

BHUBANANANDA ODISHA SCHOOL OF ENGINEERING, CUTTACK
DEPARTMENT OF MECHANICAL ENGINEERING



LESSON PLAN

SUBJECT: THERMAL ENGINEERING-1

FACULTY: MRS. SUNITA NAYAK

Sunita Nayak

ACADEMIC SESSION: 2022-23

SEMESTER: 3rd

SEC: A

[Signature]
14.09.22

H O D (Mech Engg.)

Sunita Nayak

Discipline: Mechanical Engg.	Semester: 3 rd	Name of the teaching faculty: Sunita Nayak
Subject: THERMAL ENGINEERING-I	No of days/per week class allotted: 4 (Tuesday, Wednesday, Thursday, Friday)	Semester from date: 15/09/2022 to date: 22/12/2022 No. of weeks-15
Week	Class day	Theory/practical topics
1 st	15/09/2022	Discussion of Syllabus and Introduction of Thermodynamic
	16/09/2022	Definition of thermodynamics and application of it in various field
2 nd	20/09/2022	1. Thermodynamic concept & Terminology 1.1 Thermodynamic Systems (closed, open, isolated)
	21/09/2022	1.2 Thermodynamic properties of a system (pressure, volume, temperature, entropy, enthalpy, Internal energy and units of measurement)
	22/09/2022	1.3 Intensive and extensive properties
	23/09/2022	1.4 Define thermodynamic processes, path, cycle, state, path function, point function.
3 rd	27/09/2022	1.4 Define thermodynamic path function, point function.
	28/09/2022	1.5 Thermodynamic Equilibrium.
	29/09/2021	1.6 Quasi-static Process
	30/09/2022	1.7 Conceptual explanation of energy and its sources
4 th	03/10/2022-8/10/2022	PUJA HOLIDAY
5 th	11/10/2022	1.8 Work, heat
	12/10/2022	1.8 Comparison between heat and work 1.9 Mechanical Equivalent of Heat
	13/10/2022	1.10 Work transfer, Displacement work
	14/10/2022	2. Laws of Thermodynamics

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6 th	18/10/2022	2.2 State & explain First law of thermodynamics.
	19/10/2022	2.2 State & explain First law of thermodynamics
	20/10/2022	.2.3 Limitations of First law of thermodynamics
	21/10/2022	2.4 Application of first law of thermodynamics (steady flow energy equation derivation)
7 th	26/10/2022	2.4 Application of first law of thermodynamics (SFEE application to turbine and compressor)
	27/10/2022	2.4 Second law of thermodynamics (Clausius & Kelvin Plank statements).
	28/10/2022	2.5 Application of second law in heat engine & determination of efficiencies
	29/10/2022	Class test-1
8 th	1/11/2022	2.5 Solve simple numerical on heat engine
	2/11/2022	2.5 Application of second law in heat pump, refrigerator & determination of COP
	3/11/2022	2.5 Solve simple numerical on heat pump, refrigerator
	4/11/2022	3. Properties Processes of perfect gas 3.1 Laws of perfect gas: Boyle's law, Charle's law, Avogadro's law, Dalton's law of partial pressure, Guy lussac law
9 th	9/11/2022	3.1 General gas equation, characteristic gas constant, Universal gas constant
	10/11/2022	3.2 Explain specific heat of gas (Cp and Cv) .3.3 Relation between Cp & Cv.
	11/11/2022	3.4 Enthalpy of a gas. 3.5 Work done during a non- flow process
10 th	15/11/2022	3.6 Application of first law of thermodynamics to various non flow process (Isothermal, Isobaric)
	16/11/2022	3.6 Application of first law of thermodynamics to various non flow process (Isentropic and polytrophic process)
	17/11/2022	Internal examination
	18/11/2022	Internal examination

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11 th	22/11/2022	3.6 Solve simple problems on above process
	23/11/2022	3.7 free expansion and throttling process.
	24/11/2022	4. Internal combustion engine 4.1 Explain & classify I.C engine
	25/11/2022	4.2 Terminology of I.C Engine such as bore, dead centers, stroke volume, piston speed & RPM
12 th	29/11/2022	4.3 Explain the working principle of 2-stroke & 4- stroke C.I engine.
	30/11/2022	4.3 Explain the working principle of 2-stroke & 4- stroke engine S.I engine
	01/12/2022	4.4 Differentiate between 2-stroke & 4- stroke engine C.I & S.I engine.
	02/12/2022	5. Gas Power Cycle 5.1 Carnot cycle
13 th	6/12/2022	5.2 Otto cycle
	7/12/2022	5.3 Diesel cycle
	8/12/2022	5.4 Dual cycle
	9/12/2022	5.5 Solve simple numerical
	13/12/2022	5.5 Solve simple numerical
14 th	14/12/2022	6. Fuels and Combustion 6.1 Define Fuel.. 6.2 Types of fuel.
	15/12/2022	6.3 Application of different types of fuel
	16/12/2022	6.4 Heating values of fuel. 6.5 Quality of I.C engine fuels Octane number, Cetane number
	20/12/2022	Class test-2
	21/12/2022	Revision and doubt clear
15 th	22/12/2022	Revision and doubt clear

Extended lesson plan w.e.f. 23/12/2022 to 21/1/2023



Week	Class day	Theory/practical topics
15 th	23/12/2022	5.4 Dual cycle
16 th	3/1/2023	5.5 Solve simple numerical
	4/1/2023	5.5 Solve simple numerical
	5/1/2023	6. Fuels and Combustion 6.1 Define Fuel 6.2 Types of fuel.
	6/1/2023	6.3 Application of different types of fuel
17 th	10/1/2023	6.4 Heating values of fuel. 6.5 Quality of I.C engine fuels Octane number, Cetane number
	11/1/2023	Revision
	12/1/2023	Revision and doubt clear
	13/1/2023	Revision and doubt clear
18 th	17/1/2023	Class test-2
	18/1/2023	Revision
	19/1/2023	Previous semester question discussion
	20/1/2023	Revision