

Master Syllabus

PHY 2202 - General Physics II

Division: Science, Mathematics and Engineering

Department: Physics

Credit Hour Total: 5.0

Lecture Hrs: 4.0 **Lab Hrs:** 3.0

Prerequisite(s): AND MAT 2280 PHY 2201

Date Revised: October 2017

Course Description:

Electrostatics, DC conduction and circuits, magnetism, electromagnetic induction, quantum mechanics, optics and special relativity. Calculus used extensively. Four classroom, three lab hours per week.

General Education Outcomes:

- Critical Thinking/Problem Solving Competency

Course Outcomes:

Optics

Apply the principles of geometric optics so as to analyze reflection and refraction of light. Use the principles of wave optics to analyze interference and diffraction patterns.

Assessment Method: Locally developed exams

Performance Criteria: 70% of exam items correct.

Assessment Method: Performance appraisals

Performance Criteria: 70% of items correct.

Magnetism

Describe the sources of magnetic fields. Predict the motion of charged particles interacting with magnetic fields.

Assessment Method: Locally developed exams

Performance Criteria: 70% of exam items correct.

Assessment Method: Performance appraisals

Performance Criteria: 70% of items correct.

Electromagnetic Induction

Apply the laws of Faraday and Lenz to analyze the process through which induced currents and electric fields are produced.

Assessment Method: Locally developed exams

Performance Criteria: 70% of exam items correct.

Assessment Method: Performance appraisals

Performance Criteria: 70% of items correct.

Electrostatics

Discuss how an object becomes charged. Calculate the forces between and the electric fields surrounding charged objects. Use the concept of electrical potential to describe electric fields and predict the motion of charged particles.

Assessment Method: Locally developed exams

Performance Criteria: 70% of exam items correct.

Assessment Method: Performance appraisals

Performance Criteria: 70% of items correct.

Quantum Mechanics

Discuss the empirical basis for the "photon" concept. Analyze simple models of atomic structure.

Assessment Method: Locally developed exams

Performance Criteria: 70% of exam items correct.

Assessment Method: Performance appraisals

Performance Criteria: 70% of items correct.

Special Relativity

Discuss the empirical basis for special relativity. Apply the Lorentz transformations to reference frames in relative motion. Analyze energy and energy to mass transformations using special relativity.

Assessment Method: Locally developed exams

Performance Criteria: 70% of exam items correct.

Assessment Method: Performance appraisals

Performance Criteria: 70% of items correct.

DC Conduction & Circuits

Discuss the mechanism of charge conduction in metals. Use Kirchhoff's rules to analyze the behavior of DC circuits.

Assessment Method: Locally developed exams

Performance Criteria: 70% of exam items correct.

Assessment Method: Performance appraisals
Performance Criteria: 70% of items correct.

Outline:

Electrostatics
DC Conduction and Circuits
Magnetism
Electromagnetic Induction
Quantum mechanics
Optics
Special Relativity