Syllabus

Electromagnetism in Energy Science

Prof.	Name	Ahn Kwang Jun	Sub.	Student	Department	Energy Systems Research
	Position	Associate Professor			Major	Energy Systems
	Group	Energy Systems Research				

1. Course Description

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, in consequence, to develop themselves to understand complex electromagnetic phenomena.

2. Teaching Methods

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.

3. Evaluation

Midterm examination 40%
Final examination 40%
Quizzes 10%
Attendance and enthusiasm 10%

4. TextBooks

5. 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		

6. Others