

LESSON PLAN.

Academic Session :- 2022-23

Subject :- THERMAL ENGG. -1 , Subject code -Theory 4

Total Period : 60

Teacher :-

DHARMA PRAKASH SAMAL (LECT, MECHANICAL ENGINEERING DEPT.)

Theory :- 4p/week

SEMESTER:-3rd

| MONTH | Week | DATE | UNIT NO/PERIOD ALLOTTED | Syllabus to be covered | Syllabus actually covered | Short fall | Signature |
|--------|----------|---|-------------------------|---|---------------------------|------------|-----------|
| AUGUST | 1ST | 1-8-2023 | 13 | 1) THERMODYNAMIC CONCEPTS AND TERMINOLOGY - Introduction | | | |
| | | 3-8-2023 | | Thermodynamic systems and its types - pressure , volume | | | |
| | | 5-8-2023 | | Temperature and its different scale of measurement | | | |
| | 2ND | 7-8-2023 | | Macroscopic and microscopic approach of thermodynamics | | | |
| | | 8-8-2023 | | Basic of Entropy, Enthalpy and Internal Energy | | | |
| | | 10-8-2023 | | Intensive and Extensive properties | | | |
| | | 12-8-2023 | | Basic concept of process, path, cycle and state | | | |
| | 3RD | 14-8-2023 | | Path function , Point function and its Difference | | | |
| | | 17-8-2023 | | State Thermodynamic equilibrium (what is Thermal, chemical and mechanical equilibrium) | | | |
| | | 19-8-2023 | | Discuss about Quasistatic process | | | |
| | 4TH | 21-8-2023 | | Concept of Energy and its sources | | | |
| | | 22-8-2023 | | Define Work and Heat and its comparison | | | |
| | | 24-8-2023 | | Mechanical equivalent of heat ,work transfer and Displacement work | | | |
| | | 26-8-2023 | | 2) LAWS OF THERMODYNAMICS - State and Explain Zeroth law of Thermodynamics | | | |
| | 5TH | 28-8-2023 | | Zeroth law explanation and its application | | | |
| | | 29-8-2023 | | State and Explain 1st Law of Thermodynamics | | | |
| | | 31-8-2023 | | 1st law of thermodynamics for process and cycle for closed system | | | |
| 1ST | 2-9-2023 | Limitation of 1st law of thermodynamics | | | | | |
| | 4-9-2023 | 1st law of thermodynamics for open system and basic of control volume | | | | | |

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| SEPTEMBER | 2ND | 5-9-2023 | 13 | Define steady flow energy equation and its derivation for open system | | | | |
| | | 7-9-2023 | | Application of 1st law of thermodynamics equation in Turbine and Compressor | | | | |
| | | 9-9-2023 | | Introduction to 2nd law of thermodynamics | | | | |
| | 3RD | 11-9-2023 | | Discussion about Kelvin- Planks and Clausius statement | | | | |
| | | 12-9-2023 | | State and define heat engine, heat pump and refrigerator | | | | |
| | | 14-9-2023 | | Efficiency calculation of heat engine and COP calculation of heat pump and refrigerator | | | | |
| | | 16-9-2023 | | Numerical practice on SFEE , and efficiency of heat engine and cop of heat pump and refrigerator | | | | |
| | 4TH | 18-9-2023 | | 14 | 3) PROPERTIES PROCESSES OF PERFECT GAS - INTRODUCTION | | | |
| | | 21-9-2023 | | | Define perfect gas and real gas and its difference, Boyles law | | | |
| | | 23-9-2023 | | | Define Charle's law and Gaylussac law | | | |
| | 5TH | 25-9-2023 | | | Define Avogadro's law and Dalton's law of partial pressure | | | |
| | | 26-9-2023 | | | Discuss about General gas equation , characteristics gas constant and universal gas constant | | | |
| | | 28-9-2023 | | | Explain specific heat of Gas (Cp and Cv) , relation between Cp and Cv | | | |
| 30-9-2023 | | Define Enthalpy of Gas , derieve relation between enthalpy , internal energy , pressure and volume | | | | | | |
| 1ST | 3-10-2023 | workdone during nonflow process of Isobaric, Isochoric and Isothermal process | | | | | | |
| | 5-10-2023 | Derieve workdone of isothermal and adiabatic process | | | | | | |
| | 7-10-2023 | derieve workdone of polytropic process | | | | | | |
| OCTOBER | 2ND | 9-10-2023 | Discussion of free expansion and throttling process | | | | | |
| | | 10-10-2023 | numerical on Boyle's law , Charle's law , gaylussac law | | | | | |
| | | 12-10-2023 | Numerical on Avogadro's law and Daltons's law of partial pressure and General gas equation | | | | | |
| | | 14-10-2023 | Numerical on work transfer and heat transfer for different nonflow process | | | | | |
| | 16-10-2023 | Numerical on enthalpy , specific heat Cp,Cv | | | | | | |

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| NOVEMBER | 3RD | 17-10-2023 | 18 | 4) INTERNAL COMBUSTION ENGINE - INTRODUCTION | | | |
| | | 19-10-2023 | | Explain and classify IC engine | | | |
| | 4TH | 26-10-2023 | | Terminology of IC engine such as bore, dead centre, stroke volume , piston speed and RPM | | | |
| | | 28-10-2023 | | Explain the working principle of 4-stroke SI engine | | | |
| | 5TH | 30-10-2023 | | Explain the working principle of 4- stroke CI engine | | | |
| | | 31-10-2023 | | Discussion of difference between 4-stroke SI and CI engine | | | |
| | 1ST | 2-11-2023 | | Explain the working principle of 2-stroke SI engine | | | |
| | | 4-11-2023 | | Explain the working principle of 2-stroke CI engine | | | |
| | 2ND | 6-11-2023 | | Discussion of difference between 2-stroke SI and CI engine | | | |
| | | 7-11-2023 | | Discussion clausius ineuqality and explanation of entropy | | | |
| | | 9-11-2023 | | Entropy calculation for different process and phase cahnge | | | |
| | | 11-11-2023 | | Entropy calculation for different process and phase cahnge | | | |
| | 3RD | 13-11-2023 | | Discussion of carnot theorem and its proof | | | |
| | | 14-11-2023 | | Explanation of Carnot cycle and its derivation | | | |
| | | 16-11-2023 | | Numericals on both Carnot theorem and carnots cycle | | | |
| | | 18-11-2023 | | Explanation about Otto cycle and its efficiency derivation | | | |
| | 4TH | 20-11-2023 | | Explanation about Diesel cycle and its efficiency derivation | | | |
| | | 21-11-2023 | | Comaprision between Otto ,Diesel and Dual cycle | | | |
| | | 23-11-2023 | | 5) FUELS AND COMBUSTION - INTRODUCTION | | | |
| | 25-11-2023 | Define fuel and its types explanation | | | | | |
| 5TH | 28-11-2023 | 5 | Application of different types of fuel | | | | |
| | 30-11-2023 | | Heating value of fuel and its types | | | | |

Dharama prakash Samal