

## Master Syllabus

### PHY 1131 - Technical Physics

**Division:** Science, Mathematics and Engineering

**Department:** Physics

**Credit Hour Total:** 3.0

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

**Prerequisite(s):** MAT 1280

**Date Revised:** June 2014

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### Course Description:

Algebra-based mechanics including kinematics, dynamics, statics, work, energy, power, rotational motion and fluids. Two classroom, two lab hours per week.

### General Education Outcomes:

- Critical Thinking/Problem Solving Competency

### Course Outcomes:

#### Fluids

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

**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.

#### 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.

#### 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.

#### 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.

### Outline:

Measurement  
Vectors  
One and two-dimensional kinematics  
Dynamics and Newton's laws of motion

Work and energy  
Linear momentum  
Rotational motion  
Fluid mechanics  
Labs: Fundamentals of Measurement  
Equilibrium of a Particle  
Projectile Motion  
Uniformly Accelerated Motion  
Frames of Reference  
Friction  
Addition of Torques  
Conservation of Momentum  
Work and Energy  
Archimedes Principle  
Fluid Flow