Sinclair Community College
444 E. Third St.
Dayton, OH 45402

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

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

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 scaler 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