



C.U.SHAH UNIVERSITY – Wadhwan City

FACULTY OF: -Technology and Engineering (Diploma Engineering)

DEPARTMENT OF: -Electrical Engineering

SEMESTER: - III

CODE: - 2TE03UEP1

NAME – Utilization of Electrical Power (UEP)

Teaching & Evaluation Scheme:-

Subject Code	Subject Name	Teaching Scheme (Hours)				Credits	Evaluation Scheme							
		Th	Tu	Pr	Total		Theory				Practical (Marks)			Total Marks
							Sessional Exam		University Exam		Internal		University	
							Marks	Hours	Marks	Hours	Pr	TW	Pr	
2TE03UEP1	Utilization of Electrical Power (UEP)	3	0	2	5	4	30	1.5	70	3	30	20	-----	150

Objectives:-

- To developed the basic knowledge of Utilization of Power.
- To develop skills to Maintain / operate various Electrical equipments / gadgets / appliances in power, commercial and industrial sector.
- Students will be able to utilize electrical energy efficiently & economically

Prerequisites: - Basic knowledge of different types of power system.

Course Outlines:-

Sr. No.	Course Contents	No Of Hours
1	Illumination:- Concepts and Principles of Illumination, Terms Related to Illumination- Light, Luminous Flux, Luminous Intensity, Lumen, Candle Power, Illumination, Lox or Meter Candle, Mean Horizontal Candle Power (MHCP), Mean Spherical Candle Power (MSCP), Mean Hemi-spherical Candle Power (MHSCP), Laws of Illumination: - Law of Inverse Squares - Lambert's Cosine Law. (No Numerical) Sources of Light: Construction, Working and Applications of Different Lamps, Plane and Solid Angle, Measurement of Illumination, Requirement of Good Lighting Scheme, Design of Lighting Scheme.	8
2	Electrical Heating Principle and Types of Electrical Headings, Resistance Ovens and Arc Furnaces , Design of Heating Elements, Modes of Transfer of Heat, Classification of Electric Heating Methods: Methods of Temperature Control, Causes of Failures of Heating Elements, Advantages of Electric Heating.	6
3	Electrical Welding Principles, Types and Equipment used for Welding, Methods of Electric Welding : Resistance Welding, Spot Welding Machine, Electric Arc Welding, Arc Welding with DC & AC, Requirements of Good Weld ,Comparison Between Resistance and Arc Welding.	5
4	Electrochemical Processes:- Electrolysis-Basic Principle, Electrochemical Processes-Electroplating ,Deposition of Alloy, Electro Forming, Electro Typing, Electro Facing Anodizing and Electroforming, Anodizing, Battery charging	7

5	Electric Drives:- Drives – Mechanical Drive and Electric Drive, Advantages and Disadvantages of Electric Drive, Factors Governing Selection of Electric Motors, Nature of Electric Supply: 3- Φ & 1- Φ AC and DC, Type of Drive: Group Drive & Individual Drive, Nature of Load: Nature of the Mechanical Load, Matching of the Speed Torque Characteristics of the Motor with that of the Load and Starting Conditions of the Load, Mechanical Features: Type of Enclosure as Per IS , Type of Bearings , Type of Transmission for Drive , Noise Level, Selection of Motor , Load Equalization. (No Calculations)	8
6	Elevator:- Classify Various Types of Elevator Machines and Elevator, Size And Shape of Elevator Car, Speed of Elevators, Location of Elevator Machine, Types of Elevator Machines, Elevator Motors, Power Transmission Gears Braking, Bombay Lift ,Safety In Elevators.	6
7	Domestic Appliances:- Principle of Working, Construction and Testing of Domestic Appliances, Electric Iron, Electric Toaster, Electric Water Heater, Microwave Oven, Principle of Working, Construction And Specification of Following Appliances Fans (Ceiling And Table Fan) ,Washing Machine, Grinder/ Mixer/ Juicer, Vacuum Cleaner, Flour Mill Etc. ,Air Conditioner ,Concept of Star System for Energy Conservation	8

List of Experiments:-

- To Measure Illumination at different places in college by luxmeter.
- Prepare a technical report after visiting an industry, manufacturing electrical heating furnaces.
- Study the different lighting accessories required for various types of lamps.
- Visit to nearby lamp manufacturing / testing Industry and prepare a report.
- Prepare a technical report after visiting an industry, manufacturing electrical heating furnaces.
- Dismantling, assembly, testing, preparation of list of components, parts and their cost for: Fans (ceiling and table fan) , Washing Machine, Grinder / mixer / juicer.
- Prepare a report on various elevators after visiting nearby elevators manufacturing/repairing industry.
- Prepare a report of specification of various electrical welding machines available in college Workshop.
- Study and compare various types of Electric Drives
- Prepare a report of specification of various electrical welding machines available in college Workshop.
- Given the data, design an illumination scheme for a small building.

Learning Outcomes:-

- Basic knowledge of utilization of power.
- Explain the importance of good illumination in the factory and flood lighting.
- Analyze the electric circuits of various domestic appliances.

Books Recommended:-

- A Course in Electrical Power **Soni-Gupta-Bhatnagar**, Dhanpat Rai
- Art & Science of Utilization of Electrical Energy **H. Partab**, Dhanpat Rai & Sons
- Utilization of Electric Power & Electric Traction **J. B. Gupta**, S. K. Kataria & Sons
- Utilization of Electric Power & Electric Traction **G. C. Garg**, Khanna Publishers