

PADMASHREE KRUTARTHA ACHARYA INSTITUTE OF ENGINEERING & TECHNOLOGY, BARGARH



LESSON PLAN Session-2023-2024

Discipline: Mechanical Engg. Semester: 3rd

Subject: Thermal Engineering-1

Name of the Teaching Faculty: Shashanka Sekhar Bhoi

Subject: Thermal Engg-1 No. of Days/per week class allotted 04

Semester From Date: 01/08/2023 To Date: 30/10/2023 No. of Weeks: 15

Week	Class Day	Theory /Practical Topics
01	01	Introduction to Thermodynamic system
	02	Thermodynamic properties of a system
	03	Intensive and Extensive properties
	04	Define thermodynamic process, path, cycle, state, path function, point function.
02	01	Thermodynamic equilibrium
	02	Quasistatic process.
	03	Conceptual explanation of energy and its sources.
	04	Work, heat and comparison between the two.
03	01	Mechanical equivalent of heat.
	02	Work transfer, Displacement of work.
	03	Overall chapter discussion
	04	Doubt clear class.

Shashanka Sushar Bhu

Signature of the Faculty

Subject: Thermal Engg-1 No. of Days/per week class allotted 04

Semester From Date : 01/08/2023 To Date : 30/11/2023 No. of Weeks : 15

Week	Class Day	Theory /Practical Topics
04	01	Introduction to laws of Thermodynamics.
	02	State and explain Zeroth law of thermodynamics.
	03	Limitations of State and explain First law of thermodynamics.
	04	State and explain First law of thermodynamics.
05	01	Limitations of First law of thermodynamics.
	02	Application of First law of thermodynamics.
	03	Steady flow energy equation.
	04	Second law of thermodynamics. Clausius statement.
06	01	Kelvin plank statements.
	02	Application of second law in heat engine and heat pump.
	03	Application of second law in refrigerator & determination of efficiency & C.O.P
	04	Solve simple numericals.

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Semester From Date: 01/08/2023 To Date: 30/11/2023 No. of Weeks: 15

Week	Class Day	Theory / Practical Topics
07	01	Introduction to Properties Processes of perfect gases
	02	Laws of perfect gases: Boyle's law, Charles's law.
	03	Avogadro's law, Dalton's law of partial pressure Gay Lussac law.
	04	General gas equation, characteristic gas constant, Universal gas constant.
08	01	Explain specific heat of gas (C_p & C_v)
	02	Relation between C_p & C_v .
	03	Enthalpy of gases -
	04	Work done during a non flow process -
09	01	Application of first law of thermodynamics to various non flow process -
	02	Free expansion & throttling process -
	03	Solve simple problems -
	04	Introduction to IC engine -

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Semester From Date: 01/08/2023 To Date: 30/11/2023 No. of Weeks: 15

Week	Class Day	Theory /Practical Topics
10	01	Explain and Classify I.C engine
	02	Terminology of I.C engine. such as bore, dead centre, rpm etc.
	03	C.I engine and S.I engine
	04	Explain the working principle of 2 stroke engine
11	01	Explain the working principle of 4 stroke engine
	02	Difference between 2 stroke and 4 stroke engine
	03	Carnot cycle
	04	Related problem to Carnot cycle
12	01	Otto cycle
	02	Examples of Otto cycle
	03	Diesel cycle
	04	Examples of Diesel cycle

Shahanka Seher Bini
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Semester From Date: 01/08/2023 To Date: 30/11/2023 No. of Weeks: 15

Week	Class Day	Theory /Practical Topics
13	01	Dual cycle
	02	Examples of Dual cycle
	03	Overall chapter discussion .
	04	Solve simple Numericals .
14	01	Introduction to Fuel and combustion.
	02	Define Fuel .
	03	Types of Fuel .
	04	Application of different types of fuel .
15	01	Heating value of fuel .
	02	Quality of I.C engine fuels Octane Number .
	03	Cetane Number .
	04	Overall chapter discussion .

Shahanshah Bhoi

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