

Print Date: 3/27/19
Course Objectives/Course Outline
Spokane Community College

Course Title: Engineering Physics II
Prefix and Course Number: PHYS 202

Course Learning Outcomes:

By the end of this course, a student should be able to:

- Describe the effects of static charge on nearby materials in terms of Coulombs Law
- Explain the fundamental concepts of electricity and electromagnetism, including electrostatic potential energy, electrostatic potential, potential difference, magnetic field, induction, and Maxwell's Laws.
- Explain the general nature of electrical forces and electrical charges, and their relationship to electrical current.
- Solve problems involving the inter-relationship of electrical charges, electrical forces, and electrical fields.
- Apply circuit theory, including Ohm's Law and Kirchhoff's Laws to analyze circuits with potential sources, capacitance, and resistance, including parallel and series capacitance and resistance
- Calculate the force on a charged particle between the plates of a parallel-plate capacitor.
- Use Faradays and Lenz's laws to find the electromotive forces.
- Perform laboratory experiments involving electricity and magnetism, record observations, gather and analyze data, and present the results in written form.
- Relate laboratory observations and measurements to theoretical principles
- Be able to explain physics principles and how physics is used in technology and other aspects of everyday life.
- Make the connection between physics and other academic and vocational subjects.

Course Outline:

The course is organized in the following units and roughly follows the adopted textbook. A minimum of 8 laboratory activities will be carried out in addition to course work.

- Coulomb's Law
- Electric Charge and Electric Field
- Gauss's Law
- Electric Potential
- Capacitance and Dielectrics
- Electric Current, Resistance and Electromotive Force
- DC Circuits
- Magnetic Fields
- Magnetic Fields Due to Currents
- Electromagnetic Induction and Inductance
- Electromagnetic Oscillations and Alternating Current
- Maxwell's Equations and Magnetism of Matter