

## Master Syllabus

### PHY 1106 - Physics for Technology

**Division:** Science, Mathematics and Engineering

**Department:** Physics

**Credit Hour Total:** 3.0

**Lecture Hrs:** 2.0 **Lab Hrs:** 2.0

**Prerequisite(s):** MAT 0100OR MAT 1110OR MAT 1130OR MAT 1445

**Date Revised:** October 2016

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### Course Description:

Survey of conceptual physics for technology majors. Topics include motion, forces, energy, electricity, magnetism, waves, sound, light, atomic structure and emission and absorption of radiation. Two classroom, two lab hours per week.

### General Education Outcomes:

- Critical Thinking/Problem Solving Competency

### Course Outcomes:

#### Sound

Predict and explain acoustic behavior using a model of sound as a longitudinal wave.

**Assessment Method:** Locally developed exams  
**Performance Criteria:**

70% of exams items are correct.

**Assessment Method:** Performance appraisals  
**Performance Criteria:**

70% of items are correct.

#### Forces

Apply Newton's Laws of Motion to the motion of real objects.

**Assessment Method:** Locally developed exams  
**Performance Criteria:**

70% of exams items are correct.

**Assessment Method:** Performance appraisals  
**Performance Criteria:**

70% of items are correct.

#### Magnetism

Discuss how magnetic fields are produced both by ferromagnetic materials and electric currents and describe the properties of magnetic fields.

**Assessment Method:** Locally developed exams  
**Performance Criteria:**

70% of exams items are correct.

**Assessment Method:** Performance appraisals  
**Performance Criteria:**

70% of items are correct.

#### Electrostatics

Describe the process through which a macroscopic object becomes charged using microscopic models and predict the behavior of interacting charged objects.

**Assessment Method:** Locally developed exams  
**Performance Criteria:**

70% of exams items are correct.

**Assessment Method:** Performance appraisals  
**Performance Criteria:**

70% of items are correct.

#### Electricity

Explain and predict the behavior of DC resistive circuits using relationships between current, electric potential difference and resistance.

**Assessment Method:** Locally developed exams  
**Performance Criteria:**

70% of exams items are correct.

**Assessment Method:** Performance appraisals  
**Performance Criteria:**

70% of items are correct.

### **Energy**

Apply ideas related to energy in order to explain the behavior of real objects including energy transfer and transformation.

**Assessment Method:** Locally developed exams  
**Performance Criteria:**

70% of exams items are correct.

**Assessment Method:** Performance appraisals  
**Performance Criteria:**

70% of items are correct.

### **Waves**

Describe and predict the behavior of vibrating systems including the transport of energy via wave motion.

**Assessment Method:** Locally developed exams  
**Performance Criteria:**

70% of exams items are correct.

**Assessment Method:** Performance appraisals  
**Performance Criteria:**

70% of items are correct.

### **Atomic Structure, Emission and Absorption of Radiation**

Apply the principles of the quantum theory so as to explain the behavior of electrons, protons and neutrons and to describe the interactions of matter and electromagnetic radiation.

**Assessment Method:** Locally developed exams  
**Performance Criteria:**

70% of exams items are correct.

**Assessment Method:** Performance appraisals  
**Performance Criteria:**

70% of items are correct.

### **Motion**

Describe one and two dimensional motions verbally, mathematically using simple models and pictorially using standard graphs and strobe pictures.

**Assessment Method:** Locally developed exams  
**Performance Criteria:**

70% of exams items are correct.

**Assessment Method:** Performance appraisals  
**Performance Criteria:**

70% of items are correct.

### **Light**

Apply the wave model of light in order to explain observable optical phenomena.

**Assessment Method:** Locally developed exams  
**Performance Criteria:**

70% of exams items are correct.

**Assessment Method:** Performance appraisals  
**Performance Criteria:**

70% of items are correct.

### **Outline:**

One and Two Dimensional Motions

Energy

Electricity and Magnetism

Waves, Sound and Light

Atomic Structure

Emission and Absorption of Radiation