EE1100: BASIC ELECTRICAL ENGINEERING

Course Content:

1. Properties of resistance, Ohms law, KVL, KCL, mesh and nodal analysis, Network theorems: Superposition, Thevenin, Norton and maximum power transfer. 2. Properties of inductance and capacitance, DC transients: Series RL, RC, RLC and parallel RLC. 3. Single phase AC, voltage and current phasors, impedance, network theorems application to AC, frequency response of ac circuits, resonance, filters, active power, reactive power, apparent power, power factor. 4. Balanced Three phase AC, three phase power, star and delta connection. 5. Single phase transformer: Principle of operation, equivalent circuit, OC and SC test, voltage regulation, efficiency. 6. Three phase Induction motor: Construction, rotating magnetic field, principle of operation, slip, torque, equivalent circuit, efficiency. 7. DC machines: Principle of operation, excitation, equivalent circuit, emf, speed and torque characteristics. 8. Diodes and applications: Diode characteristics, voltage and current relationship, diode circuits-rectifiers, peak and envelop detectors, solar cell. 9. Operational amplifiers: Description of amplifiers as a black box and definition of gain, effect of feedback on gain, Operational amplifier circuits: Non-inverting, inverting, summing, differential, integrators, differentiators, buffers.

Text Books:

1. Electrical Engineering Fundamentals, **Vincent Del Toro**, Prentice Hall, 2006.

Reference Books:

1. Electrical Circuit Theory and Technology**, John Bird**, Elsevier, 2011.
2. Essentials of Electrical and Computer Engineering, **Kerns & Irwin**, Pearson, 2004.
3. Electrical Engineering Concepts and Applications, **Carlson and Gisser**, Addison Wesley, 1990.

Prerequisite: