**Govt. Polytechnic Chhapar**

**Electrical Engineering Department**

**Lesson Plan**

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| **Name of Faculty** | **Mrs. Mukesh** |
| **Discipline** | **Electrical Engineering** |
| **Semester** | **6th** |
| **Subject** | **Electrical Energy Conservation and Management** |
| **Lesson Plan Duration** | **From March 2022 to June 2022** |
| **Work load [Theory + Practical] Per Week** | **[05]** |

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| **Week** | **Theory** | |
| **Lecture Day** | **Topic** |
| 1st | 1st | **Unit-1 Lighting System:-** Basic definitions- Lux, lumen and illumination space to height ratio |
| 2nd | Types of different lamps and their features |
| 3rd | Energy efficient practices in lighting |
| 4th | Tips for energy saving in building - New Building, Existing Building |
| 2nd | 5th | Laws of Illumination |
| 6th | Calculation of illumination at different points, Main requirements for proper lighting |
| 7th | Macro level approach at design stage |
| 8th | **Unit-2 Energy Conservation and EC Act 2001:-** Introduction to energy management, energy conservation, energy efficiency and its need |
| 3rd | 9th | Salient features of Energy Conservation Act 2001 & The Energy Conservation (Amendment) Act, 2010 and its importance |
| 10th | Standards and Labeling - Concept of star rating and its importance, Types of product available for star rating |
| 11th | **Unit-3 Energy Audit:-** Types and methodology |
| 12th | Energy auditing reporting format |
| 4th | 13th | Energy audit instruments |
| 14th | Unit-4 Electrical Supply System and Motors Types of electrical supply system |
| 15th | Single line diagram |
| 16th | Transformer loading |
| 5th | 17th | Tips for energy savings in transformers |
| 18th | Motor Loading |
| 19th | Variation in efficiency and power factor with loading |
| 20th | Tips for energy savings in motors |
| 6th | 21st | Need for energy efficient motors |
| 22nd | Initial cost versus like cycle cost |
| 23rd | Cost analysis on life cycle basis |
| 24th | Various constructional features of EEMs |
| 7th | 25th | EEM as compared to standard motors |
| 26th | **Unit-5 Energy Efficiency in Electrical Utilities:-**Understanding Electricity Bill,Tariff structure |
| 27th | Components of power (kW, kVA and kVAR) and power factor |
| 28th | Concept of sanctioned load, maximum demand, contract demand and monthly minimum charges (MMC) |
| 8th | 29th | **Pumps:-**Introduction to pump and its application. Efficient pumping system operation |
| 30th | Energy efficiency in agriculture pumps, Tips for energy saving in pumps |
| 31st | **Compressed Air System:-**Types of air compressor and its applications |
| 32nd | Leakage test |
| 9th | 33rd | Energy saving opportunities in compressors |
| 34th | **Energy Conservation in HVAC and Refrigeration System:-**Introduction |
| 35th | Concept of Energy Efficiency Ratio (EER) |
| 36th | Energy saving opportunities in Heating, Ventilation and Air-conditioning (HVAC) and Refrigeration Systems |
| 10th | 37th | **Thermal Basics:-Types of fuels** |
| 38th | Thermal energy |
| 39th | Energy contents in fuel |
| 40th | Energy Units and its conversion in terms of metric tonne of oil equivalent (MTOE). |
| 11th | 41st | **Unit -6 General Energy Saving Tips:-** Lighting System |
| 42nd | Room Air Conditioners |
| 43rd | Refrigerators |
| 44th | Water Heater |
| 12th | 45th | Computers |
| 46th | Fans, Heaters, Blowers and Washing Machines |
| 47th | Water Pumps |
| 48th | Kitchens |
| 13th | 49th | Transport |
| 50th | **Unit-7 Energy Conservation Building Code:-** Haryana ECBC and its salient features including thermal behavior of buildings |
| 51st | ECBC Guidelines on Building Envelope |
| 52nd | ECBC Prescriptive Requirements for Building Envelope |
| 14th | 53rd | ECBC Guidelines on Heating, Ventilation and Air Conditioning |
| 54th | ECBC Guidelines on Service Hot Water and Pumping |
| 55th | ECBC Guidelines on Lighting |
| 56th | ECBC Guidelines on Electrical Power |
| 15th | 57th | ECBC Guidelines on Star Labelling and Minimum Star rating |
| 58th | **STUDENT ACTIVITIES ON ENERGY CONSERVATION/ENERGY** |
| 59th | **STUDENT ACTIVITIES ON ENERGY CONSERVATION/ENERGY** |
| 60th | **STUDENT ACTIVITIES ON ENERGY CONSERVATION/ENERGY** |
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