole stars.
Galaxies and Cosmology: the milky way galaxy and its size and shape compared to other galaxies. The expanding universe, the Hubble law, and the big bang and steady state theories.

Assignment:

Each student is evaluated on their performance in frequent examinations which contain objective, written, and problem solving questions. Final evaluation also requires that each student competently complete at least one of the following written assignments: comprehensive research paper, analytic essay, lab report, book report, extra credit report, or field assignment. Students will be required to master textbook and research material independently outside of class.

Methods of Evaluation/Basis of Grade:

Writing: Assessment tools that demonstrate writing skills and/or require students to select, organize and explain ideas in writing.

Written homework, Essay exams, Term papers	Writing 10 - 30%

Problem Solving: Assessment tools, other than exams, that demonstrate competence in computational or non-computational problem solving skills.

Homework problems, Quizzes, Exams	Problem solving 10 - 30%

Skill Demonstrations: All skill-based and physical demonstrations used for assessment purposes including skill performance exams.

Class performances, Performance exams	Skill Demonstrations 0 - 20%

Exams: All forms of formal testing, other than skill performance exams.

Multiple choice, Completion	Exams 35 - 70%

Other: Includes any assessment tools that do not logically fit into the above categories.

None	Other Category 0 - 0%

Representative Textbooks and Materials:
Physical Science: A Dynamic Approach: Robert Dixon
The Physical Universe: Krausckpf and Beiser
Physical Science: Principles and Applications: Payne and Falls