

Planning and Quality Assurance Affairs

Form (A)

Course Specifications

General Information

Course name	Electromagnetic theory(2)
Course number	PHYS4328
Faculty	
Department	
Course type	College Needs
Course level	4
Credit hours (theoretical)	3
Credit hours (practical)	0
Course Prerequisites	

Course Objectives

1 - 1- Understand the principles of Electrodynamics.
2 - 2-Adopt self, in addition to develop skills in Electrodynamics.
3 - 3-Acquire practical skills in order to understand effects of electromagnetic fields in environments.

Intended Learning Outcomes

Knowledge and Understanding	<ul style="list-style-type: none"> * Illustrate the theoretical, practical, principles and concepts of electrodynamics. * Identify appropriate reporting styles for interpreting and analyzing Magnetic materials. * Describe applications of Electrodynamics which affect the environment
Intellectual Skills	<ul style="list-style-type: none"> * Interpret laws and theories of Electrodynamics and their applications. * Investigate methods considering laws and concepts for solving problems in Electrodynamics.
Professional Skills	<ul style="list-style-type: none"> * techniques efficiently for dielectrics based on comprehensive electrodynamics knowledge according to the national standards and safety regulations. * Manipulate theoretical results using appropriate mathematical tools and techniques for Magnetic materials..
General Skill	<ul style="list-style-type: none"> * Employ recent communication and information technologies, models, systems and tools effectively in electrodynamics.

Course Contents

1 - Electrodynamics, electromotive force, Faradys law, Maxwells equations
2 - , ,The field of magnetized object, bound currents, Ampers law in magnetized materials , electromagnetic waves in vaccum, electromagnetic waves in matter, absorption and dispersion, guided waves
3 - Potentials and fields, scalar and vector potentials, gauge transformation, coulomb gauge and lorentz gauge

Teaching and Learning Methods

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| 1 - Lectures with power points presentation.
2 - Manual of solved problems and Class discussions.
3 - independent reading throughout basic text books and research papers |
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Teaching and Learning Methods for the Disabled Students

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| 1 - Student oral presentations |
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Students Assessment

<u>Assessment Method</u>	<u>TIME</u>	<u>MARKS</u>
First mid term exam	week 6	20
Second mid term exam	week 12	20
Attendance and discussion		5
Homework and project reports	End term	5
Final exam	Week 15 or 16	50

according to faculty's
schedule for exams.

Books and References

Course note	Lecturer private notes
Essential books	1-David j. Griffiths , introduction to electrodynamics, prentice-Hall Inc ,1999. 2-David j. Griffiths , Introductors solutions manual introduction to electrodynamics, prentice-Hall Inc ,1999.
Recommended books	J.D.Jackson, Classical Electrodynamics, Seconded, Wiley, 1975. Ribari?, M., and L. ?u?ter?i?, 1990, Conservation Laws and Open Questions of Classical Electrodynamics, World Scientific, Singapore
Other References (Periodical, web sites, etc.)	http://www.youtube.com/watch?v=DSRLvkP0vmg Electrodynamics library, AUM