**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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