Syllabus

Code/Name	EEE 208 / Electromagnetic field Theory
Type	Required
Credit/ECTS	6/6
Hour per Week	4 (2+2)
Level/Year	Undergraduate/4
Semester	Spring
Classroom	A103
Content	Electrostatic fields in free space and materials; Solution methods of electrostatic problems; Energy and forces in electrostatic fields; Electric fields and conductors; Magnetostatic fields in free space and materials; Solution methods of magnetostatic problems; Magnetic properties of materials; Relationship between circuit and field theory; Introduction to the Maxwell equations
Prerequisites	None
Textbooks	***Primary*** M. N. O Sadiku, Elements of Electromagnetics, Oxford University Press, 2001.. ***Supplementary*** D. K. Cheng, Fundamentals of Engineering Electromagnetics, Addison Wesley, 1993.
Objectives	• to use vector calculus efficiently to solve electromagnetic problems. • to learn the electrostatic phenomena and be able to solve static electric field • to comprehend the magnetostatic phenomena and be able to solve static magnetic field problems
Course Outcomes	In this course you will be able to: CO1 Comprehend scalar and vector field concepts CO2 Use gradient, divergence and curl operations CO3 Evaluate line, surface and volume integrals CO4 Know the relationship between charges/currents and fields CO5 Know the charges/currents-potentials and potentials-fields relationships CO6 Know the electromagnetic classification of materials

Weekly Schedule of Topics

W	Topic
1-2	Orthogonal coordinate systems
3-4	Vector operations
5	Line, volume and surface integrals
6	Coulomb's law, electroststic field intensity, electric field intensity
7	Electric flux density and Gauss law Applications of Gauss law
8	Electric potential and electric field-potential relationship
9	Boundary conditions for electrostatic fields
10	Fundamental postulates of magnetostatics, Ampere law and magnetic vector potential
11	Biot-Savart law
12	Magnetic dipole, magnetic diople moment, magnetization of materials

13	Forces due to magnetic fields and magnetic boundary conditions
14	Inductance, inductor, magnetic energy and magnetic circuits

Contribution to Program Outcomes*

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	3	4	1	4	0	0	3	3	1	0	0
CO2	5	4	1	4	0	0	4	3	2	0	0
CO3	4	4	1	4	0	0	3	3	1	0	0
CO4	3	3	1	4	0	0	5	3	1	0	0
CO5	3	4	1	4	0	0	2	3	0	0	0
CO6	5	5	1	4	0	0	4	3	1	0	0

* Contribution Level | 0: None | 1: Very Low | 2: Low | 3: Medium | 4: High | 5: Very High

Special Conditions	- Students work in groups. - Experimental studies are reported using MS Word equation editor or Latex. - The laboratory reports are presented, as well.
Requirements	Basic knowledge of Matlab; Knowledge of MS Word Equation Editor or Latex
Course Policy	- Be in the class or laboratory on time. - English should always be used to communicate with one another. - Please be prepared by reviewing the assigned readings and laboratory notes. - At least **80%** attendance is required, otherwise a grade of **DZ** will be assigned. - You must be present in class for the presentations, otherwise you will not be graded for the presentation.
Cheating & Plagiarism	- Copying or letting someone copy your work on exams, assignments, or reports is cheating. - Cutting and pasting text, figures and tables from web sources or any other electronic source is plagiarism. - The consequence of academic dishonesty is to receive a grade of **FF** for the course.
Evaluation	Laboratory (7×10 pts.) 70% Midterm Exam 15% Final Exam 15% Total 100%

Instructor

Name/Surname	Akın Uslu	Email	akin.uslu@alanya.edu.tr
Room	209	Office Hours	W 11.30-12.30	F 13.30-14.30

Prepared by Akın Oktav on june 10th, 2024