Virginia Western Community College
PHY 201
General College Physics I

Prerequisites
MTH 161 or MTH 167 with a grade of "C" or better.

Course Description
Covers classical mechanics and thermodynamics. Includes kinematics, Newton's laws of motion, work, energy, momentum, rotational kinematics, dynamic and static equilibrium, elasticity, gravitation, fluids, simple harmonic motion, calorimetry, ideal gas law, and the laws of thermodynamics. Part I of II. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

Semester Credits: 4 **Lecture Hours: 3** **Laboratory Hours: 3**

Required Materials
Mastering Physics (online homework system) and a scientific calculator.

Textbook:
College Physics with Mastering Physics access. Young and Adams. 11th edition. Pearson Publishing. ISBN: any of 99780135180327, 9780135720349, 9780135720516

Course Outcomes

At the completion of this course, the student should be able to:

- Apply the equations of kinematics to predict the position and the velocity at a later time.
- Apply Newton's laws of motion to find the acceleration of the objects and to identify other forces in the system.
- Apply the conservation laws (mechanical energy conservation and momentum conservation) to compare the system before and after the interaction.
- Find the solutions of problems involving rectilinear motion, parabolic motion, circular motion & objects in equilibrium.
- Apply the conservation laws to the solutions of problems involving collisions, conservative & non-conservative forces.
- Understand the fluid mechanics, such as buoyant force and Bernoulli's equation.
- Solve problems involving thermal expansion, heat transfer, thermodynamic processes & the behavior of ideal gases.

Topical Description

Lecture Topics

Chapter 1	Models, Measurements, and Vectors
Chapter 2	Motion Along a Straight Line
Chapter 3	Motion in a Plane
Chapter 4	Newton's Laws of Motion
Chapter 5	Applications of Newton's Laws
Chapter 6	Circular Motion and Gravitation
Chapter 7	Work and Energy
Chapter 8	Momentum
Chapter 9	Rotational Motion
Chapter 10	Dynamics of Rotational Motion
Chapter 11	Elasticity and Periodic Motion
Chapter 13	Fluid Mechanics
Chapter 14	Temperature and Heat
Chapter 15	Thermal Properties of Matter
Chapter 16	The Second Law of Thermodynamics

Laboratory Topics

Lab 1	Introduction. Safety. Significant figures. Math review
Lab 2	Pi Measurement
Lab 3	Force table (vector addition)
Lab 4	Free fall
Lab 5	Uniform motion
Lab 6	Projectile motion 1
Lab 7	Projectile motion 2
Lab 8	Atwood machine
Lab 9	Friction and Newton's law
Lab 10	Work-energy theorem
Lab 11	Energy conservation
Lab 12	Momentum conservation

Notes to Instructors

- In order to pass the course, students should earn 50 % of the entire homework grade by the end of the semester. Earning less than 50% of homework will result in 'F grade'.

ADA Statement (PDF)

Title IX Statement (PDF)