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| **Sl.No.** | **Period** | **Time(min)** | **TeachingMethod** | **TopictobeCovered** | **Unit** |
| 1. | 1. | 55 min | Blackboard | Environmentalconsequence offossilfueluse | 1 |
| 2. | 2. | 55min | Blackboard | Importance ofrenewablesources ofenergy,LimitationofREsources | 1 |
| 3. | 3. | 55min | Blackboard | SustainableDesign and development | 1 |
| 4. | 4. | 55min | Blackboard | Types ofREsources | 1 |
| 5. | 5. | 55min | Blackboard | PresentIndiaandInternationalenergyscenarioofconventionaland REsources | 1 |
| 6. | 6. | 55min | Blackboard | Solar photo voltaicsystem-operatingprinciple | 2 |
| 7. | 7. | 55min | Blackboard | Cell,module,array,Seriesand parallelconnections | 2 |
| 8. | 8. | 55min | Blackboard | Maximumpowerpointtracking(MPPT) | 2 |
| 9. | 9. | 55min | Blackboard | Classificationofenergysources | 2 |
| 10. | 10. | 55min | Blackboard | Extra-terrestrialandterrestrialRadiation | 2 |
| 11. | 11. | 55 min | Blackboard | Azimuthangle,Zenithangle,Hourangle,Irradiance,Solarconstant | 2 |
| 12. | 12. | 55 min | Blackboard | Solarcollectors,Typesofsolar collector | 2 |
| 13. | 13. | 55min | Blackboard | Performancecharacteristicsof solarcollectors | 2 |
| 14. | 14. | 55 min | Blackboard | Photovoltaic-batterycharger | 2 |
| 15. | 15. | 55 min | Blackboard | Domesticlighting | 2 |
| 16. | 16. | 55min | Blackboard | Streetlighting | 2 |
| 17. | 17. | 55min | Blackboard | Waterpumping | 2 |
| 18. | 18. | 55 min | Blackboard | Solarcooker | 2 |
| 19. | 19. | 55 min | Blackboard | Solarpond | 2 |
| 20. | 20. | 55 min | Blackboard | Introductiontowindenergy | 3 |
| 21. | 21. | 55 min | Blackboard | Windenergyconversion | 3 |
| 22. | 22. | 55min | Blackboard | Types ofwindturbines | 3 |
| 23. | 23. | 55min | Blackboard | Aerodynamicsof windrotors | 3 |

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| LESSON PLAN |
| JHARSUGUDA ENGINEERING SCHOOL,JHARSUGUDA |
| AcademicYear:2023-24 | Name of the Faculty : Binay Bhusan Nanda |
| Course name : Renewable Energy | CourseNo.:TH4 IE2 |
| Branch:Electrical | Program: Diploma |
| Section: | Year/Sem:3rd/6th |

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| 24. | 24. | 55 min | Blackboard | Windturbinecontrolsystems | 3 |
| 25. | 25. | 55 min | Blackboard | Inductiongenerators | 3 |
| 26. | 26. | 55 min | Blackboard | Synchronousgenerators | 3 |
| 27. | 27. | 55 min | Blackboard | Gridconnectedinductiongeneratoroperation | 3 |
| 28. | 28. | 55 min | Blackboard | Self-excitedinductiongeneratoroperation | 3 |
| 29. | 29. | 55 min | Projector | Constantvoltageand constantfrequencygenerationwithpowerelectroniccontrol | 3 |
| 30. | 30. | 55 min | Projector | Single anddoubleoutputsystems | 3 |
| 31. | 31. | 55 min | Projector | Characteristicsof windpowerplant | 3 |
| 32. | 32. | 55 min | Projector | EnergyfromBiomass | 4 |
| 33. | 33. | 55 min | Projector | Biomassas renewableenergysource | 4 |
| 34. | 34. | 55 min | Projector | Types ofBiomassfuel-solid,liquidand gas | 4 |
| 35. | 35. | 55 min | Projector | Combustion | 4 |
| 36. | 36. | 55 min | Projector | fermentation | 4 |
| 37. | 37. | 55 min | Blackboard | Anaerobicdigestion | 4 |
| 38. | 38. | 55 min | Blackboard | Types ofbiogasdigester | 4 |
| 39. | 39. | 55 min | Blackboard | Wood gassifier | 4 |
| 40. | 40. | 55 min | Blackboard | Pyrolysis | 4 |
| 41. | 41. | 55 min | Blackboard | Application:Biogas | 4 |
| 42. | 42. | 55 min | Blackboard | BioDiesel | 4 |
| 43. | 43. | 55 min | Blackboard | Tidalenergy:Energyfromthetides | 5 |
| 44. | 44. | 55 min | Blackboard | Barragetidalpowersystem | 5 |
| 45. | 45. | 55 min | Blackboard | Nonbarragetidalpowersystem | 5 |
| 46. | 46. | 55 min | Blackboard | Oceanthermalenergyconversion(OTEC) | 5 |
| 47. | 47. | 55 min | Blackboard | Types ofOTEC plant | 5 |
| 48. | 48. | 55 min | Blackboard | Geothermalenergy | 5 |
| 49. | 49. | 55 min | Blackboard | Classificationofgeothermalenergy | 5 |
| 50. | 50. | 55 min | Blackboard | Hybridenergysystems | 5 |
| 51. | 51. | 55 min | Blackboard | Types ofhybridenergysystems | 5 |
| 52. | 52. | 55 min | Blackboard | Needforhybridsystems | 5 |
| 53. | 53. | 55 min | Blackboard | Diesel-PV | 5 |
| 54. | 54. | 55 min | Blackboard | Wind -PV | 5 |

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| 55. | 55. | 55 min | Blackboard | Microhydel-PV | 5 |
| 56. | 56. | 55 min | Blackboard | Electricvehicles | 5 |
| 57. | 57. | 55 min | Blackboard | Hybridelectricvehicles | 5 |
| 58. | 58. | 55 min | Blackboard | Revisionofalltopics |  |
| 59. | 59. | 55 min | Blackboard | Revisionofalltopics |  |
| 60. | 60. | 55 min | Blackboard | Revisionofalltopics |  |