

Instructors:

Dr. A.bdefl-Fattah Sheta
Dr. Ibrahim Elshafiey:

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Lectures Schedule: Sat., Mon., and Wed.
9:00 – 9:50
10:00 – 10:50
11:00 – 11:50

Textbook: M.N.O. Sadiku, *Elements of Electromagnetics*, 3rd Edition, Oxford University Press.

Outline

Review: ch. 1, ch. 2, and ch. 3

Vector Algebra; Coordinate Systems and Transformation; Vector Calculus

Electrostatics: ch. 4, ch. 5, and ch. 6

Coulomb's Law; Electric Fields; Electric Flux Density; Gauss's Law-Maxwell's Equation; Applications of Gauss's Law; Electric Potential; Relationship between E and V-Maxwell's Equation; Energy Density; Properties of Materials; Conductors; Dielectrics; Continuity Equation; Boundary Conditions; Poisson's and Laplace's Equations; Uniqueness Theorem; Resistance and Capacitance; Method of Images.

Magnetostatics: ch. 7 and ch. 8

Biot-Savart's Law; Ampere's Circuit Law and its Applications; Magnetic Flux Density; Maxwell's Equations for Static EM Fields; Magnetic Scalar and Vector Potential; Forces due to Magnetic Field; Magnetic Torque and Moment; Magnetic Dipole; Magnetization in Materials; Magnetic Boundary Conditions; Inductors and Inductances; Magnetic Energy; Magnetic Circuits; Force on Magnetic Materials.

GRADING:

20%	Homework and Quizzes	
20%	First In-term Exam	(17/9/1426)
20%	Second In-term Exam	(13/11/1426)
40%	Final Exam	

Attendance:

Attendance is mandatory in lectures and tutorials. A student who misses more than 25% of classes will not be allowed to take the final