



**BIJU PATTANAİK INSTITUTE OF TECHNOLOGY**  
**GOVERNMENT POLYTECHNIC, PURI**  
ସରକାରୀ ବହୁବୃତ୍ତି ଅନୁଷ୍ଠାନ, ପୁରୀ

# **LESSON PLAN**

**ON**

**U.E.E.T**

**5<sup>TH</sup> SEMESTER**

***PREPARED BY***

**MR. NILAKANTHA NAIK**

**LECTURER IN ELECTRICAL ENGINEERING DEPARTMENT,**

**GOVERNMENT POLYTECHNIC, PURI.**





# GOVERNMENT POLYTECHNIC, PURIDEPARTMENT OF ELECTRICAL ENGINEERING

Discipline:  
**ELECTRICAL  
ENGINEERING**

Semester:  
**5<sup>TH</sup>**

Name of the Teaching Faculty: **MR NILAKANTHA NAIK,  
LECTURER IN ELECTRICAL ENGINEERING**

Subject: **UEET**

No. of  
days/per  
week  
class  
allotted: **4**

Semester From date: **15/09/2022** To Date: **22/12/2022**  
  
No. of Weeks: **15**

**PRE-  
REQUISITE**

Basic knowledge about dc /ac current, charge, mode of heat transfer, different types of motors etc.

**COURSE OUT  
COMES**

CO1: Able to maintain electric drives used in an Industries  
CO2: Able to identify a heating/ welding scheme for a given application  
CO3: Able to maintain/ Trouble shoot various lamps and fittings in use

Week	Class Day	Practical Topics	DELIVERY METHOD
1 <sup>ST</sup>	1 <sup>st</sup>	<b>1. ELECTROLYTIC PROCESS</b> 1.1 Definition and Basic principle of Electro Deposition.	Whiteboard
	2 <sup>nd</sup>	1.2 Important terms regarding electrolysis	Whiteboard
	3 <sup>RD</sup>	1.3 Faradays Laws of Electrolysis. 1.4 Definitions of current efficiency, Energy efficiency	Whiteboard
	4 <sup>TH</sup>	1.5 Principle of Electro Deposition.	Whiteboard
2 <sup>ND</sup>	1 <sup>st</sup>	1.6 Factors affecting the amount of Electro Deposition	Whiteboard
	2 <sup>nd</sup>	1.7 Factors governing the electro deposition.	Whiteboard
	3 <sup>RD</sup>	1.8 State simple example of extraction of metals. 1.9 Application of Electrolysis.	Whiteboard
	4 <sup>TH</sup>	<b>QUIZ/ASSIGNMENT</b>	
3 <sup>RD</sup>	1 <sup>st</sup>	<b>ELECTRICAL HEATING</b> 2.1. Advantages of electrical heating. 2.2. Explain mode of heat transfer and Stephen's Law.	Whiteboard
	2 <sup>nd</sup>	2.3. Discuss principle of Resistance heating. 2.3.1 Direct Resistance heating. 2.3.2 Indirect Resistance heating.	Whiteboard
	3 <sup>RD</sup>	2.4. Explain working principle of direct arc furnace and indirect arc furnace.	Whiteboard
	4 <sup>TH</sup>	2.5. Principle of Induction heating	Whiteboard
4 <sup>TH</sup>	1 <sup>st</sup>	2.6. Working principle of direct core type, vertical core type and indirect core type Induction furnace.	Whiteboard
	2 <sup>nd</sup>	2.7. Principle of coreless induction furnace and skin effect.	Whiteboard
	3 <sup>RD</sup>	2.8. Principle of dielectric heating and its application 2.9. Principle of Microwave heating and its application.	Whiteboard
	4 <sup>TH</sup>	<b>QUIZ/ASSIGNMENT</b>	
5 <sup>TH</sup>	1 <sup>st</sup>	<b>PRINCIPLES OF ARC WELDING</b> 3.1 Explain principle of arc welding.	Whiteboard
	2 <sup>nd</sup>	3.2 Discuss D. C. & A. C. arc phenomena	Whiteboard
	3 <sup>RD</sup>	3.3 D.C. & A. C. arc welding plants of single and multi-	Whiteboard



