EEE261 Electromagnetics I (4-0)-4
2026 Fall Semester

Lecturers: Dr. Musa BUTE
Main Reference: David K. Cheng, Field and Wave Electromagnetics, 2nd Edition, Addison Wesley

Major Aims: Students will learn basic physical laws of static electric fields and will gain experience in applying these theories to the solution of problems.

Course Content: Review of vector differential calculus. Electrostatic fields in vacuum and in dielectric media; Coulombs' Law. Gauss law; Conductors, capacitance energy and forces; Uniqueness theorem. Continuity conditions at an interface. Images.

Supplementary References:
1. W. H. Hayt, J. A. Buck, Engineering Electromagnetics, (5th or 6th) Edition, McGraw Hill
2. S.V. Marshall, R. E. DuBroff, Electromagnetic Concepts and Applications, 4th Edition, Prentice Hall
3. J. D. Krauss, Electromagnetics, 4th Edition, McGraw Hill
4. P.Lorrain and D.Corson, Electromagnetic Fields and Waves, 2nd Edition, Freeman
5. M.N.O.Sadiku, Elements of Electromagnetics, 3rd Edition, Oxford University Press

---

Exams and Grading:
Midterm Exams, (2 x30%) and Final Exam (40%).

- Grading will be not 30 points for DD.
- Grading will be as in the right table of our university chart.
- Please do not insist on this situation at the end of the final exam.

Point	Grade	Coefficient
95-100	AA	4,00
90-94	BA+	3,75
85-89	BA	3,50
80-84	BB+	3,25
75-79	BB	3,00
70-74	CB+	2,75
65-69	CB	2,50
60-64	CC+	2,25
55-59	CC	2,00
50-54	DC	1,50
45-49	DD	1,00
40-44	FD	0,50
<40	FF	0,00
Not Attended	NA	0,00

Course Outline:

Week	Subject
Lecture 1	*Introduction, Electromagnetic Model, SI Units, Universal Constants*
Lecture 2	*Vector Analysis, Product of vectors, Coordinate Systems,*
Lecture 3	*Integrals of vector functions, Divergence, Curl, Divergence and Stokes's Theorems*
Lecture 4	*Helmholtz's Theorem, Coulomb's Law and Electric Field Intensity,*
Lecture 5	*Examples of field by charge densities, Gauss' Law*
Lecture 6	*Gauss' Law Applications*
	1st Mid-term Exam
Lecture 7	*Electric Potential, Conductors in Static Electric Field, Electric Flux Density*
Lecture 8	*Dielectrics in Static Electric Field, Electric Flux Density*
Lecture 9	*Boundary conditions*
Lecture 10	*Boundary conditions, Capacitance and Capacitors, Energy and Forces*
Lecture 11	*Poisson's and Laplace Equations*
Lecture 12	*Image Method, Boundary-Value Problems for single variables*
Lecture 13	*Boundary-Value Problems*
Lecture 14	**2nd Mid-term Exam**
	Final Exam