

## Master Syllabus

### PHY 1141 - College Physics I

**Division:** Science, Mathematics and Engineering

**Department:** Physics

**Credit Hour Total:** 4.0

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

**Prerequisite(s):** MAT 1290OR MAT 1470OR MAT 1570OR MAT 1580

**Date Revised:** January 2015

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### Course Description:

Algebra-based university-parallel sequence in mechanics, including vectors, statics, work and energy, momentum, rotational motion, elasticity, fluids and thermodynamics. Three classroom, three lab hours per week.

### General Education Outcomes:

- Critical Thinking/Problem Solving Competency

### Course Outcomes:

#### Dynamics

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

**Assessment Method:** Locally developed exams  
**Performance Criteria:** 70% of exam items correct.

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

#### Elasticity

Apply stress and strain relationships so as to describe the elastic properties of solids. Predict the behavior of solids under stress.

**Assessment Method:** Locally developed exams  
**Performance Criteria:** 70% of exam items correct.

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

#### Kinematics

Use graphical and equation based representations of one and two dimensional motions to predict the motion of real objects.

**Assessment Method:** Locally developed exams  
**Performance Criteria:** 70% of exam items correct.

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

#### Thermodynamics

Apply microscopic models of matter and the laws of thermodynamics so as to describe and predict the thermal properties and behavior of matter in gaseous, liquid and solid states.

**Assessment Method:** Locally developed exams  
**Performance Criteria:** 70% of exam items correct.

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

#### Statics

Apply the conditions for static equilibrium to real structures.

**Assessment Method:** Locally developed exams  
**Performance Criteria:** 70% of exam items correct.

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

#### Energy & Momentum

Apply the conservation laws associated with energy, linear and angular momentum to the motion of real objects.

**Assessment Method:** Locally developed exams  
**Performance Criteria:** 70% of exam items correct.

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

#### Vectors

Apply basic principles of vector algebra: addition, subtraction and scalar multiplication. Decompose two dimensional vectors into component form.

**Assessment Method:** Locally developed exams  
**Performance Criteria:** 70% of exam items correct.

**Assessment Method:** Performance appraisals

**Performance Criteria:** 70% of items correct.

**Fluids**

Use the principles of hydrostatics and hydrodynamics to describe and predict the behavior of gases and liquids.

**Assessment Method:** Locally developed exams

**Performance Criteria:** 70% of exam items correct.

**Assessment Method:** Performance appraisals

**Performance Criteria:** 70% of items correct.

**Outline:**

Kinematics Dynamics Vectors and Static Equilibrium Work, Energy, Momentum, and Rotational Motion Elasticity and Fluids Thermodynamics