# LESSON PLAN

| **Discipline:** Elect. Engg. | **Semester:** Sixth($6^{th}$) | **Name of the Faculty:** Er R Kar |
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| **Subject:** Renewable Energy Systems | **No. of days per Week class allotted: S**ix (6) | **Semester from Date:** 14.02.23 **to Date:** 23.05.23<br><br>**No. of Weeks:** 15 |
| **WEEK** | **CLASS DAY** | **THEORY TOPICS** |
| $1^{st}$ | $1^{st}$ | Chapter – 01(**Introduction to Renewable energy)**<br>Introduction |
| | $2^{nd}$ | Environmental consequences of fossil fuel use |
| | $3^{rd}$ | Importance of renewable sources of energy |
| | $4^{th}$ | Sustainable Design and |
| | $5^{th}$ | Sustainable Development |
| | $6^{th}$ | Cont. |
| $2^{nd}$ | $1^{st}$ | Types of RE sources |
| | $2^{nd}$ | Limitation of RE sources |
| | $3^{rd}$ | Present Indian and international energy scenario of conventional sources |
| | $4^{th}$ | Present Indian and international energy scenario of RE sources |
| | $5^{th}$ | **Possible question answer discussion** |
| | $6^{th}$ | **Chapter – 02(Solar Energy)**<br>Solar photovoltaic system- Operating Principle |
| $3^{rd}$ | $1^{st}$ | Continue… |
| | $2^{nd}$ | Photovoltaic cell concept |
| | $3^{rd}$ | Cell, Module & Array |
| | $4^{th}$ | Series and parallel connections |
| | $5^{th}$ | Maximum power point tracking (MPPT). |
| | $6^{th}$ | Classification of energy Sources. |

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| 4th | 1st | **Monthly test-01** |
| | 2nd | Extra-terrestrial and terrestrial Radiation |
| | 3rd | Azimuth angle, Zenith angle, Hour angle, |
| | 4th | Irradiance, Solar constant |
| | 5th | Solar collectors & its Type |
| | 6th | Solar Collectors performance Characteristic |
| 5th | 1st | Applications: Photovoltaic –i) battery charger, ii) domestic lighting, |
| | 2nd | iii) street lighting, iv) water pumping, |
| | 3rd | v)Solar cooker, vi) Solar Pond, |
| | 4th | **Possible question answer discussion** |
| | 5th | **Chapter – 03 (Wind energy)** Introduction to wind energy. |
| | 6th | Wind energy conversion |
| 6th | 1st | Types of wind turbines |
| | 2nd | Continue |
| | 3rd | Aerodynamics of wind rotors |
| | 4th | Wind turbine control systems |
| | 5th | Wind energy to Electrical energy |
| | 6th | Induction generators |
| 7th | 1st | synchronous generators |
| | 2nd | Grid connected and self-excited induction generator operation |
| | 3rd | Grid connected and self-excited induction generator operation |
| | 4th | Continue |

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| | 5th | **Monthly test-02** |
| | 6th | Constant voltage and constant frequency generation with power electronic control. |
| 8th | 1st | Single and double output systems |
| | 2nd | Characteristics of wind power plant |
| | 3rd | **Possible question answer discussion** |
| | 4th | **Chapter- 04(Biomass Power)**<br>Energy from Bio mass<br>Applications: Bio gas, Bio diesel |
| | 5th | Biomass as Renewable Energy Source |
| | 6th | Types of Biomass Fuels - Solid, Liquid and Gas |
| 9th | 1st | Combustion and fermentation |
| | 2nd | Anaerobic digestion |
| | 3rd | Types of biogas digester |
| | 4th | Wood gasifier |
| | 5th | Pyrolysis |
| | 6th | **Possible question answer discussion** |
| 10th | 1st | **Monthly test-03** |
| | 2nd | **Chapter- 05(Other Energy Sources)**<br>Tidal Energy: Energy from the tides, Barrage |
| | 3rd | Tidal Energy: Non-Barrage Tidal power system |
| | 4th | Ocean Thermal Energy Conversion (OTEC) |
| | 5th | Geothermal Energy & its Classification |
| | 6th | Hybrid Energy Systems |
| | 1st | Need for hybrid system |

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| 11th | 2nd | Diesel-PV, Wind-PV, Micro hydel-PV |
| | 3rd | Electric and hybrid electric vehicles |
| | 4th | **Possible question answer discussion** |
| | 5th | Revision |
| | 6th | Revision |
| 12th | 1st | Revision |
| | 2nd | Revision |
| | 3rd | Revision |
| | 4th | Revision |
| | 5th | Revision |
| | 6th | Revision |
| 13th | 1st | Revision |
| | 2nd | Revision |
| | 3rd | **Monthly test-04** |
| | 4th | Revision |
| | 5th | Revision |
| | 6th | Revision |
| 14th | 1st | Revision |
| | 2nd | Revision |
| | 3rd | Revision |
| | 4th | Revision |
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| | 6th | Revision |
| 15th | 1st | Revision |
| | 2nd | Revision |
| | 3rd | Revision |
| | 4th | Revision |
| | 5th | Revision |
| | 6th | Revision |

Syllabus coverage up to Internal assessment:-Chapters-1,2& 3