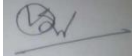




UTKAL INSTITUTE OF ENGINEERING & TECHNOLOGY

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| DISCIPLINE: electrical engineering | SEMESTER: 6TH Sem | NAME OF THE TEACHING FACULTY Engg KALAKAR MOHANTY | | |
| SUBJECT: Th4. RENEWABLE ENERGY SYSTEMS | No of Days/Per week class allotted: 5 Class P/W(60) | Semester From Date: 16/01/2024 To Date: 26/04/ 2024 No. Of Weeks: 12 | | |
| WEEK | CLASS DAY | THEORY TOPICS PART-A Introduction to Renewable energy: | REMARKS | |
| 1 st | 1 st | Environmental consequences of fossil fuel use | Date | Dean/Principal |
| | 2 nd | Importance of renewable sources of energy. | | |
| | 3 rd | . Sustainable Design and development. | | |
| | 4 th | Types of RE sources. and Limitations of RE sources. | | |
| | 5 th | Present Indian and international energy scenario of conventional and RE sources | | |
| 2 nd | 1 st | PART B Solar Energy: Solar photovoltaic system-Operating principle. | | |
| | 2 nd | Solar photovoltaic system-Operating principle. | | |
| | 3 rd | Solar photovoltaic system-Operating principle. | | |
| | 4 th | Photovoltaic cell concepts | | |
| | 5 th | Photovoltaic cell concepts | | |
| 3 rd | 1 st | Classification of energy Sources. | | |
| | 2 nd | Classification of energy Sources. | | |
| | 3 rd | Extra-terrestrial and terrestrial Radiation. | | |
| | 4 th | Extra-terrestrial and terrestrial Radiation. | | |
| | 5 th | Azimuth angle, Zenith angle, Hour angle, Irradiance, Solar constant | | |
| 4 th | 1 st | Azimuth angle, Zenith angle, Hour angle, Irradiance, Solar constant | | |
| | 2 nd | Solar collectors, Types and performance characteristics, | | |
| | 3 rd | Solar collectors, Types and performance characteristics, | | |
| | 4 th | Applications: Photovoltaic - battery charger, domestic lighting, street lighting, water pumping, solar cooker, Solar Pond. | | |
| | 5 th | Applications: Photovoltaic - battery charger, domestic lighting, street lighting, water pumping, solar cooker, Solar Pond. | | |

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| 5th | 1st | PART C Wind Energy: Introduction to Wind energy. | | |
| | 2nd | Introduction to Wind energy. | | |
| | 3rd | Wind energy conversion. | | |
| | 4th | Wind energy conversion. | | |
| | 5th | Types of wind turbines | | |
| 6th | 1st | Aerodynamics of wind rotors. | | |
| | 2nd | Wind turbine control systems; conversion to electrical power | | |
| | 3rd | Induction and synchronous generators | | |
| | 4th | Grid connected and self excited induction generator operation. | | |
| | 5th | Constant voltage and constant frequency generation with power electronic control. | | |
| 7th | 1st | Single and double output systems. | | |
| | 2nd | Characteristics of wind power plant. | | |
| | 3rd | PART D Biomass Power: Energy from Biomass. | | |
| | 4th | Biomass as Renewable Energy Source | | |
| | 5th | Types of Biomass Fuels - Solid, Liquid and Gas. | | |
| 8th | 1st | Types of Biomass Fuels - Solid, Liquid and Gas. | | |
| | 2nd | Anaerobic digestion. | | |
| | 3rd | Types of biogas digester. | | |
| | 4th | Wood gassifier. | | |
| | 5th | Wood gassifier. | | |
| 9th | 1st | Pyrolysis.. | | |
| | 2nd | Pyrolysis.. | | |
| | 3rd | Applications: Bio gas, Bio diesel | | |
| | 4th | Applications: Bio gas, Bio diesel | | |
| | 5th | PART F Other Energy Sources: Tidal Energy: Energy from the tides, Barrage and Non Barrage Tidal power systems | | |
| 10th | 1st | Tidal Energy: Energy from the tides, Barrage and Non Barrage Tidal power systems | | |
| | 2nd | Tidal Energy: Energy from the tides, Barrage and Non Barrage Tidal power systems | | |
| | 3rd | Tidal Energy: Energy from the tides, Barrage and Non Barrage Tidal power systems | | |

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| | 4th | Ocean Thermal Energy Conversion (OTEC) | | |
| | 5th | Ocean Thermal Energy Conversion (OTEC) | | |
| 11th | 1st | Geothermal Energy – Classification. | | |
| | 2nd | Geothermal Energy – Classification. | | |
| | 3rd | Hybrid Energy Systems. | | |
| | 4th | Hybrid Energy Systems. | | |
| | 5th | Need for Hybrid Systems. | | |
| 12th | 1st | Need for Hybrid Systems. | | |
| | 2nd | Diesel-PV, Wind-PV, Microhydel-PV. | | |
| | 3rd | Diesel-PV, Wind-PV, Microhydel-PV. | | |
| | 4th | . Electric and hybrid electric vehicles. | | |
| | 5th | . Electric and hybrid electric vehicles. | | |
| HOD | | DEAN | PRINCIPAL | |
| Chittaranjan Parida | | Chittaranjan Parida |  | |