NOVA COLLEGE-WIDE COURSE CONTENT SUMMARY
PHY 201-2 - GENERAL COLLEGE PHYSICS I-II (4 CR.) (4 CR.)

Course Description

Teaches fundamental principles of physics. Covers mechanics, thermodynamics, wave phenomena, electricity and magnetism, and selected topics in modern physics. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

General Course Purpose

The course is a non-calculus treatment of physics dealing with topics in classical and modern physics. This course is intended for students in some of the two-year technical programs offered at NVCC and also for pre-med, pre-vet, pre-dental, Liberal Arts and pre-teaching non-science majors, thus satisfying the requirement for a laboratory science at many four-year institutions.

Course Prerequisites/Co-requisites

For PHY 201, MTH 163 - Precalculus I or equivalent and satisfactory placement score for ENG 111. For PHY 202, PHY 201 - General College Physics I and satisfactory placement score for ENG 111.

Course Objectives

As a result of the learning experiences provided in this course, the student should be able to:

- Learn physics as the basic tool of quantitative science and technology
- Learn how to describe physical events in the language of mathematics
- Learn the required physical and mathematical concepts and their sources

Major Topics to be Included

**PHY 201**

- Motion in one dimension with constant velocity and constant acceleration
- Falling bodies and projectile motion
- Newton’s Three Laws of Motion
- Static forces in equilibrium
- Circular motion
- Momentum and impulse
- Work and energy
- Conservation of momentum and energy
- Rotational dynamics
- Physical properties of matter
  - density
  - plastic moduli
- Hydrostatics and hydrodynamics
- Oscillatory motion
- Thermal expansion, specific heat, latent heat
- Ideal gases, P-V diagrams, molar specific head
- Laws of thermodynamics equipartition of energy
• Kinetic theory, entropy
• Wave motion
• Sound

PHY 202

• Coulomb’s Law
• Electric fields, electric potential energy
• Capacitors
• DC circuits, Ohm’s Law, Kirchhoff’s Law
• Magnetic forces, magnetic fields
• Induced voltages
• Inductance
• AC circuits
• Electromagnetic waves
• Geometrical optics
• Interference and diffraction
• Quantum physics
• Atomic physics
• Nuclear structure and energy