

**Brief Course Description**

Course number: ECE 220	Course name: Electromagnetics
لغة تدريس المقرر: English	Pre-requisites: ECE 210, ECE 202
Credit hours: 4 ( 3+ 2+ 0 )	Course level: Level 6- Third Year

**Course Description**

وصف المقرر :

Course description:

Review of vector algebra and vector Calculus. Electrostatics: Coulomb's law, Gauss's law, electric potential, Poisson's and Laplace's equation, image method, resistance and capacitance. Magnetostatics: Biot-Savart law, Ampere's law, Magnetic forces, magnetic boundary conditions and inductance.

**Course objectives**

أهداف المقرر :

- ✓ To introduce the basic concepts of electric charge and magnetism.
- ✓ To explain the concepts of the electrostatic field, the potential difference, and Gauss law.
- ✓ To allow students learn the principals of the static magnetism and its laws.
- ✓ To link the electric circuits elements to electromagnetism.

**Course Outcomes**

مخرجات التعليم:

Upon completing the course, the student should be able to:

- Use vector algebra and vector calculus in electromagnetism.
- Describe and explain the basic concepts of electricity and magnetism such as charge, potential and field.
- Understand Gauss' law, Ampere's Law, Biot-Savart law and their applications.
- Carry out experiments, analyze the obtained data and compare with theoretical results.

**Textbook and references**

الكتاب المقرر والمراجع المساندة:

Book	Authors	Publisher	Publication year
Elements of Electromagnetics (textbook)	M. Sadiku	Oxford University Press	2015
Engineering Electromagnetics	W.H. Hayt, and J. A. Buck	McGraw-Hill	2007
Fundamentals of Applied Electromagnetics	F. T. Ulaby and U. Ravaioli	Pearson	2015