

GUJARAT TECHNOLOGICAL UNIVERSITY

M.E Semester: 2

Electrical Engineering

Subject Name : ELECTRICAL POWER UTILIZATION

Sr.No	Course content
1.	<p>Electric Traction:</p> <p>Features of an ideal traction system, Systems of electric traction, Mechanism of train movement, Speed-time curve, Traction supply system, Transmission line to substation, Feeding and distributing system on an ac traction, System of current collection-traction, Motors-tractive effort and horse power, Speed control Schemes Electric braking</p>
2.	<p>Electric heating & welding:</p> <p>Classification, Radiant heating, Induction heating, High frequency eddy current Heating, Dielectric heating, Arc furnace, Electric welding, Heating element, Methods and equipments, Electrolysis and Electroplating applications</p>
3.	<p>Illumination:</p> <p>Radiant energy-terms and definitions, Laws of illumination, Polar curves, Photometry, MSCP, Integrating sphere, luminous efficacy, illumination levels for various purposes, Light fittings, Factory lighting, Flood lighting, Street lighting Energy conservation in lighting: Types of lamps and ballasts</p>
4.	<p>Air conditioning and refrigeration:</p> <p>Control of temperature, Protection of motors, Simple heat load and motor ,Calculations, Function of complete air conditioning system, Type of compressor Motor, Cool storage, Estimation of tonnage capacity and motor power, Technology of electric and hybrid electric vehicles</p>
5.	<p>Electrolytic processes:</p> <p>Fundamental principles, Extraction and refining of metals, Electrodeposition, Manufacture of chemicals, Power supply for elecgtrolysis purposes.</p>
6.	<p>Domestic electrical appliances:</p> <p>Construction and working of washing machine, mixer, hair dryer, vacuum cleaner, microwave oven.</p>

References Books:

1. "Utilisation of Electric Energy", Orient Longman,1986- Taylor E Openshaw
2. "Utilization of electric power and electric traction", S K Kataria & Sons, 2002- J B Gupta
3. "Generation, Distribution and utilization of electrical energy", Wiley Eastern Limited,1993- Wadhwa. C.L
4. "A course in electric power", Dhanapat Rai & sons, 2001- Soni, Gupta, Bhatnagar
5. "Electrical Power",Khanna pulishers,1988- S.L.Uppal
6. "Utilisation of Electric energy"- Garg and Girdhar