15EE101	**BASIC ELECTRICAL ENGINEERING**	**L**	**T**	**P**	**C**
	Total Contact Hours - 30	**2**	**0**	**0**	**2**
	Prerequisite				
	Nil				

PURPOSE	
This course provides comprehensive idea about circuit analysis, working principles of machines and common measuring instruments.	
INSTRUCTIONAL OBJECTIVES	
1.	Understand the basic concepts of magnetic circuits, AC & DC circuits.
2.	Explain the working principle, construction, applications of DC & AC machines and measuring instruments.
3.	Gain knowledge about the fundamentals of wiring and earthing

UNIT I – FUNDAMENTALS OF DC CIRCUITS (6 hours)

Introduction to DC and AC circuits, Active and passive two terminal elements, Ohms law, Voltage-Current relations for resistor, inductor, capacitor , Kirchhoff's laws, Mesh analysis, Nodal analysis, Ideal sources –equivalent resistor, current division, voltage division

UNIT II – MAGNETIC CIRCUITS (6 hours)

Introduction to magnetic circuits-Simple magnetic circuits-Faraday's laws, induced emfs and inductances

UNIT III – AC CIRCUITS (6 hours)

Sinusoids, Generation of AC, Average and RMS values, Form and peak factors, concept of phasor representation, J operator. Analysis of R-L, R-C, R-L-C circuits. Introduction to three phase systems - types of connections, relationship between line and phase values.

UNIT IV – ELECTRICAL MACHINES & MEASURING INSTRUMENTS (6 hours)

Working principle, construction and applications of DC machines and AC machines (1 - phase transformers, single phase induction motors: split phase, capacitor start and capacitor start & run motors). Basic principles and classification of instruments -Moving coil and moving iron instruments.

UNIT V – ELECTRICAL SAFETY, WIRING &INTRODUCTION TO POWER SYSTEM (6 hours)

Safety measures in electrical system- types of wiring- wiring accessories- staircase, fluorescent lamps & corridor wiring- Basic principles of earthing-Types of earthing- Simple layout of generation, transmission & distribution of power.

TEXT BOOK

1. Dash.S.S, Subramani.C, Vijayakumar.K, ”Basic Electrical Engineering”, First edition,Vijay Nicole Imprints Pvt.Ltd,2013

REFERENCES

1. Smarajt Ghosh, “*Fundamentals of Electrical & Electronics Engineering*”, Second edition, PHI Learning, 2007.
2. Metha.V.K, Rohit Metha, “*Basic Electrical Engineering*”, Fifth edition, Chand. S & Co, 2012.
3. Kothari.D.P and Nagrath.I.J, “*Basic Electrical Engineering*”, Second edition, Tata McGraw - Hill, 2009.
4. Bhattacharya.S.K, “*Basic Electrical and Electronics Engineering”*, First edition, Pearson Education, 2011.

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<tr><td colspan="2">Course designed by</td><td colspan="11">Department of Electrical and Electronics Engineering</td></tr>
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