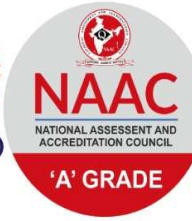




VISAKHA
INSTITUTE OF ENGINEERING & TECHNOLOGY
 Approved by AICTE NEW DELHI
 (Affiliated to JNTUGV, VIZIANAGARAM)
 88th Division, Narava, GVMC, Visakhapatnam-530027
DIPLOMA | ENGINEERING | MANAGEMENT



COLLEGE CODE
VSPT

DEPARTMENT OF ELECTRICAL & ELECTRONICS ENGINEERING

LESSON PLAN

Course Code	Course Title	Year/Sem	Branch	Contact Hrs/Week	Section
R20	UTILIZATION OF ELECTRICAL ENERGY	III/I	EEE	5	EEE

COURSE OUTCOMES:

At the end of the course students are able to

CO1: Identify various illumination methods produced by different illuminating sources.

CO2: Identify a suitable motor for electric drives and industrial applications

CO3: Identify most appropriate heating and welding techniques for suitable applications.

CO4: Distinguish various traction system and determine the tractive effort and specific energy consumption.

CO5: Validate the necessity and usage of different energy storage schemes for different applications and comparisons.

Unit No.	Out Comes	TOPIC(S)	BOOK Reference	Total periods	Delivery Method	GATE/ IES
UNIT I - Illumination fundamentals						
1	CO1:To study the basic principles of illumination and its measurements and to design the different types lighting systems..	1.1 Introduction 1.2 terms used in illumination 1.3 Laws of illumination 1.4 Polar curves 1.5 Integrating sphere 1.6 Lux meter 1.7 Sources of light 1.8 Discharge lamps 1.9 MV and SV lamps 1.10 Comparison between tungsten filament lamps and fluorescent tubes 1.11 Basic principles of light control 1.12 Types and design of lighting	T1 T1 T1 T1 T1 T1 T1 T1 T1 T1 T1	15	Chalk & Talk, PPT, Active Learning, Smart board & Tutorial	

			and flood lighting			
		1.13	LED lighting	T1		
		1.14	Energy conservation	T1		
UNIT II - Selection of Motors						
2	CO2: To utilize different algorithms of ANN.	2.1	Choice of Motor	T1, T2	9	Chalk & Talk, PPT Tutorial, Active Learning Smart board&C ase Study
		2.2	Type of Electric Drives	T1, T2		
		2.3	Starting And Running Characteristics	T1, T2		
		2.4	Speed Contro	T1		
		2.5	Temperature Rise	T1		
		2.6	Applications of Electric Drives	T1, T2		
		2.7	Types of Industrial Loads	T1, T2		
		2.8	Continuous–Intermittent And Variable Loads	T1		
		2.9	Load Equalization	T1		
		2.10	Introduction To Energy Efficient Motors.	T1, T2		
UNIT III – Electric Heating						
3	CO3: To distinguish between classical and fuzzy sets.	3.1	Advantages and methods of electric heating	T1, T2	15	Chalk & Talk, PPT, Smart board‘La b, Tutorial
		3.2	Resistance heating induction heating and dielectric heating.	T1, T2		
		3.3	Electric welding	T2		
		3.4	Resistance and arc welding	T1, T2		
		3.5	Electric welding equipment	T2		
		3.6	Comparison between AC and DC Welding.	T2		
UNIT IV- Electric Traction						
	CO4:To understand the basic principles of electric traction including speed–time curves of different traction services and calculation of braking, acceleration and other related parameters.	4.1	System of electric traction and track electrification	T1, T2	14	Chalk & Talk, PPT, Smart board‘La b, Tutorial
		4.2	Review of existing electric traction systems in India	T1		
		4.3	Special features of traction motor			
		4.4	Mechanics of train movement–Speed–time curves for different services			
		4.5	Trapezoidal and quadrilateral speed time curves.			
		4.6	Calculations of tractive effort			
		4.7	power –Specific energy consumption for given run	T1, T2		

