

BASIC ELECTRICAL ENGINEERING

Course Code : 19EEE15/25

L:T:P : 3:0:0

Exam Hours : 03

Credits : 03

CIE Marks : 50

SEE Marks : 50

Course Outcomes: At the end of the course, the Student will be able to:

CO1	Solve DC circuits using simple network reduction methods
CO2	Analyze single phase and three phase systems and compute various parameters
CO3	Select the appropriate energy conversion technique based on the application
CO4	Utilize the electrical utilities with appropriate protection and energy saving technique
CO5	Assess the performance characteristics of measurement system
CO6	Evaluate and choose measuring instrument based on the quantity to be measured in various applications

Mapping of Course Outcomes to Program Outcomes:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	-	2	1	-	-	-	-	-	-	-
CO2	3	3	-	2	1	-	-	-	-	-	-	-
CO3	3	3	-	2	1	-	-	-	-	-	-	-
CO4	3	3	-	1	1	-	-	-	-	-	-	-
CO5	3	3	-	1	1	-	-	-	-	-	-	-
CO6	3	3	-	2	1	-	-	-	-	-	-	-

Course Syllabus			
Module No.	Contents of the Module	Hours	COs
1	DC Circuits Introduction to Electrical Engineering Concepts of DC circuits – Ohm's Law – Resistance, Temperature Coefficient of Resistance, Power and Energy – Series and parallel circuits–star/delta conversion – Kirchhoff's laws	9	CO1
2	AC Circuits Concepts of AC circuits – RMS value, average value, form factor and peak factor – Single phase circuits (R,L,C,RL,RC,RLC) – Power Triangle – Power factor Concepts of Three phase circuits – Relation between line and phase quantities in star and delta connected balanced systems –Measurement of Power and Power factor by two wattmeter method	9	CO2
3	Electromagnetic Induction and Energy Conversion	9	CO3

	<p>Faraday's Law of Electromagnetic Induction – Self and Mutually induced emfs – Statically induced and dynamically induced emfs – Self and Mutual Inductances – Simple Problems</p> <p>Construction and Working Principle – DC generator and motor – Single Phase Transformer – Synchronous generator – Single phase induction motor – Three phase induction motor</p>		
4	<p>Electric Utilities and Protection</p> <p>Different sources of Electrical Energy – Single Line Diagram of Power System – Electrical tariff – Energy audit – Energy Conservation – Basic elements in electrical wiring (Service mains, meter board and Distribution board, Concealed conduit wiring, Two way and Auditorium wiring) – Protection (Fuse & MCB) – Electric Shock and prevention – Earthing (Pipe & Plate)</p>	9	CO4
5	<p>Measurement and Instrumentation</p> <p>Functional elements of measuring instruments – Types of measuring instruments – Standards, Errors and calibration Principle and types of analog and digital voltmeters, ammeters, multimeters – Single and three phase wattmeters and energy meters – Current and Potential transformers</p>	9	CO5, CO6

Text Books

1. Basic Electrical Engineering, V.K. Metha, Rohit Metha, S.Chand Publishing, Revised edition, 2006
2. Basic Electrical Engineering, DC Kulshreshtha, Revised First Edition, Tata McGraw Hill, 2017
3. Basic Electrical and Electronics Engineering, S.K. Bhattacharya, Pearson Education, 2017
4. A Course in Electrical and Electronic Measurements and Instrumentation, J. B. Gupta, S. K. Kataria & Sons, 2014.

Reference Books

1. Basic Electrical Engineering, S.S. Dash, C.Subramani, K.Vijayakumar, Second edition, Vijay Nicole Imprints Pvt. Ltd, 2015
2. Basic Electrical Engineering - Volume I, P.S. Dhogal, Tata McGraw Hill, 2006
3. Electronic Instrumentation, H. S. Kalsi, Tata McGraw Hill, Third Edition, 2012

4. Explanations/Solutions to an Integrated Course in Electrical Engineering, J.B.Gupta, S. K. Kataria & Sons, 2018.

Assessment Pattern

CIE- Continuous Internal Evaluation (50 Marks)

Bloom's Category	Tests	Assignment-1	Assignment-2	Quiz1	Quiz2
Marks(Out of 50)	25	7.5	7.5	5	5
Remember	5				
Understand	5			2.5	2.5
Apply	10	3.5	3.5	2.5	2.5
Analyze	5	3.5	3.5		
Evaluate					
Create					

SEE- Semester End Examination (50 Marks)

Bloom's Category	Marks Theory (50)
Remember	10
Understand	10
Apply	20
Analyze	10
Evaluate	
Create	