Electrical engineering Courses – EE

EE 238 – Electrical Engineering Fundamentals

Hour: Lecture: 2 Hrs. Tutorial: 2 Hrs. Credit: 3.
Coordinator: Yasser Galal

Text Book:

- J. Nilson & S. Riedel, "Electrical circuits", Prentice Hall, latest edition

Specific course information:

a. Basic circuit: Current, Voltage, Ohm's law – Kirchoff's current and voltage laws – Resistance in series or parallel - Mesh analysis – Nodal analysis– Electromagnetism ; laws of magnetic force, field strength, flux density, magnetic induction– Relation between B,H,I and K, force on a conductor lying in magnetic field– Alternating current: waves– effective– and mean values– phasor representation– voltage– current and impedance as complex numbers– phasor analysis– instantaneous and complex power– RL & RC circuits– RLC circuits– analysis of A-C networks– power analysis (active, reactive, apparent, power factor)– Resonance– Polyphase circuits: three-phase generation, Y-Y, Y-Δ, Δ-Y and Δ-Δ three phase circuit analysis
b. Prerequisite: BA124
c. Designation: Required

Specific goals for the course:

- An ability to apply knowledge of mathematics, science, and engineering.
- An ability to design and conduct experiments, analyze and interpret data.
- An ability to function on multi-disciplinary teams.

Course instruction outcomes:

- The students will be able to provide detailed skills related to the basic circuit, circuit theorems, the laws of magnetic force, and the alternating current.

Student outcomes:
A, E, D

Topics Covered:

- Basic dc circuits elements
- Ohm's law
- Kirchhoff's laws

- Resistances in series and parallel
- Mesh analysis
- Source transformation
- Superposition method
- Laws of magnetic force
- Field strength and flux density
- Alternating current circuits
- Waves' average and effective values
- Power calculations.

Course / credit hours	Math & Basic Sciences	Engineering Topics	General Education
Electrical Engineering Fundamentals /3	0.5	2.5	