ASIAN SCHOOL OF TECHNOLOGY,KHORDA
Department of Mechanical Engineering

LESSON PLAN

Semester-4th **Subject-Thermal engineering-II**
Branch-Mechanical Engineering **Theory**
Name of the Faculty-Priyaranjan Pattanaik
Academic Session – 2024

Period	Unit/Sl. No	Topics to be covered
1	**Module-01**	**Performance of I.C engines**: Introduction to different types of engines,Advantages and disadvantages of engines.
2		Classification of I.C engines, various applications of I.C engines
3		Different Processes inside an I.C engines, Indicator Diagram and other technical terms
4		Performance parameters like Indicated power,brake power, frictional power and calculations based on it.
5		Efficiency of I.C engines like Mechanical efficiency, Indicated thermal efficiency and calculations based on it.
6		Air Fuel Ratio, Calorific value of Fuel and calculations based on it.
7		Mean effective pressure, brake mean effective pressure and Calculations based on it.
8		**OMR-1**
9	**Module-02**	**Air Compressor-**Introduction to Air Compressor,Uses of Compressed air
10		Classification of Air compressor
11		Operation of Air Compressor
12		Different parts of air compressor
13		Working principle of Reciprocating air compressor
14		Terminology of Reciprocating Air compressor
15		Derivation of work done in Single stage Reciprocating Air compressor with and without clearance volume
16		Derivation of work done in Double or two stage Reciprocating Air compressor with and without clearance volume
17		Calculations based on work done of Single stage Reciprocating Air compressor without clearance volume
18		Calculations based on work done of Double or two stage Reciprocating Air compressor with clearance volume
19		Calculations based on work done of Double stage Reciprocating Air compressor without clearance volume
20		**Unit Discussion**
21	**Module-03**	Introduction to properties of steam,difference between Gas and Vapour
22		Formation of steam,Representation on P-V,T-S,H-S and T-H diagram
23		Properties of steam
24		Use of steam table and Mollier chart for finding unknown properties
25		Non-flow process of Vapour
26		P-V,T-S and H-S diagram
27		Determination of changes in the properties
28		Calculations based on change in enthalpy
29		Calculations based on change in entropy

30		Calculations based on Pressure and Temperature
31		**Unit Discussion**
32		**OMR-2**
33	**Module-04**	Introduction to steam generators
34		Classification of boiler and its types
35		Important terms for boiler
36		Comparison of Fire tube and water tube boiler
37		Working of Cochran Boiler
38		Working of Lancashire Boiler
39		Working of Babcock Boiler
40		Working of Wilcox boiler
41		Boiler Drought(Forced), Boiler Drought(Induced and balanced)
42		Boiler Mountings,Boiler Accessories
43		**OMR-3**
44		Class test.
45	**Module-05**	Introduction to steam power Cycle, Carnot cycle with vapour
46		Derivation of work and efficiency of Carnot cycle
47		Rankine Cycle, Effect of various end conditions in Rankine cycle
48		Representation of Rankine cycle in P-V,T-S and H-S diagram
49		Reheat cycle and regenerative cycle
50		Simple Calculations on Carnot Vapour cycle and Rankine cycle
51		**Unit Discussion**
52		**OMR-4**
53	**Module-06**	Introduction to heat transfer,Modes of heat transfer
54		Fourier law of heat conduction and thermal conductivity
55		Newton's law of cooling
56		Radiation heat transfer(Stefan Boltzmann and Kirchoff's law)
57		Blackbody Radiation
58		Emissibility,Absorptivity,Transmissibility
59		**Unit Discussion**
60		**OMR-5**