

## **Electricity and Magnetism**

**3 Credit Hours**

### **Objectives**

The primary objective of the course is to teach student calculus based general physics, particularly basic concepts of thermodynamics, electricity, and magnetism. The following topics will be covered in the course: Temperature, Thermal expansion, Kinetic theory and the ideal gas, Heat and First law of thermodynamics, Entropy and Second law of thermodynamics, Review of Vectors, Electric Charge and Coulomb's law, Electric field, Gauss's law, Electric potential, Capacitors and dielectrics, Current and resistance, Ohm's Law, Simple resistive circuits (series and parallel), Magnetic field, Ampere's law, Faraday's law of induction, Lien's Laws, Ampere's Law and its applications.

### **Prerequisites**

Mechanics and Wave Motion

### **Text Book**

Halliday, Resnick, and Walker, *Fundamentals of Physics Extended*, Sixth Edition, ISBN: 978-0-471-32000-5

### **Reference Books**

- Sears and Zemansky, *University Physics*, vol. 1 and 2. ISBN-10: 0201603365