

Planning and Quality Assurance Affairs

Form (A)

Course Specifications

General Information

Course name	Electromagnetic Theory(1)
Course number	PHYS3314
Faculty	
Department	
Course type	Major Needs
Course level	3
Credit hours (theoretical)	3
Credit hours (practical)	0
Course Prerequisites	

Course Objectives

- 1 - Apply mathematical methods for electrodynamics.
- 2 - develop critical, analytical and personal skills that prepare students to be active contributor to solve problems in electrodynamics.
- 3 -
- 4 - learn the tools and ethics of scientific research.
- 5 - develop continuously his knowledge in the specialized field to be qualified for public sector and real job market.
- 6 - encourage a view of mathematics as a way of thinking and as a language for communicating ideas, and to develop effective ways of visualizing and thinking more generally.

Intended Learning Outcomes

Knowledge and Understanding	<ul style="list-style-type: none">* Describe the importance of Electrodynamics and the relation between Electrodynamics and other sciences in solving Society problems.* Interpret the theoretical bases electrodynamics and its techniques* Illustrate discussion and thought, leading to solution of problems.
Intellectual Skills	<ul style="list-style-type: none">* Conclude the essential facts, concepts, principles and theories relating to electrodynamics* Focus on a range of solutions and critically evaluate and justify proposed design solutions.* Apply mathematical method in solving problems with industrial constraints using recent development .
Professional Skills	<ul style="list-style-type: none">* Implement scientific research on the investigated data; considering scientific guidance.* Apply electrodynamics problems related to industry.* Construct physical problems and find suitable solutions for their problems.
General Skill	<ul style="list-style-type: none">* Employ recent communication and information technologies, models and tools effectively in electrodynamics topics.* Lead team work effectively for solving problems; appreciating the values of independent thinking, continuous learning, time management, collaboration, neatness, property rights, ethics and traditions.

Course Contents

1 - vector analysis
2 - Electrostatics
3 - solution of electrostatic problems
4 - electrostatic field in dielectric media
5 - Microscopic theory of dielectrics
6 - Magnetic field of steady currents

Teaching and Learning Methods

1 - using Whiteboard
2 - using international websites
3 - independent reading throughout basic text books and research papers

Teaching and Learning Methods for the Disabled Students

1 - student oral presentation

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	End of course	50

Books and References

Course note	Lecturer private notes
Essential books	Foundation of electromagnetic theory, John Reitz, third edition ,1979, Introduction to electrodynamics,Griffiths, third edition, 1999.
Recommended books	1- W.H.Hayt ,Engineering Electromagnetic ,W.H.Hayt ,McGraw-Hill , Tokyo,1974. 2- J.V.Stewart ,Intermediate Electromagnetic Theory, World Scientific Publishing Company , London,2001.
Other References (Periodical, web sites, etc.)	Electrodynamics library, AUM