PHYS 110 - Descriptive Physics Course Outline

Approval Date: 03/01/1983
Effective Date: 01/16/2018

SECTION A

Unique ID Number	CCC000305476
Discipline(s)	Physics/Astronomy
Division	Science and Engineering
Subject Area	Physics
Subject Code	PHYS
Course Number	110
Course Title	Descriptive Physics
TOP Code/SAM Code	1902.00 - Physics, General / -
Rationale for adding this course to the curriculum	update text and SLOs
Units	3
Cross List	*N/A*
Typical Course Weeks	18

Total Instructional Hours

Contact Hours	
Lecture	54.00
Lab	0.00
Activity	0.00
Work Experience	0.00
Outside of Class Hours	108.00

Total Contact Hours	54
Total Student Hours	162
Open Entry/Open Exit	No
Maximum Enrollment	
Grading Option	Letter Grade or P/NP
Distance Education Mode of Instruction	

SECTION B

General Education Information:

SECTION C

Course Description

Repeatability May be repeated 0 times

Catalog Description A nonmathematical descriptive introduction to physics for non-science majors. Numerous slides and demonstrations will be used to illustrate the fundamental laws and applications of mechanics, heat, electricity, optics, atomic and nuclear physics.

Schedule Description

SECTION D

Condition on Enrollment

1a. Prerequisite(s): *None*

1b. Corequisite(s): *None*

1c. Recommended: *None*

1d. Limitation on Enrollment: *None*

SECTION E

Course Outline Information

1. Student Learning Outcomes:

A. Students understand the physics underpinning much of our currently used technology. Classical mechanics is used in the design of automobiles and other machines. Thermodynamics lies behind the design of an air conditioner. Electromagnetism is the basis for computers and communications. Students should understand that it is impossible to accept the benefits of science without being aware of its potential misuse in modern society. Eventually students, as voters, will play a role in the use and misuse of science.

B. Students should understand the scientific method. Decisions about the acceptance of scientific ideas are based on observation and experiment. A scientific idea is supported if it correctly predicts, within experimental or observational error, the results of experiments and observations. If the predictions of a scientific idea are not consistent with the experimental or observational results, the idea is rejected as invalid.

2. Course Objectives: Upon completion of this course, the student will be able to:

A. Use Newton?s Laws to predict and explain the motion of an object.
B. Describe the motion of objects as related through the concepts of position, displacement, speed, velocity and acceleration.
C. Discuss the type of energy present in a system and use conservation of energy to solve problems.
D. Explain the requirements for a complete circuit in terms of a model of electric charge.
E. Describe color perception based on the wave nature of light and its interactions.
F. Describe properties and structure of atoms.
G.

3. Course Content

MECHANICS/ABOUT SCIENCE
The Study of Motion
Newton's Laws of Motion
Nonlinear Motion
Vectors, Torque, and Mechanical Equilibrium
Work, Power, and Energy

Momentum
The Law of Gravitation

PROPERTIES OF MATTER
The Atomic Nature of Matter
Solids
Liquids
Gases
Fluids in Motion

HEAT
Temperature, Heat, and Expansion
Transmission of Heat
Change of State

SOUND
Vibrations and Waves
Sound
Musical Sounds
Shock Waves and the Sonic Boom

ELECTIRICITY AND MAGNETISM
Electricity at Rest
Current Electricity
Magnetism
Electromagnetic Interactions
Electromagnetic Radiation

LIGHT AND QUANTUM THEORY
The Wave and Quantum Nature of Light
Light Emission and Color
The Behavior of Light: Reflection and Refraction
The Behavior of Light: Scattering, Diffraction, Interference, and Polarization Lenses
Optical Instruments
The Atom and the Quantum
The Special Theory of Relativity

NUCLEAR PHYSICS
Radioactivity
Nuclear Fission and Fusion

4. Methods of Instruction:

Discussion:
Lecture:
Observation and Demonstration:

5. Methods of Evaluation: Describe the general types of evaluations for this course and provide at least two, specific examples.

Typical classroom assessment techniques

Exams/Tests --
Quizzes --
Research Projects --
Papers --
Oral Presentation --

Letter Grade or P/NP

6. Assignments: State the general types of assignments for this course under the following categories and provide at least two specific examples for each section.

A. Reading Assignments
   Out of class assignments will include assigned readings from the text.
   Each hour of in-class instruction will require a minimum of one hour of out-of-class reading.
B. Writing Assignments
   Writing assignments include note-taking on assigned readings and short-answer questions as in class activities and/or homework.
C. Other Assignments
D.

7. Required Materials

A. EXAMPLES of typical college-level textbooks (for degree-applicable courses) or other print materials.

Book #1:

Author:	Hewitt, Paul
Title:	Conceptual Physics
Publisher:	Pearson
Date of Publication:	2014
Edition:	12th

B. Other required materials/supplies.