# DEPARTMENT OF MECHANICAL ENGINEERING
## LESSION PLAN

| Discipline : Mechanical Engg | Semester: 4th Sem Mech | Name of faculty: Biswajit Mishra | |
|---|---|---|---|
| Sub: TE-II | No of Days/ week class allotted :- 4 | Total no of weeks:- 15<br>Session: 2023-24 (Summer) | |
| **No of Week** | **No Of Class Planned** | **Topic to be taught** | **Date of Delivery** |
| 1st | 1st | IC Engine overview (Why should we study) | |
| | 2nd | Indicated poer, brake power, friction power | |
| | 3rd | Numericals | |
| | 4th | Specific fuel consumption, air consumption, Air-fuel ratio | |
| 2nd | 1st | Numericals | |
| | 2nd | Efficiencies of IC engines: $\eta_{bth}$, $\eta_{ith}$,$\eta_{mech}$, $\eta_{rel}$, $\eta_{vol}$ | |
| | 3rd | Numericals | |
| | 4th | Functions & use of air compressor (Why should we study) | |
| 3rd | 1st | Principle of operation & classification of air compresssor | |
| | 2nd | Reciprocating air compressor terminology | |
| | 3rd | Indicated work for 1-acting compressor without clearance, Mep | |
| | 4th | Numericals | |
| 4th | 1st | Power, mechanical efficiency of air compressor | |
| | 2nd | 2-Stage compressor work done with clearance, Numericals | |
| | 3rd | Adiabatic, compressor & isothermal efficiency | |
| | 4th | Numericals | |
| 5th | 1st | Volumetric efficiency, Free air delivery | |
| | 2nd | Numericals | |
| | 3rd | Class Test-I | |
| | 4th | Introduction: Difference between vapour & steam | |
| 6th | 1st | Pure substance: Introduction (Why should we study) | |
| | 2nd | Phases & phase change phenomena of pure substance | |
| | 3rd | Terminology: property diagrams | |
| | 4th | p-v, T-s, h-s diagrams with phases of pure substance | |
| 7th | 1st | Critical & triple point: Enthalpy change | |
| | 2nd | Wet steam, superheated steam, Specific vol. of steam: Numericals | |
| | 3rd | Internal energy of steam, Entropy of pure substance | |
| | 4th | Dryness fraction, Introduction to steam table | |
| 8th | 1st | Mollier diagram: Introduction with key points | |
| | 2nd | Numericals | |
| | 3rd | Numericals | |
| | 4th | Classification & types of Boiler | |
| 9th | 1st | fire tube & Water tube Boiler | |
| | 2nd | Description & working of Cochran Boiler | |
| | 3rd | Description & working of Lancashire boiler | |
| | 4th | Description & working of Babcock & Wilcox boiler | |
| 10th | 1st | High pressure boilers | |

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|---|---|---|---|
| | 2nd | Boiler draught: functions of draught, classification | |
| | 3rd | Natural draught: height & diameter of chimney | |
| | 4th | Artificial draught: Numericals | |
| 11th | 1st | Efficiencies of boiler: Numericals | |
| | 2nd | Boiler mountings &accesories | |
| | 3rd | Class Test-II | |
| | 4th | Steam power cycle overview (Why should we study) | |
| 12th | 1st | Carnot cycle: work, efficiency calculation | |
| | 2nd | Rankine cycle: p-v, T-s, h-s diagrams, mollier diagram | |
| | 3rd | Work & efficiencies of Rankine cycle | |
| | 4th | Numericals | |
| 13th | 1st | Effect of operating variables on Rankine cycle | |
| | 2nd | Reheat cycle, regenerative cycle | |
| | 3rd | Numericals | |
| | 4th | Introduction to heat transfer ( Scope of heat transfer), Modes of heat transfer | |
| 14th | 1st | Fourier's law of heat conduction: Numericals | |
| | 2nd | Thermal conductivity: Numericals | |
| | 3rd | Convection: Newton's law of cooling :Numericals | |
| | 4th | Radiation: Steffan-Boltzman law, Kirchhoff's law | |
| 15th | 1st | Black body Radiation, Definition of Emissivity, absorptivity, & transmissibility | |
| | 2nd | Quiz test: previous year question answer | |
| | 3rd | Previous year question answer | |
| | 4th | Previous year question answer | |

Bikrajit Mishra
27/01/2024

**Prep by:** **Lect & Head, Mechanical Engg**