**GOVERNMENT POLYTECHNIC JAJPUR**
**A/ P: Ragadi, Block: Korei, Dist.: Jajpur, Odisha- 755019**
**Website: https://www.gpjajpur.org E-mail: principalgpjajpur@yahoo.co.in Contact: 9437155107**

**DEPARTMENT OF MECHANICAL ENGINEERING**

**LESSON PLAN**

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| **Discipline: Mechanical** | **Semester: 6th** | **Name of the Teaching faculty: SUSHANTA KUMAR MOHANTA** |
| **Subject: Th3 PSE** | **No of Days/Week class alloted: 4** | **Semester from Date: 22/12/25 To Date: 18/04/26**<br>**No of weeks: 15** |

| Week | Class Day | Topics |
|---|---|---|
| 1st | 1st | **CH:01-INTRODUCTION**:Describe sources of energy. |
| | 2nd | Explain concept of Central and Captive power station. |
| | 3rd | Classify power plants. |
| | 4th | Importance of electrical power in day today life |
| 2nd | 1st | Overview of method of electrical power generation. |
| | 2nd | **CH:2.0 THERMAL POWER STATIONS:**<br>Layout of steam power stations. |
| | 3rd | Steam power cycle.Explain Carnot vapour power cycle with P-V, T-s diagram and<br>determine thermal efficiency. |
| | 4th | Explain Rankine cycle with P-V, T-S & H-s diagram |
| 3rd | 1st | determine thermal efficiency, Work done, work ratio,<br>and specific steam Consumption. |
| | 2nd | Solve Simple Problems. |
| | 3rd | List of thermal power stations in the state with their capacities. |
| | 4th | Boiler Accessories: Operation of Air pre heater,<br>Operation of Economiser, Operation Electrostatic precipitato |
| 4th | 1st | Operation of super heater. Need of boiler mountings and<br>operation of boiler |
| | 2nd | Draught systems (Natural draught, Forced draught &<br>balanced draught) |
| | 3rd | with theiradvantages & disadvantages. |
| | 4th | Steam prime movers: Advantages & disadvantages of steam turbine, |
| 5th | 1st | Elements of steam turbine, governing of steam turbine. |
| | 2nd | Performance of steam turbine: Explain Thermal efficiency,<br>Stage efficiency and Gross efficiency |
| | 3rd | Steam condenser: Function of condenser, Classification of condenser. |
| | 4th | function of condenser auxiliaries such as hot well, |
| 6th | 1st | condenser extraction pump, air extraction pum circulating pump. |
| | 2nd | Cooling Tower: Function |
| | 3rd | types of cooling tower, and spray ponds |
| | 4th | Selection of site for thermal power stations |
| | 1st | **3.0 NUCLEAR POWER STATIONS**<br>**:**Classify nuclear fuel (Fissile & fertile material) |

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| 7th | | Explain fusion and fission reaction |
| | 2nd | Explain working of nuclear power plants with block diagram |
| | 3rd | Explain the working and construction of nuclear reactor |
| | 4th | Compare the nuclear and thermal plants. |
| 8th | 1st | Explain the disposal of nuclear waste. |
| | 2nd | Selection of site for nuclear power stations. |
| | 3rd | List of nuclear power stations. |
| | | **INTERNAL ASSESMENT-I** |
| | 4th | **4.0 DIESEL ELECTRIC POWER STATIONS** Introduction and overview |
| 9th | 1st | State the advantages and disadvantages of diesel electric power stations. |
| | 2nd | Explain briefly different systems of diesel electric power stations |
| | 3rd | Fuel storage and fuel supply system, |
| | 4th | Fuel injection system, Air supply system, |
| 10th | 1st | Exhaust system, cooling system, Lubrication system |
| | 2nd | starting system, governing system |
| | 3rd | Selection of site for diesel electric power stations. |
| | 4th | Performance and thermal efficiency of diesel electric power stations |
| 11th | 1st | Performance and thermal efficiency of diesel electric power stations |
| | 2nd | **5.0 HYDEL POWER STATIONS: Introduction** |
| | 3rd | State advantages and disadvantages of hydroelectric power plant. |
| | 4th | Classification |
| 12th | 1st | explain the general arrangement of storage type hydroelectric project |
| | 2nd | explain its operation |
| | 3rd | Selection of site of hydel power plant. |
| | 4th | List of hydro power stations with their capacities and number of units in the state. |
| 13th | 1st | Types of turbines and generation used. |
| | 2nd | Simple problems. |
| | 3rd | Simple problems. |
| | 4th | **6.0 GAS TURBINE POWER STATIONS** |
| 14th | 1st | Selection of site for gas turbine stations. |
| | 2nd | Fuels for gas turbine |
| | 3rd | Elements of simple gas turbine power plants |
| | 4th | Merits, demerits |
| 15th | 1st | application of gas turbine power plants. |
| | 2nd | **INTERNAL ASSESMENT-II** |
| | 3rd | REVISION/DOUBT CLEARING CLASS |
| | 4th | REVISION/DOUBT CLEARING CLASS |

**E.LEARNING RESOURCES:**

| *Sl. No.* | *Name of Authors* | *Title of the Book* | *Name of the Publisher* |
|---|---|---|---|
| 1 | R.K Rajput | Power Plant Engineering | Laxmi Publication |
| 2 | P.K.NAG | Power Plant Engineering | TMH |
| 3 | Nag pal G,R | Power plant Engineering | Khanna Publisher |
| 4 | P.C.SHARMA | Power Plant Engineering | S.K KATARIA &SONS |

Signature of Faculty