BHUBANANANDA ORISSA SCHOOL OF ENGINEERING, CUTTACK

ELECTRICAL ENGG.DEPARTMENT

LESSON PLAN

SEMESTER : 5th (C)

SESSION – Winter(2022-23)

SUBJECT: UTILIZATION ELECTRICAL ENERGY&TRACTION

NAME OF FACULTY: PRATIK MOHANTY

Discipline: **Electrical Engg.**	Semester: **5th (C)**	Name of the teaching faculty: **PRATIK MOHANTY**
Subject-**Utilization of Electrical Energy and Traction**	No. of Days/per week class allotted:**04 PERIODS/WEEK (MON,TUE,FRI,SAT-1 period each)**	Semester: From Date: **1/10/2022** To Date: **08/01/2022** No. of weeks: **15 WEEKS**
Week	Class Day	Theory/Practical Topics
1st (15/09/2022-17/09/2022)	16/09/2022	**1. ELECTROLYTIC PROCESS:** 1.1. Definition and Basic principle of Electro Deposition.
2nd (19/09/2022-24/09/2022)	19/09/2022	Important terms regarding electrolysis
	20/09/2022	Faradays Laws of Electrolysis..
	23/09/2022	1.4Definitions of current efficiency, Energy efficiency. 1.5. Principle of Electro Deposition.
	24/09/2022	1.6 Factors affecting the amount of Electro Deposition. 1.7. Factors governing the electro deposition.
3rd (26/09/2022-01/10/2022)	26/09/2022	1.8State simple example of extraction of metals. 1.9. Application of Electrolysis.
	27/09/2022	**ELECTRICAL HEATING**: 2.1. Advantages of electrical heating.
	30/09/2022	2.2 Mode of heat transfer and Stephen's Law.
	01/10/2022	2.3. Principle of Resistance heating. (Direct resistance and indirect resistance heating.
4th (03/10/2022-08/10/2022)		**PUJA HOLIDAYS**
5th (10/10/2022-15/10/2022)	10/10/2022	2.4. Discuss working principle of direct arc furnace and indirect arc furnace.
	11/10/2022	2.5 Principle of Induction heating 2.5.1. Working principle of direct core type, vertical core type and indirect core type Induction furnace. 2.5.2. Principle of coreless induction furnace and skin effect..

	14/10/2022	2.6. Principle of dielectric heating and its application..
	15/10/2022	2.7. Principle of Microwave heating and its application
6th (17/10/2022-22/10/2022)	17/10/2022	**3. PRINCIPLES OF ARC WELDING:** 3.1. Explain principle of arc welding
	18/10/2022	3.2. Discuss D. C. & A. C. Arc phenomena.
	21/10/2022	**Class test 1**
	22/10/2022	3.3. D.C. & A. C. arc welding plants of single and multi-operation type.
7th (24/10/2022-29/10/2022)	24/10/2022	**Kali Puja/Diwali**
	25/10/2022	3.4. Types of arc welding.
	28/10/2022	3.5. Explain principles of resistance welding.
	29/10/2022	3.6. Descriptive study of different resistance welding methods.
8th (31/10/2022-05/11/2022)	31/10/2022	4. ILLUMINATION: 4.1. Nature of Radiation and its spectrum.
	01/11/2022	4.2. Terms used in Illuminations. [Lumen, Luminous intensity, Intensity of illumination, MHCP, MSCP, MHSCP, Solid angle, Brightness, Luminous efficiency.].
	04/11/2022	4.3. Explain the inverse square law and the cosine law.
	05/11/2022	4.4 Explain polar curves. 4.5. Describe light distribution and control. Explain related definitions like maintenance factor and depreciation factors.
9th (07/11/2022-12/11/2022)	07/11/2022	4.6 Design simple lighting schemes and depreciation factor. 4.7. Constructional feature and working of Filament lamps, effect of variation of voltage
	08/11/2022	4.8Explain Discharge lamps. 4.9. State Basic idea about excitation in gas discharge lamps.
	11/11/2022	4.10. State constructional factures and operation of Fluorescent lamp. (PL and PLL Lamps)
	12/11/2022	4.11. Sodium vapor lamps

10th (14/11/2022-19/11/2022)	14/11/2022	4.12. High pressure mercury vapor lamps
	15/11/2022	4.13. Neon sign lamps. 4.14. High lumen output & low consumption fluorescent lamps.
	18/11/2022	5. INDUSTRIAL DRIVES: 5.1. State group and individual drive. 5.2. Method of choice of electric drives
	19/11/2022	5.3. Explain starting and running characteristics of DC and AC motor
11th (21/11/2022-26/11/2022)	21/11/2022	5.4. State Application of: 5.4.1. DC motor. 5.4.2. 3-phase induction motor. 5.4.3. 3 phase synchronous motors. 5.4.4. Single phase induction, series motor, universal motor and repulsion motor.
	22/11/2022	5.4.3. 3 phase synchronous motors. 5.4.4. Single phase induction, series motor, universal motor and repulsion motor.
	25/11/2022	6. ELECTRIC TRACTION: 6.1. Explain system of traction
	26/11/2022	**Internal Assessment**
12th (28/11/2022-03/12/2022)	28/11/2022	6.2. System of Track electrification.
	29/11/2022	**Quiz test**
	02/12/2022	6.3. Running Characteristics of DC and AC traction motor.
	03/12/2022	6.4. Explain control of motor: 6.4.1. Tapped field control. 6.4.2. Rheostatic control.
13th (05/12/2022-10/12/2022)	05/12/2022	6.4.3. Series parallel control.
	06/12/2022	6.1. Water conservation, rain water harvesting, water shed management.