

EEE1001	Basic Electrical and Electronics Engineering		L	T	P	J	C
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Pre-requisite	NIL	Syllabus version					
		v. 1.0					
Course Objectives:							
1. To understand the various laws and theorems applied to solve electric circuits and networks							
2. To provide the students with an overview of the most important concepts in Electrical and Electronics Engineering which is the basic need for every engineer							
Expected Course Outcome:							
1. Solve basic electrical circuit problems using various laws and theorems							
2. Analyze AC power circuits and networks, its measurement and safety concerns							
3. Classify and compare various types of electrical machines							
4. Design and implement various digital circuits							
5. Analyze the characteristics of semiconductor devices and comprehend the various modulation techniques in communication engineering							
6. Design and conduct experiments to analyze and interpret data							
Student Learning Outcomes (SLO): 1,2,9							
Module:1	DC circuits	5 hours					
Basic circuit elements and sources, Ohms law, Kirchhoff's laws, series and parallel connection of circuit elements, Node voltage analysis, Mesh current analysis, Thevenin's and Maximum power transfer theorem							
Module:2	AC circuits	6 hours					
Alternating voltages and currents, AC values, Single Phase RL, RC, RLC Series circuits, Power in AC circuits-Power Factor- Three Phase Systems – Star and Delta Connection- Three Phase Power Measurement – Electrical Safety –Fuses and Earthing, Residential wiring							
Module:3	Electrical Machines	7 hours					
Construction, Working Principle and applications of DC Machines, Transformers, Single phase and Three-phase Induction motors, Special Machines-Stepper motor, Servo Motor and BLDC motor							
Module:4	Digital Systems	5 hours					
Basic logic circuit concepts, Representation of Numerical Data in Binary Form- Combinational logic circuits, Synthesis of logic circuits							
Module:5	Semiconductor devices and Circuits	7 hours					
Conduction in Semiconductor materials, PN junction diodes, Zener diodes, BJTs, MOSFETs, Rectifiers, Feedback Amplifiers using transistors. Communication Engineering: Modulation and Demodulation - Amplitude and Frequency Modulation							
	Total Lecture hours:		30 hours				
Text Book(s)							
1.	1. John Bird, 'Electrical circuit theory and technology ', Newnes publications, 4 t h Edition, 2010.						
Reference Books							

1.	Allan R. Hambley, ‘Electrical Engineering -Principles & Applications’ Pearson Education, First Impression, 6/e, 2013		
2.	Simon Haykin, ‘Communication Systems’, John Wiley & Sons, 5 t h Edition, 2009.		
3.	Charles K Alexander, Mathew N O Sadiku, ‘Fundamentals of Electric Circuits’, Tata McGraw Hill, 2012.		
4.	Batarseh, ‘Power Electronics Circuits’, Wiley, 2003		
5.	H. Hayt, J.E. Kemmerly and S. M. Durbin, ‘Engineering Circuit Analysis’, 6/e, Tata McGraw Hill, New Delhi, 2011.		
7.	Fitzgerald, Higgabogan, Grabel, ‘Basic Electrical Engineering’, 5t h edn, McGraw Hill, 2009.		
8.	S.L.Uppal, ‘Electrical Wiring Estimating and Costing ’, Khanna publishers, NewDelhi, 2008.		
Mode of Evaluation: CAT / Assignment / Quiz / FAT / Project / Seminar			
List of Challenging Experiments (Indicative)			
1.	Thevenin’s and Maximum Power Transfer Theorems – Impedance matching of source and load	3 hours	
2.	Sinusoidal steady state Response of RLC circuits	3 hours	
3.	Three phase power measurement for ac loads	3 hours	
4.	Staircase wiring circuit layout for multi storey building	3 hours	
5.	Fabricate and test a PCB layout for a rectifier circuit	3 hours	
6.	Half and full adder circuits.	3 hours	
7.	Full wave Rectifier circuits used in DC power supplies. Study the characteristics of the semiconductor device used	3 hours	
8.	Regulated power supply using zener diode. Study the characteristics of the Zener diode used	3 hours	
9.	Lamp dimmer circuit (Darlington pair circuit using transistors) used in cars. Study the characteristics of the transistor used	3 hours	
10.	Characteristics of MOSFET	3 hours	
Total Laboratory Hours		30 hours	
Mode of assessment: CAT / Assignment / Quiz / FAT / Project / Seminar			
Recommended by Board of Studies		29/05/2015	
Approved by Academic Council		37 th AC	Date 16/06/2015