



SWARNANDHRA

COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous)

Accredited by NBA, AICTE, NEW DELHI • Accredited by NAAC with "A" Grade – 3.32/4.00 CGPA

Recognized by UGC Under Sections 2(f) & 12 (B) of UGC Act 1956

Approved by AICTE, New Delhi, Permanent Affiliated to JNTU K, Kakinada

Seetharampuram, NARSAPUR-534 280, W.G-Dist., Andhra Pradesh

Department of Electrical and Electronics Engineering

TEACHING PLAN

Course Code	Course Title	Semester	Branches	Contact Periods/Week	Academic Year	Date of Commencement of Semester
20EE1T01	BASIC ELECTRICAL AND ELECTRONICS ENGINEERING	I	MECH & ROBOTICS	7	2021-2022	2/12/2021

Course Outcomes: After successful completion of this course, students should be able to:

1	Solve simple DC circuit using KVL, KCL and Network Theorems.[K3]
2	Understand the fundamental concepts of single-phase and three phase systems analysis for simple AC circuit.[K2]
3	Demonstrate the construction, working principles and operating characteristics of DC machines, transformer and AC rotating machines.[K2]
4	Study the construction details, operation and characteristics of various semiconductor devices, digital and logic operations.[K]

Unit	Outcome/Bloom's Level	Topics No.	Topics/ Activity	Text Book/ Reference	Cont act Hour	Delivery Method
I	Solve simple DC circuit using KVL, KCL and Network Theorems.[K3]	1.1	Introduction to the subject	R1,R2, T3	1	Chalk and Board
		1.2	Electrical Circuit Elements	R1,R2, T3	1	Chalk and Board
		1.3	Voltage and Current Sources	R1,R2, T3	1	Chalk and Board
		1.4	Ohms Laws	R1,R2, T3	1	Chalk and Board
		1.5	Kirchoff's Laws and Star/Delta Conversion	R1,R2, T3	1	Chalk and Board
		1.6	Series and Parallel connections	R1,R2, T3	1	Chalk and Board
		1.7	Superposition Theorem	R1,R2, T3	1	Chalk and Board
		1.8	Thevenin's and Norton's Theorems	R1,R2, T3	1	Chalk and Board
		1.9	Problems	R1,R2, T3	1	Chalk and Board
		1.10	Problems	R1,R2, T3	1	Chalk and Board
Content beyond syllabus: series and parallel connections for inductors and					1	Chalk and



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capacitors					Total	11	Board
II	Understand the fundamental concepts of single-phase and three phase systems analysis for simple AC circuit.[K2]	2.1	Introduction to AC circuits	T1,R1, R2	1	Chalk and Board	
		2.2	Sinusoidal Waveforms Peak and RMS Values,	T1,R1, R2	1	Chalk and Board	
		2.3	Phasor Representation	T1,R1, R2	1	Chalk and Board	
		2.4	Real Power, Reactive Power, Apparent Power	T1,R1, R2	1	Chalk and Board	
		2.5	Power Factor, Analysis of Single Phase AC Circuits	T1,R1, R2	1	Chalk and Board	
		2.6	Three Phase Circuits	T1,R1, R2	1	Chalk and Board	
		2.7	Voltage and Current Relations in Star/ Delta Connections	T1,R1, R2	1	Chalk and Board	
		2.8	Problems	T1,R1, R2	1	Chalk and Board	
		2.9	Problems	T1,R1, R2	1	Chalk and Board	
Content beyond syllabus: Two wattmeter method						1	Chalk and Board
					Total	10	
III	Demonstrate the construction, working principles and operating characteristics of DC machines, transformer and AC rotating machines.[K2]	3.1	Classification of DC Machines	T3,R2, R3	1	Chalk and Board	
		3.2	Construction of DC Generator and Motor	T3,R2, R3	1	Chalk and Board	
		3.3	Principle of operation of DC Generator and Motor	T3,R2, R3	1	Chalk and Board	
		3.4	EMF Equation of DC Generator and Motor	T3,R2, R3	1	Chalk and Board	
		3.5	Performance Characteristics	T3,R2, R3	1	Chalk and Board	
		3.6	Simple problems	T3,R2, R3	1	Chalk and Board	
		3.7	Classification of AC Machines	T3,R2, R3	1	Chalk and Board	
		3.8	Transformers	T3,R2, R3	1	Chalk and Board	
		3.9	Synchronous Machines	T3,R2, R3	1	Chalk and Board	
		3.10	Induction motor Performance Characteristics	T3,R2, R3	1	Chalk and Board	
		3.11	Starting Methods	T3,R2, R3	1	Chalk and Board	



