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

Master Syllabus

PHY 2201 - General Physics I

Division: Science, Mathematics and Engineering

Department: Physics

Credit Hour Total: 5.0 **Lecture Hrs:** 4.0 **Lab Hrs:** 3.0

Prerequisite(s): MAT 2270

Date Revised: June 2014

Course Description:

Fundamentals of mechanics including kinematics, dynamics, work and energy, momentum, oscillations, gravity, fluids, waves and sound, thermodynamics and kinetic theory, using calculus as appropriate. Four classroom, three lab hours per week.

General Education Outcomes:

- Critical Thinking/Problem Solving

Course Outcomes:

Gravity
Apply Newton's Law of Gravitation to the motions 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 & Kinetic Theory
Discuss and predict the behavior and properties of matter by applying the laws of thermodynamics and microscopic models of matter.

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

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

Kinematics
Predict the one and two dimensional motions of objects using equation based and graphical descriptions.

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

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

Vectors
Use vector algebra to solve problems: addition, subtraction, scalar multiplication and scalar (dot) product. Decompose two dimensional vectors into components.

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

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

Fluids
Apply the principles of hydrostatics and hydrodynamics to predict the behavior of liquids and gases.

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

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

Oscillations, Waves & Sound
Describe mechanical oscillations and waves using equation based and graphical descriptions. Discuss the energy transformations that occur in oscillations and energy transport in waves.

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

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

Newton's Laws of Motion/Statics
Predict the motions of real objects by applying Newton's Laws of Motion. Analyze static structures by applying the conditions for equilibrium.

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

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

Work & Energy/Linear Momentum
Apply the conservation laws associated with energy and linear momentum to analyze the interactions between real objects and to predict their motion.

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

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

Torques, Rotations & Angular Momentum
Describe and analyze the rotational motion of real objects using the concept of torque and the conservation law associated with angular momentum.

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

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

Outline:

KinematicsVectorsNewton's Laws of MotionWork and EnergyLinear Momentum and CollisionsTorque, Rotations and Angular MomentumStaticsGravityFluidsOscillations, Waves and SoundThermodynamics and Kinetic Theory