

Syllabus

Electromagnetism in Energy Science

Course Name	Course type (credit/hours)		전필(3/3)		Course code	
	Target students Division/major/grade		에너지시스템 학과/6학년		Opening semester	2017년 1학기
	Class time and classroom		화6(원242) 화7(원242) 화8(원242)(원242)			
Reference to this course	Related basic courses					
	Recommended concurrent courses					
	Related advanced courses					
Instructor	Name (title/division)		안광준(교수/에너지시스템 학과)			
	Office Room Number	에너지센터 213호	Office phone Number	031-219-2740	e-mail	kjahn@ajou.ac.kr
	Office hours	매 주 화 17:00-18:00		Homepage address		
Teaching Assistant	Name (title/division)					
	Office Room Number		Office phone Number		e-mail	

1. Introduction

This one semester course is aimed to offer graduated students in nature science and engineering departments principal understanding as well as general overview of classical electromagnetics. Students have opportunity to solve independently diverse electromagnetic problems with help of specialized mathematical techniques, to visualize results with open source graphics programs, and, in consequence, to develop themselves to understand complex electromagnetic phenomena.

2. Course Objectives

3. Class types and activities

In this course three-hour lecture per week is mainly given. Lecture materials are opened to students one day earlier. Active attendance of students is strongly recommended. All students must submit homeworks before the dead line and take part in the midterm and the final examination.

4. Teaching Method

In this course three-hour lecture per week is mainly given.
Lecture materials are opened to students one day earlier.
Active attendance of students is strongly recommended.
All students must submit homeworks before the dead line
and take part in the midterm and the final examination.

5. Knowledge and ability required for taking this course

6. Method of Evaluation

Evaluation Item	The Number of Times	Evaluation Proportion	Remarks
Attendance		5	
midterm exam		40	
final exam		40	
quiz			
presentation			
discussion			
homework		15	
etc			

Midterm examination 40%
Final examination 40%
Homeworks 15%
Attendance and enthusiasm 5%

7. Textbooks

Main/Sub	Title	Writer	Publisher	Publication year
주교재	Introduction to Electrodynamics	D. J. Griffiths	Prentics Hall International Inc.	1999
부교재	Classical Electrodynamics 3rd Ed.	J. D. Jackson	John Wiley & Sons, Inc.	1999
부교재	Classical Electrodynamics	W. Greiner	Springer	1998

8. Lecture Schedule

Week	Lecture contents	Lesson type	Remark
1	Courese Introduction, Vector Analysis	Lecture	
2	Dirac Delta Function	Lecture	
3	Coulomb's law, Divergence and Curl of Electrostatic Fields	Lecture	
4	Potential, Work, and Energy in Electrostatics	Lecture	
5	Laplace Equations, Method of Images, Multipole Expansion	Lecture	
6	Boundary value problems	Lecture	
7	Polarization, Displacement Field, and Linear Dielectrics	Lecture	
8	Midterm Exam		
9	Lorentz Force Law, Biot-Savart Law	Lecture	
10	Divergence and Curl of Magnetic Fields	Lecture	
11	Magnetization, Ampere's Law, Auxiliary Field H, Magnetic Media	Lecture	
12	Ohm's Law, Faraday's Law	Lecture	
13	Maxwell's Equations	Lecture	
14	Electromagnetic Waves in Vacuum	Lecture	
15	Electromagnetic Waves in Linear Media	Lecture	
16	Final Exam		

9. Others

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