



Atal Bihari Vajpayee Govt Institute of Engineering &
Technology

DEPARTMENT OF MECHANICAL ENGINEERING

LESSON PLAN

Academic Year	JANUARY 2026 -JUNE 2026
Scheme	N-2022
Semester	FOURTH
Course Code	MEPC204
Course Name	THERMAL ENGINEERING-II
Course Type	Program Core Course (PCC)
L-T-P	3-1-0
Name of Faculty	NIKHIL SHARMA
Semester Start & End Dates	27-01-2026 TO 27-05-2026

STUDY AND EVALUATION SCHEME

Sr. No.	Name of the Subject	Th.	Pr.	Internal Assessment			External Assessment					Total Marks	Credit
				Th.	Pr.	Total	Th.	Hrs.	Pr.	Hrs.	Total		
1	THERMAL ENGINEERING-II	04	NA	40	NA	40	60	03	NA	NA	60	100	03

Reference Books:

	Name of Book	Author Name	Publication
Prescribed Books	Thermal Engineering	R.K. Rajput	Laxmi Publication NewDelhi
	A Course in Thermal Engineering	S. Domkundwar&C.P.Kothand araman	Dhanpat Rai & Publication, New Delhi
	Heat Engineering	V.P.Vasandani&D.S. Kumar	Metropolitan Book Co. Pvt. Ltd,NewDelhi.

On the successful completion of this course, students will be able to:

CO1	Explain the working cycle of gas turbines, and the working of Jet and Rocket Engines a part From identifying the fuels used for Jet and Rocket propulsion.
CO2	Compute the work done, enthalpy, internal energy and entropy of steam at given conditions using steam tables and Mollier chart.
CO3	Distinguish between water tube and fire-tube boilers and explain the function of all the Mountings and accessories.
CO4	Calculate Velocity of steam at the exit of nozzle in terms of heat drop analytically and by Using Mollier chart.
CO5	State the necessity of governing and compounding of a turbine.
CO6	Explain the principle of working of a steam turbine and distinguish between the impulse Turbines and reaction turbines.

Teaching Plan:

Unit No	No. of Lect. Planned	Topic to be covered	Proposed date (as per time table)	Actual Date	Remarks
1. Gas Turbines & Jet Propulsion	1	Air-standard Brayton cycle; Brief description along with derivation of efficiency of Air standard Brayton Cycle with P- V and T-S diagrams	27.01.2026		
	2	Gas turbines Classification	28.01.2026		
	3	open cycle gas turbines	30.01.2026		
	4	closed cycle gas turbines	31.02.2026		
	5	comparison of gas turbine with reciprocating I.C. engines and steam turbines	03.02.2026		
	6	Applications and limitations of gas turbines	04.02.2026		
	7	General layout of Open cycle constant pressure gas turbine; P-V and T-S diagrams and working	6.02.2026		
	8	General layout of Closed cycle gas turbine; P-V and T-S diagrams and working	7.02.2026		
	9	Principle of jet propulsion	10.02.2026		
	10	Fuels used for jet propulsion; Applications of jet propulsion	11.02.2026		
	11	Working of a turbo jet engine	13.02.2026		
	12	Principle of Ram effect; Working of a Ramjet engine	7.02.2026		
	13	Principle of Rocket propulsion; Working principle of a rocket	18.02.2026		

		engine; Applications of rocket propulsion			
	14	Comparison of jet and rocket propulsions.	20.02.2026		
2.Properties of Steam	15	Formation of steam under constant pressure; Industrial uses of steam	21.02.2026		
	16	Basic definitions: saturated liquid line, saturated vapour line, liquid region, vapour region, wet region, super heat region, critical point, saturated liquid, saturated vapour, saturation temperature	24.02.2026		
	17	Basic definitions: sensible heat, latent heat, wet steam, dryness fraction, wetness fraction, saturated steam, superheated steam, degree of superheat;	25.02.2026		
	18	Determination of enthalpy, volume and entropy of wet, dry and super heated steam using steam tables and Mollier chart	27.02.2026		
	19	Throttling process	28.02.2026		
	20	Numerical problems using steam tables and Mollier charts	03.03.2026		
	21	DCS	06.03.2026		
		22	Function and use of steam boilers; Classification of steam boilers with examples; Brief explanation with line sketches of Cochran	07.03.2026	
3.Steam Generators	23	explanation with line sketches of Babcock and Wilcox Boilers	12.03.2026		
	24	Comparison of water tube and fire tube boilers	13.03.2026		
	25	Construction & working of modern high pressure boilers Lamont and Benson boilers.	17.03.2026		
	26	Boiler mountings: Pressure gauge, water level indicator, fusible plug, blow down cock, stop valve, safety valve, (dead weight type, spring loaded type)	18.03.2026		
	27	Boiler accessories: economizer, super heater and air pre-heater	20.03.2026		
	28	Study of steam traps & separators	24.03.2026		
	29	Concept of Actual evaporation, equivalent evaporation, factor of evaporation, boiler horse power and boiler efficiency	25.03.2026		
	30	Numerical based on evaporation & boiler efficiency	27.03.2026		
	31	-do-	28.03.2026		
	4. Steam Nozzles	32	Type of steam nozzles; Flow of steam through nozzle	31.03.2026	

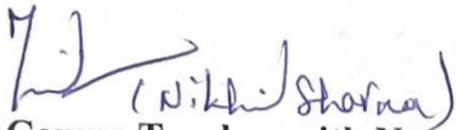
	33	Velocity of steam at the exit of nozzle in terms of heat drop using analytical method	01.04.2026		
	34	Numerical based on above topic	04.04.2026		
	35	DCS	10.04.2026		
	36	Discharge of steam through nozzles; Critical pressure ratio	17.04.2026		
	37	Methods of calculation of crosssectional areas at throat and exit for maximum discharge	18.04.2026		
5. Steam Turbines	38	Classification of steam turbines with examples	22.04.2026		
	39	Difference between impulse & reaction turbines; Principle of working of a simple De-lavel turbine.	24.04.2026		
	40	-do-	25.04.2026		
	41	Methods of reducing rotor speed; compounding for velocity, for pressure or both pressure and velocity	28.04.2026		
	42	Working principle with line diagram of a Parson's Reaction turbine	29.04.2026		
	43	Bleeding, re-heating and re-heating factors	02.05.2026		
	44	Bleeding, re-heating and re-heating factors	08.05.2026		
	45	-do-	12.05.2026		
	46	Governing of steam turbines: Throttle, By-pass & Nozzle control governing	13.05.2026		
	47	do	15.05.2026		
	48	DCS	16.05.2026		
	49	DCS	19.05.2026		
	50	REVISION	20.05.2026		
	51	REVISION	22.05.2026		
	52	REVISION	23.05.2026		
53	REVISION	26.05.2026			

Home Assignments

Ass. No	Contents of Syllabus Covered	Proposed date	Actual Date	Remarks
1	Unit-1&2	06.03.2026		
2	Unit-3&4	18.04.2026		
3				

Class /House Test

Name of Test	Syllabus Covered in Tests (Unit/Chapter Wise)	Proposed date	Actual Date	Remarks
Class Test-I	30% of whole syllabus	As per HPTSB Academic Calendar Schedule		
Class Test-II	60% of whole syllabus			
House Test	80% of whole syllabus			


(Nikhil Sharma)

Signature of Course Teacher with Name


Approved by

OIC/HoD/Principal

Signature: 

Faculty Signature: _____