Course Title	Course Code	Number of Study Hours			Year	Level	Prerequisites
		Theoretical	Laboratory	Credit			
Electrodynamics	331PHYS	3	--	3	3rd	5th	231PHYS

(1) Brief Course Description

This course includes the discussion on electric phenomena when the charge is assumed to be at rest (electrostatics), magnetic phenomena under steady state consideration (magnetostatics) and some special techniques. It mainly focuses on establishing the notion of electrodynamics based on the time and spatial dependence of the electric and magnetic fields. It also encompasses Maxwell's equations and derivation of electromagnetic wave equation for vacuum and material medium.

(2) Course Objectives

This course is designed to provide the students with:

- The differential and integral calucus that required to understand electrodynamics.
- Calculataion of electric and magnetic fields for simple system, to describe properties of electric and magnetic fields using divergence, curl and gradient .
- Solve some problems using the method of images.
- Maxwell's equations and subsequent discussion on electromagnetic wave theory.

(3) Course Contents

- Vector calculus (differentiation and integration).
- Electrostatics.
- Special Techniques.
- Magnetostatic.
- Electromagnetic induction.
- Maxwell's equations.
- Electromagnetic waves theory in vacuum and material medium

(4) Assessment Criteria

- Periodic Exams: 40%
- Oral, Student Activity and Essay: 10%
- Final Exam: 50%

(5) Course Teaching Strategies

- Lectures, Reports and Essay Assignments, Homework, and Web-based Assignments.

(6) Text Book

- Introduction To Electrodynamics, 3rd Edition, Dived J. Griffiths, Prentice-Hall-, Inc., Englewood Cliffs, 1991.

(7) Reference Books

- Foundations of Electromagnetic Theory, 4th Edition, John R. Reitz, Frederick J. Milford, Robert W. Christy, Addison-Wesley Publishing Company, Inc., 2008.

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