PHYS 11 Course Outline as of Fall 2011

CATALOG INFORMATION

Dept and Nbr: PHYS 11 Title: DESCRIPTIVE PHYSICS
Full Title: Descriptive Physics
Last Reviewed: 4/10/2023

Units		Course Hours per Week		Nbr of Weeks	Course Hours Total	
Maximum	4.00	Lecture Scheduled	3.00	17.5	Lecture Scheduled	52.50
Minimum	4.00	Lab Scheduled	3.00	8	Lab Scheduled	52.50
		Contact DHR	0		Contact DHR	0
		Contact Total	6.00		Contact Total	105.00
		Non-contact DHR	0		Non-contact DHR	0

Total Out of Class Hours: 105.00 Total Student Learning Hours: 210.00

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:
Descriptive survey of principles of classical and modern physics emphasizing basic concepts, which may include some problem solving using elementary algebra.

Prerequisites/Corequisites:
Completion of MATH 150B or higher (V1) OR Course Completion of MATH 151

Recommended Preparation:
Eligibility for ENGL 1A or equivalent

Limits on Enrollment:

Schedule of Classes Information:
Description: Descriptive survey of principles of classical and modern physics emphasizing basic concepts, which may include some problem solving using elementary algebra. (Grade or P/NP)
Prerequisites/Corequisites: Completion of MATH 150B or higher (V1) OR Course Completion of MATH 151
Recommended: Eligibility for ENGL 1A or equivalent
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 2011	
CSU GE:	**Transfer Area**		Effective:	Inactive:
	B1	Physical Science	Fall 2011	
	B3	Laboratory Activity		

IGETC:	**Transfer Area**		Effective:	Inactive:
	5A	Physical Sciences	Fall 2011	
	5C	Fulfills Lab Requirement		

CSU Transfer:	Transferable	Effective:	Fall 2011	Inactive:

UC Transfer:	Transferable	Effective:	Fall 2011	Inactive:

CID:

Certificate/Major Applicable:
Major Applicable Course

COURSE CONTENT

Outcomes and Objectives:

Upon completion of this course students should be able to do the following:

1. Explain motion in one dimension including free fall, and use Newton’s laws to solve problems related to motion.
2. Define force, energy, momentum, impulse, and describe the relationship between these parameters.
3. Describe types of rotational motion and their application to the movement of planets.
4. Explain the states of matter, and atomic and nuclear theory.
5. Define temperature, thermal energy and heat transfer and the effect of thermal energy on materials.
6. Describe different types of waves, their propagation and interference.
7. Describe static electricity, the field associated with charges and the force between various charges.
8. Interpret series/parallel circuits and Ohm’s law.
9. Define magnetism, Ampere’s law, Faraday’s law of induction and their practical applications.
10. Explain full electromagnetic spectrum, visible optics/colors and optical components and systems.
11. Describe the wave interference phenomenon.
12. Describe the concepts related to relativity, quantum physics, atomic physics and nuclear physics.
13. Apply laboratory techniques including computer data acquisition and analysis tools to observe, measure and experiment with physical phenomenae.

Topics and Scope:

1. Mechanics
    a. linear motion
    b. nonlinear motion
    c. Newton's law of motion
    d. momentum
    e. energy
    f. rotational motion
    g. gravity
    h. satellite motion
2. Properties of matter
    a. atomic nature of matter
    b. solids
    c. liquids
    d. gases and plasmas
3. Heat
    a. temperature, heat and expansion
    b. heat transfer
    c. change of state
4. Sound
    a. vibrations and waves
    b. sound
    c. musical sounds
5. Electricity and magnetism
    a. electrostatics
    b. electric current
    c. magnetism
    d. electromagnetic induction
6. Light
    a. properties of light
    b. color
    c. reflection and refraction
    d. light waves
    e. light emission
    f. light quanta
7. Atomic and nuclear physics
    a. the atom
    b. atomic nucleus and radioactivity
    c. nuclear fission and fusion
8. Relativity
    a. special theory of relativity
    b. general theory of relativity
9. Laboratory Skills
    a. laboratory safety
    b. SI and metric units
    c. using calipers, stopwatches, metersticks, and etc. to make measurements on mechanical systems
    d. using computers and motion detectors to make measurements on mechanical systems
    e. using spreadsheets to record data and to calculate and analyze experimental results
    f. constructing graphs using computer graphing programs
    g. error analysis
    h. numerical and graphical analysis of data

Assignment:

1. Read approximately one chapter of textbook per week
2. Laboratory readings and reports: 12-17
3. Laboratory and/or lecture homework assignments: 12-16
4. Quizzes: 5-16
5. Midterm exams: 2-4
6. Laboratory exams: 1-3
7. Special projects 0-1
8. Class participation
9. Final exam: 1

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.

Lab reports	Writing 10 - 20%

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

Homework assignments	Problem solving 10 - 20%

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

None	Skill Demonstrations 0 - 0%

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

Multiple choice, short answer and/or essay, lab exams (required), mid-term exams, final exam	Exams 60 - 70%

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

Special project, class participation	Other Category 0 - 10%

Representative Textbooks and Materials:
Conceptual Physics by Hewitt, 10th ed., Addison Wesley, 2008
Conceptual Physics Laboratory Manual by Hewitt, 10th ed. Addison Wesley, 2008