		4.8	Effect of varying acceleration and braking retardation				
		4.9	Adhesive weight and braking retardation adhesive weight and coefficient of adhesion				
		4.10	Numerical problems.				
UNIT V - Introduction to Energy Storage Systems							
5	CO5: To Introduce the concepts of various types of energy storage systems.	5.1	Need For Energy Storage	T1, T2	10	Chalk & Talk, PPT Tutorial, Active Learning & Seminars	
		5.2	Types of Energy Storage- Thermal - Electrica	T1, T2			
		5.3	Magnetic And Chemical Storage Systems	T2			
		5.4	Comparison of Energy Storage Technologies	T2			
		5.5	Applications	T2			
			TOTAL		63		

CO1	Identify various illumination methods produced by different illuminating sources.	APPLY	K3
CO2	Identify a suitable motor for electric drives and industrial applications	APPLY	K3
CO3	Identify most appropriate heating and welding techniques for suitable applications	APPLY	K3
CO4	Distinguish various traction system and determine the tractive effort and specific energy consumption.	ANALYZE	K4
CO5	Validate the necessity and usage of different energy storage schemes for different applications and comparisons.	APPLY	K3

CO-PO MAPPING: (1: Slight [Low]; 2: Moderate [Medium]; 3: Substantial [High]); ‘-’: No Correlation)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1-K3	3	3	3	3	2	<u>2</u>	<u>2</u>	<u>2</u>	<u>2</u>		3	3
CO2-K3	3	3	2	2	2	3	2	-	2		3	3
CO3-K3	3	3	2	3	2	2	2	-	2		3	2
CO4-K4	3	3	2	3	2	2	2	-	2		2	3
CO5-K3	3	3	2	3	2	3	2	-	2		3	2

S.NO	GRADUATE ATTRIBUTION	ACTION VERBS	LEVEL
1	ENGINEERING KNOWLEDGE	APPLY	K3
2	PROBLEM ANALYSIS	ANALYZE	K4
3	DESIGN DEVELOPMENT OF SOLUTIONS	UNDERSTANDIG	K2
4	INVESTIGATION OF COMPLEX PROBLEMS	APPLY, ANALYZE,	K3,K4

5	MODERN TOOL USAGE	APPLY	K3
6	ENGINEER AND SOCIETY	ANALYZE	K4
7	ENVIRONMENT AND SUSTAINABILITY		
8	ETHICS		
9	INDIVIDUALS AND TEAM WORK	APPLY, ANALYZE	K3,K4
10	COMMUNICATION	APPLY, ANALYZE,	K3,K4
11	PROJECT MANAGEMENT AND FINANCE	APPLY	K3
12	LIFE LONG LEARNING		

Text Books:

S.No.	AUTHORS, BOOK TITLE, EDITION, PUBLISHER, YEAR OF PUBLICATION
1.	Utilization of Electric Energy – by E. Openshaw Taylor - Orient Longman.
2.	Art & Science of Utilization of electrical Energy – by Partab - Dhanpat Rai& Sons.
3.	Thermal energy storage systems and applications”-by Ibrahim Dincer and Mark A.Rosen. John Wiley and Sons 2002.

Reference Books:

S.No.	AUTHORS, BOOK TITLE, EDITION, PUBLISHER, YEAR OF PUBLICATION
1.	Utilization of Electrical Power including Electric drives and Electric traction – by N.V.Suryanarayana - New Age International (P) Limited - Publishers - 1996.
2.	Generation - Distribution and Utilization of electrical Energy – by C.L. Wadhwa - New Age International (P) Limited - Publishers - 1997

	Name	Signature with Date
i. Faculty	Rongali Maha Lakshmi	
ii. Course Coordinator		

HOD

PRINCIPAL