EE214-2: Electromagnetic Fields

Course code and name	EE214-2: Electromagnetic Fields
Credits units	2 Credit units
Contact hours	4 Contact hours: 1 lecture, 1 tutorial and 2 practical
Instructor name	Dr. Shaban Marzouk Eladl
Textbook	Ulaby, F. "Fundamentals of applied electromagnetic", Practice-Hall, 2004 Media Edition
Other supplemental materials	-
	Specific course information
a. Course description	This course will give students a sufficient background on the fundamentals of electromagnetic Fields, electrostatic electric fields, fixed electric current, fixed magnetic field, time varying electric and electromagnetic fields.
b. Prerequisite	EE111-3
c. Required / Elective	Required
	Course Learning Outcomes

CLO of the Lecture Activities:

CLO1: Explain all basic concepts and engineering fundamentals concerning Electromagnetic Field and different applications.

CLO2: Apply different techniques of vector calculus to understand different concepts of electromagnetic field theory.

CLO3: Solve the theoretical problems related to the physical quantities of Electromagnetic Field.

CLO4: Analyze several characteristic parameters such as electric field intensity due to charge distributions, work, electric potential, current, current density, and magnetic field intensity.

CLO of the Laboratory Activities:

CLO1: Verify theory and to improve knowledge learned in class.

CLO2: Formulate and solve problems related to theory.

CLO3: Design and safety conducts an experimental procedure.

CLO4: Independently perform accurate quantitative measurements, interpret experimental results, perform calculations on these results and draw a reasonable, accurate conclusion.

CLO5: Communicate critical analysis of scientific information through written reports.

CLO6: Be integrated inside a group of work and respect the team working.

Brief list of topics to be covered

- Vector analysis and representation

- Coordinate Systems

- Coulomb Forces between electric charges

- Electric field intensity due to point electric charge

- Electric field intensity due to line charge and Electric field intensity due to surface charge

- Electrostatic field: work, Energy, and potential

- Current, current density, and carrier mobility

- Force within magnetic field

- Maxwell's Equations

Mapping Course Learning Outcomes to Student Outcomes

	Lecture Activities						
	SO1	SO2	SO3	SO4	SO5	SO6	SO7
CLO1							
CLO2							
CLO3							
CLO4							

	Laboratory Activities						
	SO1	SO2	SO3	SO4	SO5	SO6	SO7
CLO1							
CLO2							
CLO3							
CLO4							
CLO5							
CLO6							