Mata Kuliah (MK)	Course Name	: Electromagnetic Fields
	Code	: EE184303
	Credits	: 4
	Semester	: III

Description of Course

Electromagnetic Field discusses the basic theory of electromagnetic fields and their application to the theory of conductor materials, semionductors and capacitors. In addition, this course provides knowledge about the concepts of static and time-varying electromagnetic fields and their application in electrical components and machines. Also discusses static magnetic fields, dynamic fields and their applications.

Learning Outcomes

KNOWLEDGE

(P01) Mastering the concepts and principles of science and engineering mathematics, and implementing them in the form of procedures for analysis and design in power systems, control systems, multimedia telecommunications, or electronics.

SPECIFIC SKILL

(KK01) Able to formulate engineering problems in power systems, control systems, multimedia telecommunications, or electronics.

GENERAL SKILL

(KU02) Able to apply logical, critical, systematic and innovative thinking in the context of development or implementation of science and technology that concerns and implements the value of humanities in accordance with their area of expertise.

ATTITUDE

(S09) Demonstrating attitude of responsibility on work in his/her field of expertise independently

(S11) Trying his/her best to achieve perfect results.

Course Learning Outcomes

KNOWLEDGE

Mastering the basic concepts of electromagnetic fields which include electrostatic field theory, electromagnetics field which either is static or changing against time, as well as related basic laws.

Mastering the concept of static magnetic fields, the concept of dynamic electromagnetic fields, Maxwell's equations and their applications.

SPECIFIC SKILL

Able to analyze the problems of the electrostatic field and to use the related basic laws.

Able to analyze the problems of static magnetic fields and dynamic electromagnetic fields and be able to analyze the propagation of flat waves together in various medium.

GENERAL SKILL

Able to work independently, to show quality and measurable performance in analyzing problems.

Able to analyze peroblems in electrostatic field and electromagnetics in static and changing againts time.

ATTITUDE

Able to be responsible for the work, both individually and in groups.

Main Subjects

1. Vector, Coulomb Law, and Electric Field Intensity
2. Electric Flux Density, Gauss Law, and Divergence
3. Energy and Potential
4. Conductor, Dielectric and Capacitance
5. Static Magnetic Field
6. Material & Magnetism, Inductance
7. The field changes with time, Maxwell's theorem
8. Uniform Plane Wave

Reference(s)

[1] William H. Hayt, Jr. . John A. Buck, 8th Edition of Engineering Electromagnetics, McGraw-Hill, 2010

[2] Joseph Edminister, Schaum's Outline of Electromagnetics Schaum's Outline of Electromagnetics, 2013

Prerequisite(s)

EE184201 Linear Algebra and Discrete Structures