EE110 FUNDAMENTALS OF ELECTRICAL ENGINEERING
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COURSE OBJECTIVE:

This subject has been introduced for the undergraduate students to understand and develop the concepts of basic electrical engineering for all the undergraduate students of different branches of engineering.

COURSE CONTENT:

D.C. Circuits: Units and dimensions, Ohm's Law, Kirchhoff's Law, Superposition theorem, Thevenin's theorem and their application for analysis of series and parallel resistive circuits excited by independent voltage sources, Power & Energy in such circuits. Mesh & nodal analysis, Star Delta circuits.

1- phase AC Circuits: Generation of sinusoidal AC voltage, definition of average value, R.M.S. value, form factor and peak factor of AC quantity , Concept of phasor, Concept of Power factor, Concept of impedance and admittance, Active, reactive and apparent power, analysis of R-L, R-C, R-L-C series & parallel circuit

3-phase AC Circuits: Necessity and advantages of three phase systems, Meaning of Phase sequence, balanced and unbalanced supply and loads. Relationship between line and phase values for balanced star and delta connections. Power in balanced & unbalanced three-phase system and their measurements

Magnetic Circuits: Basic definitions, magnetization characteristics of Ferro magnetic materials, self inductance and mutual inductance, energy in linear magnetic systems, coils connected in series, AC excitation in magnetic circuits, magnetic field produced by current carrying conductor, Force on a current carrying conductor. Induced voltage, laws of electromagnetic Induction, direction of induced E.M.F.
single phase transformer- general construction, working principle, e.m.f. equation, open circuit and short circuit test

Electrical Machines: D.C. Motor & D.C. Generator, Three phase Induction motor and Synchronous Machines, their general construction, working principle, emf equation and applications. Types of losses occurring in electrical machines.

COURSE OUTCOMES

The final outcome of the subject will result into an enhancement in understanding the basic concepts of Core Electrical Engineering subjects. The topics covered under this subject will help to enhance the basic understanding of Electrical machines and power systems.

EVALUATION

Evaluation will be continuous an integral part of the class followed by final examination.

REFERENCES

1.   D.P. Kothari & I.J. Nagrath, Basic Electrical Engineering, Tata McGraw Hill, latest edition.
2. S.N. Singh , Basic Electrical Engineering, P.H.I.,2013
3. Rajendra Prasad, Fundamentals of Electrical Engineering, Prentice Hall,2014
4.   M.S. Sukhija, T. K. Nagsarkar, Basic Electrical and electronics engineering, Oxford University press,2012
5. C.L. Wadhwa, Basic Electrical Engineering. New Age International.
6. Bharti Dwivedi, Fundamentals of Electrical Engineering, Wilkey India, 2013
7. Sanjeev Sharma, Basic Electrical Engineering, I.K. International