

R.G. Government Polytechnic Banikhet, Distt. Chamba (H.P)176303
Department of Electrical Engineering
Lesson Plan


Name of Faculty	Ms. Divya
Discipline	Electrical Engineering
Semester	6 th
Subject	Utilization Of Electrical Energy (L-4 Hrs./Week)
Lesson Plan Duration	February – June 2023

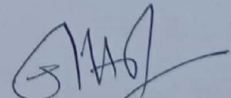
Week	Topic	Theory
1 st (14 Feb. – 21 Feb.)	1. Electric Drives	1.1 Advantages of Electric Drives 1.2 Characteristics of different mechanical loads 1.3 Types of Motors used as electric drive
2 nd (22 Feb. – 28 Feb.)	1. Electric Drives	1.4 Electric braking 1.4.1 Plugging 1.4.2 Rheostatic braking. 1.4.3 Regenerative braking 1.5 Methods of power transfer by direct coupling by using devices like belt drive, gears, chain drives. 1.6 Selection of motors for different types of domestic loads 1.7 Selection of drive for applications such as general workshop, textile mill, paper mill, steel mill, printing press, cranes and lift. Applications of flywheel.
3 rd (01 Mar. – 07 Mar.)	2. Illumination	2.1 Nature of light, visibility spectrum curve of relative sensitivity of human eye and wave length of light. 2.2 Definition: Luminous flux, solid angle, luminous intensity, illumination, luminous efficiency, depreciation factor, coefficient of utilization, space to height ratio, reflection factor, glare, shadow, lux level. 2.3 Laws of Illumination 2.4 Different type of lamps, construction and working of incandescent and discharge lamps– their characteristics, fittings required for filament lamp,
4 th (09 Mar. – 16 Mar.)	2. Illumination	mercury vapor, sodium lamp, fluorescent lamp, halogen lamp, neon lamp, Compact fluorescent lamp, LED lamps. 2.5 Main requirements of proper lighting; absence of glare, contrast, and shadow 2.6 Illumination requirement for street

		lighting, flood lighting, monument lighting and decorative lighting. 2.7 LED based lighting systems, advantages of LED based lighting
5 th (17 Mar. – 23 Mar.)	3. Electric Heating	3.1 Advantages of Electrical Heating 3.2 Electrical Heating Methods: 3.2.1 Resistance heating – direct and indirect resistance heating, electric ovens, their temperature range, properties of resistance heating elements, thermostat control circuit
Class Test – 1	In third week of March 2023	
6 th (24 Mar. – 31 Mar.)	3. Electric Heating	3.2.2 Induction Heating: Principle of core type and coreless induction furnace, their construction and applications 3.2.3 Electric Arc Heating: direct and indirect arc heating, construction, working and applications of arc furnace. 3.2.4 Dielectric heating: working principle and applications in industrial fields 3.2.5 Infra-red heating and its applications 3.2.6 Microwave heating and its applications
7 th (01 Apr. – 10 Apr.)	4. Electric Welding	4.1 Advantages of Electric Welding 4.2 Welding methods 4.2.1 Principles of resistance welding, types – spot, projection, seam and butt welding, welding equipment. 4.2.2 Principle of arc production, electric arc welding, characteristics of arc; carbon arc, metal arc, hydrogen arc welding method and their applications. Power supply requirement. Advantages of using coated electrodes, comparison between AC and DC arc welding, welding control circuits, welding of aluminium and copper materials
8 th (11 Apr. – 19 Apr.)	5. Electrolytic Processes	5.1 Need of Electro-deposition 5.2 Laws of Electrolysis, process of electro-deposition - clearing, operation, deposition of metals, polishing and buffing 5.3 Equipment and accessories for electroplating

9 th (20 Apr. – 27 Apr.)	5. Electrolytic Processes 6. Electrical Circuits used in Refrigeration, Air Conditioning and Water Coolers	5.4 Factors affecting electro-deposition. 5.5 Electroplating of non-conducting materials 6.1 Principle of air conditioning, vapor pressure, refrigeration cycle, eco-friendly refrigerants.
10 th (28 Apr. – 04 May)	6. Electrical Circuits used in Refrigeration, Air Conditioning and Water Coolers	6.2 Description and Working of Electrical circuits used in 6.2.1 Refrigerator, 6.2.2 Air-conditioner 6.2.3 Water cooler
11 th (06 May – 12 May)	7. Electric Traction	7.1 Requirements of ideal Traction System, Different systems of electric traction, DC and AC systems, diesel electric system, types of services – urban, sub-urban, and main line and their speed-time curves, Advantages of Electric Traction.
Class Test - 2	In third week of April 2023	
12 th (15 May – 20 May)	7. Electric Traction	7.2 Different accessories for track electrification, such as overhead catenary wire, conductor rail system, current collector-pantograph 7.3 Electrical block diagram of an Electric Locomotive with description of various equipment and accessories used.
13 th (23 May-29 May)	7. Electric Traction	7.4 Types of motors used for electric traction. 7.5 Starting and braking of electric locomotives
House Test	In Second week of May 2023	
14 th (30 May-05 June)	7. Electric Traction	7.6 Introduction to EMU (Electrical Multiple Unit) and Metro Railway 7.7 Modern Electrical Traction systems, their features and advantages
15 th (06 June – 09 June)	Revision and doubt clearance	Revision and doubt clearance

NOTE: - Lesson Plan is Tentative, subject to availability of Time, Students & Faculty.


Signature of Teacher
(Er. Divya)


Signature of HOD/OIC
(Er. Amit Attri)