PHYS 102 Principles of Physics ll

The course provides an overview of the fundamental principles of physics in areas of electricity and magnetism. Topics include electric field, Gauss law, electric potential, capacitance and dielectrics, current and resistance, direct current circuits, magnetic fields, sources of magnetic fields, Biot-Savart Law, Ampere's Law, Faraday's law, and Lenz's Law. The course is designed for students requiring calculus-based physics.

(Pre-requisites: MATH 151 or MATH 153)

Course Learning Outcomes:

By the end of the course, students will be able to:

1. Identify in detail the main theories and concepts behind electricity and magnetism in advanced way
2. Relate the main theories and concepts behind electricity and magnetism to real-life situation using some advanced skills.
3. Solve defined and some undefined problems using combined theories and concepts of electricity and magnetism.

Textbook & Course Materials:

- Principles of Physics, by Walker, Halliday and Resnick, 10th Edition (Wiley)

Course Content:

1. Electric Field
2. Gauss Law
3. Electric Potential
4. Capacitance and Dielectrics
5. Capacitance and Dielectrics Current and Resistance
6. Direct Current Circuits
7. Magnetic Fields
8. Lorentz Force
9. Maxwell Equations