6TH		operation type.	
	4 <sup>TH</sup>	3.3 D.C. & A. C. arc welding plants of single and multi-operation type.	Whiteboard
	1 <sup>st</sup>	3.4 Types of arc welding	Whiteboard
	2 <sup>nd</sup>	3.4 Types of arc welding	Whiteboard
	3 <sup>RD</sup>	3.5 Explain principles of resistance welding. 3.6 Descriptive study of different resistance welding methods.	Whiteboard
	4 <sup>TH</sup>	<b>QUIZ/ASSIGNMENT</b>	
7TH	1 <sup>st</sup>	<b>4. ILLUMINATION</b> 4 . 1 Nature of Radiation and its spectrum.	Whiteboard
	2 <sup>nd</sup>	4 . 2 Terms used in Illuminations. i. Luminous intensity ii. Lumen iii. Intensity of illumination iv. MHCP v. MSCP vi. MHSCP vii. Brightness viii. Solid angle ix. Luminous efficiency	Whiteboard
	3 <sup>RD</sup>	4 . 3 Explain the inverse square law and the cosine law	Whiteboard
	4 <sup>TH</sup>	4 . 4 Explain polar curves.	Whiteboard
8 <sup>TH</sup>	1 <sup>st</sup>	4 . 5 Describe light distribution and control. Explain related definitions like maintenance factor and depreciation factors.	Whiteboard
	2 <sup>nd</sup>	4 . 6 Design simple lighting schemes and depreciation factor.	Whiteboard
	3 <sup>RD</sup>	4 . 7 Constructional feature and working of Filament lamps, effect of variation of voltage on working of filament lamps.	Whiteboard
	4 <sup>TH</sup>	4 . 7 Constructional feature and working of Filament lamps, effect of variation of voltage on working of filament lamps.	Whiteboard
9 <sup>TH</sup>	1 <sup>ST</sup>	4 . 8 Explain Discharge lamps.	Whiteboard
	2 <sup>ND</sup>	4 . 8 Explain Discharge lamps.	Whiteboard
	3 <sup>RD</sup>	4 . 9 State Basic idea about excitation in gas discharge lamps. 4 . 10 State constructional factures and operation of: - Fluorescent lamp. (PL and PLL Lamps)	Whiteboard
	4 <sup>TH</sup>	<b>QUIZ/ASSIGNMENT</b>	
10 <sup>TH</sup>	1 <sup>ST</sup>	<b>INDUSTRIAL DRIVES</b> 5 . 1 State group and individual drive.	Whiteboard
	2 <sup>ND</sup>	5 . 1 State group and individual drive.	Whiteboard
	3 <sup>RD</sup>	5 . 2 Method of choice of electric drives.	Whiteboard
	4 <sup>TH</sup>	5 . 2 Method of choice of electric drives.	Whiteboard
11 <sup>TH</sup>	1 <sup>ST</sup>	5 . 2 Method of choice of electric drives	Whiteboard
	2 <sup>ND</sup>	5 . 3 Explain starting and running characteristics of DC and AC motor.	Whiteboard

	3 <sup>RD</sup>	5.3 Explain starting and running characteristics of DC and AC motor.	Whiteboard
	4 <sup>TH</sup>	5.3 Explain starting and running characteristics of DC and AC motor.	Whiteboard
12 <sup>TH</sup>	1 <sup>ST</sup>	5.4 State Application of : 5.4.1 DC motor 5.4.2 3-phase induction motor series motor, universal motor and repulsion motor 5.4.3 State the application of 3-phase synchronous motors. 5.4.4 Application Of Single phase induction,	Whiteboard
	2 <sup>ND</sup>	<b>QUIZ/ASSIGNMENT</b>	
	3 <sup>RD</sup>	<b>ELECTRIC TRACTION</b> 6.1. Explain system of traction.	Whiteboard
	4 <sup>TH</sup>	6.1. Explain system of traction	Whiteboard
13 <sup>TH</sup>	1 <sup>ST</sup>	6.2. System of Track electrification	Whiteboard
	2 <sup>ND</sup>	6.2. System of Track electrification	Whiteboard
	3 <sup>RD</sup>	6.2. System of Track electrification	Whiteboard
	4 <sup>TH</sup>	6.3. Running Characteristics of DC and AC traction motor	Whiteboard
14 <sup>TH</sup>	1 <sup>ST</sup>	6.3. Running Characteristics of DC and AC traction motor	Whiteboard
	2 <sup>ND</sup>	6.3. Running Characteristics of DC and AC traction motor	Whiteboard
	3 <sup>RD</sup>	6.4. Explain control of motor 6.4.1 Tapped field control	Whiteboard
	4 <sup>TH</sup>	6.4. Explain control of 6.4.2 Rheostatic control 6.4.3 Series parallel control	Whiteboard
15 <sup>TH</sup>	1 <sup>ST</sup>	6.4. Explain control of 6.4.4 Metadyne control	Whiteboard
	2 <sup>ND</sup>	6.5. Explain Braking of the following types. 6.5.1 Regenerative Braking	Whiteboard
	3 <sup>RD</sup>	6.5.2 Braking with 1-phase series motor 6.5.3 Magnetic Braking	Whiteboard
	4 <sup>TH</sup>	<b>QUIZ/ASSIGNMENT</b>	

#### LEARNING RESOURCES:

1. Utilization of Electrical Energy by Traction G. C. Garg Khanna Publisher
2. Utilization of Electrical Energy E. I. Taylor TMH
3. A Text book on Power system Engineering Soni, Gupta and Bhatnagar Dhanpat Rai & Sons

#### WEBSITE RESOURCES:

<https://www.youtube.com/playlist?list=PLm...>





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15/9/22

*[Signature]*  
Principal  
G.P Puri  
15/9/2022

*[Signature]*  
Sign. of HOD i/c  
15/9/22