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		3.12	Problems	T3,R2, R3	1	Chalk and Board
Content beyond syllabus: 4-point Starter					1	Chalk and Board
Total					13	
IV	Study the construction details, operation and characteristics of various semiconductor devices, digital and logic operations.[K]	4.1	Characteristics of PN Junction Diode	T3,R1, R4	1	Chalk and Board
		4.2	Zener Diode	T3,R1, R4	1	Chalk and Board
		4.3	Intrinsic and Extrinsic Semiconductors	T3,R1, R4	1	Chalk and Board
		4.4	Semiconductor Diodes	T3,R1, R4	1	Chalk and Board
		4.5	Bipolar Junction Transistors-CB, CE, CC Configurations and Characteristics	T3,R1, R4	1	Chalk and Board
		4.6	FET and MOSFET	T3,R1, R4	1	Chalk and Board
		4.7	Silicon-controlled Rectifier	T3,R1, R4	1	Chalk and Board
		4.8	DIAC and TRIAC	T3,R1, R4	1	Chalk and Board
		4.9	Half wave and Full wave Rectifiers	T3,R1, R4	1	Chalk and Board
		4.10	Voltage Regulation	T3,R1, R4	1	Chalk and Board
Content beyond syllabus: UJT,IGBT and Amplifiers					1	Chalk and Board
Total					11	
V	Study the construction details, operation and characteristics of various semiconductor devices, digital and logic operations.[K]	5.1	Binary Number System	T4,R5	1	Chalk and Board
		5.2	Logic Gates	T4,R5	1	Chalk and Board
		5.3	Boolean Algebra	T4,R5	1	Chalk and Board
		5.4	De Morgan's Theorem	T4,R5	1	Chalk and Board
		5.5	Simplification of Boolean Expressions using De Morgan's Theorem	T4,R5	2	Chalk and Board
		5.6	Half and Full Adders	T4,R5	2	Chalk and Board
		5.7	A/D and D/A Conversion.	T4,R5	2	Chalk and Board
Content beyond syllabus: Karnaugh Maps					1	Chalk and Board



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		Total	11
Text Books:			
S. No.	Authors, Book Title, Edition, Publisher, Year of Publication		
1	D.P. Kothari and I.J. Nagrath, Basic Electrical Engineering, 3rd edition, Tata McGrawHill, 2010.		
2	P. V. Prasad, S. Sivanagaraju, K. R. Varmah, and Chikku Abraham, Basic Electrical Engineering, Cengage, 2019 edition.		
3	J. B. Gupta, Basic Electrical & Electronics Engineering, S. K. Kataria & Sons Publications, 2019 edition		
4	A. AnandKumar, Switching Theory and Logic Design by PHI Learning Pvt Ltd, 2019 edition.		
Reference Books:			
S. No	Authors, Book Title, Edition, Publisher, Year of Publication		
1	<u>V K Mehta & Rohit Mehta</u> , "Principles of Electrical Engineering and Electronics", S Chand Publishers, 2019 edition.		
2	Basic Electrical Engineering - D.C. Kulshreshtha, Basic Electrical Engineering, Tata McGraw Hill. 2009 edition.		
3	L.S. Bobrow, Fundamentals of Electrical Engineering, Oxford University Press, 2011		
4	E. Hughes, Electrical and Electronics Technology, 10th Edition, Pearson, 2010		
5	M. Morris Mano, Michael D Ciletti, Digital Design 4th edition, PHI publication, 2018 edition.		
Web Details:			
1	https://youtu.be/FjaJEo7knF4		
2	https://youtu.be/3TR_DS_7z2w?list=PLbRMhDVUMngfdEXVcdf_ijk2Eub-UHs_y		
3	https://www.youtube.com/watch?v=GxEKkKZhTpU		
4	https://www.youtube.com/watch?v=mx3J9wdbJ30&list=PL4K9r9dYCOors6MRFwoIe9_iBzSzUp2Zi		
		Name	Signature
i.	Course Coordinator	Y. VENKATESH	
ii.	Module Coordinator	K.K.D. BHAVANI	
iii.	Programme Coordinator	A. SATYANARAYANA	

Principal