

PHYS 10 Course Outline as of Fall 2015

CATALOG INFORMATION

Dept and Nbr: PHYS 10

Title: DESCRIPTIVE PHYSICS

Full Title: Descriptive Physics

Last Reviewed: 4/19/2010

| 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 | 6 | 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:
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) and Concurrent Enrollment in PHYS 10L OR
Completion of MATH 151 or higher (V1) and Concurrent Enrollment in PHYS 10L

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) and Concurrent Enrollment in PHYS 10L OR Completion of MATH 151 or higher (V1) and Concurrent Enrollment in PHYS 10L
Recommended: Eligibility for ENGL 1A or equivalent

Limits on Enrollment:

Transfer Credit:

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 | Fall 2015 |
| CSU GE: | Transfer Area | | Effective: | Inactive: |
| | B1 | Physical Science | Fall 1981 | Fall 2015 |
| IGETC: | Transfer Area | | Effective: | Inactive: |
| | 5A | Physical Sciences | Fall 1981 | Fall 2015 |
| CSU Transfer: | | Effective: | Inactive: | |
| UC Transfer: | | Effective: | 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.

Topics and Scope:

1. The scientific method
2. 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
- 3. Properties of matter
 - a. atomic nature of matter
 - b. solids
 - c. liquids
 - d. gases and plasmas
- 4. Heat
 - a. temperature, heat and expansion
 - b. heat transfer
 - c. change of state
- 5. Sound
 - a. vibrations and waves
 - b. sound
 - c. musical sounds
- 6. Electricity and magnetism
 - a. electrostatics
 - b. electric current
 - c. magnetism
 - d. electromagnetic induction
- 7. Light
 - a. properties of light
 - b. color
 - c. reflection and refraction
 - d. light waves
 - e. light emission
 - f. light quanta
- 8. Atomic and nuclear physics
 - a. the atom
 - b. atomic nucleus and radioactivity
 - c. nuclear fission and fusion
- 9. Relativity
 - a. special theory of relativity
 - b. general theory of relativity

Assignment:

- 1. Read approximately one chapter of textbook per week
- 2. Homework problems: 12-16
- 3. Quizzes: 5-16
- 4. Midterm exams: 2-4
- 5. Special project(s)/class participation: 0-1
- 6. 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.

None, This is a degree applicable course but assessment tools based on writing are not included because this course includes essay exams that fulfil the writing component of the course.

Writing
0 - 0%

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

Homework problems

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.

Objective examinations: essay (short conceptual questions), multiple choice, true/false, matching items, completion; 2-4 mid-term exam(s) and 1 final exam

Exams
70 - 80%

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

Special project(s), class participation

Other Category
0 - 10%

Representative Textbooks and Materials:

Conceptual Physics by Hewitt, 11th ed., Addison Wesley, 2009