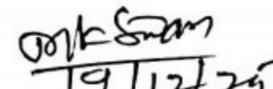


**DEPARTMENT OF MECHANICAL ENGINEERING**  
**LESSON PLAN**

<b>Discipline :</b> Mechanical Engg	<b>Semester:</b> 4 <sup>th</sup> Sem Mech	<b>Name of faculty: Biswajit Mishra</b>	
<b>Sub: TE-II</b>	<b>No of Days/ week class allotted :- 4</b>	<b>Total no of weeks:- 15</b> <b>Session: 2024-25 (Summer)</b>	<i>Start Date: 22/12/2025</i> <i>End Date: 18/01/2026</i>
<b>No of Week</b>	<b>No Of Class Planned</b>	<b>Topic to be taught</b>	
1 <sup>st</sup>	1 <sup>st</sup>	Air-standard Brayton cycle; Description with p-v and T-S diagrams	
	2 <sup>nd</sup>	Gas turbines Classification: open cycle gas turbines and closed cycle gas turbines	
	3 <sup>rd</sup>	comparison of gas turbine with reciprocating I.C. engines and steam turbines. Applications and limitations of gas turbines	
2 <sup>nd</sup>	1 <sup>st</sup>	General lay-out of Open cycle constant pressure gas turbine; P-V and T-S diagrams and working	
	2 <sup>nd</sup>	General lay-out of Closed cycle gas turbine; P-V and T-S diagrams and working	
	3 <sup>rd</sup>	<b>Jet Propulsion:</b> Principle, Fuels used for jet propulsion; Applications	
3 <sup>rd</sup>	1 <sup>st</sup>	Working of turbojet engine; Principle of Ram effect; Working of Ram jet engine	
	2 <sup>nd</sup>	Principle of Rocket propulsion; Working principle of a rocket engine	
	3 <sup>rd</sup>	Applications of rocket propulsion; Comparison of jet and rocket propulsions	
4 <sup>th</sup>	1 <sup>st</sup>	QA discussion	
	2 <sup>nd</sup>	Introduction: Difference between vapour & steam	
	3 <sup>rd</sup>	Phases & phase change phenomena of pure substance	
5 <sup>th</sup>	1 <sup>st</sup>	Terminology: property diagrams	
	2 <sup>nd</sup>	p-v, T-s, h-s diagrams with phases of pure substance	
	3 <sup>rd</sup>	Wet steam, superheated steam, Specific vol. of steam: Numericals	
6 <sup>th</sup>	1 <sup>st</sup>	Internal energy of steam, Entropy of pure substance	
	2 <sup>nd</sup>	Dryness fraction, Introduction to steam table	
	3 <sup>rd</sup>	Mollier diagram: Introduction with key points: Different processes	
7 <sup>th</sup>	1 <sup>st</sup>	Calorimeters	
	2 <sup>nd</sup>	Numericals	
	3 <sup>rd</sup>	Classification & types of Boiler, fire tube & Water tube Boiler	
8 <sup>th</sup>	1 <sup>st</sup>	Description & working of Cochran Boiler & Lancashire boiler	
	2 <sup>nd</sup>	Description & working of Babcock & Wilcox boiler	
	3 <sup>rd</sup>	High pressure boilers	
9 <sup>th</sup>	1 <sup>st</sup>	Boiler draught: functions of draught, classification	
	2 <sup>nd</sup>	Natural draught: height & diameter of chimney	
	3 <sup>rd</sup>	Artificial draught: Numericals	
10 <sup>th</sup>	1 <sup>st</sup>	Efficiencies of boiler: Numericals	
	2 <sup>nd</sup>	Boiler mountings & accessories	
	3 <sup>rd</sup>	Flow of steam through nozzle	
11 <sup>th</sup>	1 <sup>st</sup>	Velocity of steam at the exit of nozzle	
	2 <sup>nd</sup>	heat drop using analytical method in terms of and Mollier chart	
	3 <sup>rd</sup>	Numericals	
	1 <sup>st</sup>	Discharge of steam through nozzles; Critical pressure ratio	

12 <sup>th</sup>	2 <sup>nd</sup>	Methods of calculation of cross-sectional areas at throat and exit for maximum discharge
	3 <sup>rd</sup>	Effect of friction in nozzles and Super saturated flow in nozzles
13 <sup>th</sup>	1 <sup>st</sup>	Numericals
	2 <sup>nd</sup>	Working steam jet injector
	3 <sup>rd</sup>	Numericals
14 <sup>th</sup>	1 <sup>st</sup>	Classification of steam turbines with examples; Difference between impulse & reaction turbines, (Problems omitted)
	2 <sup>nd</sup>	Principle of working of a simple De-lavel turbine with line diagrams- Velocity diagrams;
	3 <sup>rd</sup>	Expression for work done, axial thrust, tangential thrust, Efficiencies
15 <sup>th</sup>	1 <sup>st</sup>	Compounding for velocity, for pressure or both pressure and velocity
	2 <sup>nd</sup>	Parson's Reaction turbine-velocity diagrams; Simple problems on single stage impulse turbines and reaction turbine
	3 <sup>rd</sup>	Bleeding, re-heating and re-heating factors
16 <sup>th</sup>	1 <sup>st</sup>	Governing of steam turbines: Throttle, By-pass & Nozzle control governing
	2 <sup>nd</sup>	Previous year question answer
	3 <sup>rd</sup>	Previous year question answer

  
 17/12/2025  
 Sign of Faculty

  
 19/12/25  
 H.O.D  
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 MECHANICAL ENGG. DEPT.  
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