राजकीय बहुतकनीकी, हमीरपुर (हि.प्र.)
GOVT. POLYTECHNIC, HAMIRPUR (H.P.)

DEPARTMENT OF MECHANICAL ENGINEERING

LESSON PLAN

Name of Faculty	**Manoj Kumar**	Academic Session	**Jan - May 2026**
Course Name	**Strength of Materials**	Scheme	**N- 2022**
Course Code	**MEPC202**	Semester	**4th**
Course Type	**Programme Core Course (PC)**	Semester Start Date	**27-01-2026**
L-T-P	**4-0-0**	Semester End Date	**27-05-2026**

STUDY AND EVALUATION SCHEME

Teaching Hours/Week		Internal Assessment		External Assessment				Total		Credit
Theory	Practical	Theory	Practical	Theory	Hrs.	Practical	Hrs.	Theory	Practical	
04 Hrs.	**NA**	**40**	**NA**	**60**	**03 Hrs**	**NA**	**NA**	**100**	**NA**	**03**

COURSE OUTCOMES(COs)

On the successful completion of this course, students will be able to:-	
CO1	Compute stress and strain values and find the changes in axial, lateral and volumetric dimensions of bodies of uniform section and of composite section under the influence of normal forces.
CO2	Calculate thermal stresses, in bodies of uniform section and composite sections.
CO3	Define resilience, proof–resilience and modulus of resilience and obtain expressions for Instantaneous stress developed in bodies subjected to different loads.
CO4	Compute shear force and bending moment at any section of beam and draw the S.F.& B.M diagrams for UDL and Point loads.
CO5	Calculate the safe load, safe span and dimensions of the cross section.
CO6	Compare strength and weight of solid and hollow shafts of the same length and material And compute the stress and deflection of the closed coil helical spring.

Recommended Books	
1.	Strength of Materials–R.S. Khurmi, S. Chand Company Ltd. Delhi
2.	A Text Book strength of Material–R.K. Bansal, Laxmi Publication New Delhi
3.	Strength of Materials by K.P.S Chauhan, Eagle's
4.	Strength of Materials–S. Ramamrutham, Dhanpat Rai & Publication New Delhi

Teaching Plan

Unit No	No. of Lect. Planed	Topic to be covered	Proposed date (as per time table)	Actual Date	Remarks
1. **Simple Stresses and Strains**	1	Introduction to Syllabus	27.01.2026		
	2	Types of forces	28.01.2026		
	3	Concept of Stress & types	29.01.2026		
	4	Concept of Strain & types	30.01.2026		
	5	Mechanical properties of materials	03.02.2026		
	6	Hook's law, elastic modulus types and relations	04.02.2026		
	7	Stress strain diagram for MS and CI	05.02.2026		
	8	Working stress,FOS and proof stress	06.02.2026		
	9	Stress and strain values in bodies of uniform section and of composite section - Derivations and Numerical problems	10.02.2026		
	10	----------do----------	11.02.2026		
	11	----------do----------	12.02.2026		
	12	----------do----------	13.02.2026		
	13	Thermal stress– Derivation, Numericals	17.02.2026		
	14	----------do----------	18.02.2026		
2. **Shear Force and bending Moment Diagram**	15	Types of beams	19.02.2026		
	16	Types of loads	20.02.2026		
	17	Definition and explanation of shear force and bending moment	24.02.2026		
	18	SFD and BMD : Cantilever beam	25.02.2026		
	19	----------do----------	26.02.2026		
	20	----------do----------	27.02.2026		
	21	SFD and BMD : Simply supported beam	03.03.2026		

	22	----------do----------	05.03.2026		
	23	----------do----------	06.03.2026		
	24	SFD and BMD : Overhanging beam	10.03.2026		
	25	----------do----------	11.03.2026		
	26	CT-1	12.03.2026		
3. Theory of simple bending and deflection of beams	27	Explanation of terms: Neutral layer, Neutral axis, Modulus of section, Moment of resistance, Bending stress, Radius of curvature, Assumptions in theory of simple bending	13.03.2026		
	28	---------do----------	17.03.2026		
	29	Bending equation derivation	18.03.2026		
	30	Simple problems involving calculations of bending stress, modulus of section and moment of resistance	19.03.2026		
	31	----------do----------	20.03.2026		
	32	----------do----------	24.03.2026		
	33	----------do----------	25.03.2026		
	34	Deflection of Beams-Formulae (Without Derivation)	27.03.2026		
	35	Deflection of beams: Numerical Problems	31.03.2026		
	36	----------do----------	01.04.2026		
4. Torsion in Shafts and Springs	37	Definition and function of shaft, Calculation of polar M.O.I for solid and hollow shafts	02.04.2026		
	38	Assumptions in torsion equation and Torsion equation	07.04.2026		
	39	CT-2	08.04.2026		
	40	Comparison of Solid and Hollow shafts: By Weight	09.04.2026		
	41	Comparison of Solid and Hollow shafts: By Strength	10.04.2026		
	42	Simple problems on design of shaft based on strength and rigidity	16.04.2026		
	43	----------do----------	17.04.2026		
	44	----------do----------	21.04.2026		
	45	Spring: Classification	22.04.2026		
	46	Nomenclature of closed coil helical spring	23.04.2026		
	47	----------do----------	24.04.2026		

	48	Simple numerical problems on closed coil helical spring to find safe load, deflection, size of coil and no.of coils	28.04.2026		
	49	----------do----------	29.04.2026		
	50	----------do----------	30.04.2026		
5. Thin Cylindrical Shells	51	Explanation of longitudinal and hoop stresses in the light of circumferential and longitudinal failure of shell	12.05.2026		
	52	Derivation of expressions for the longitudinal and hoop stress	13.05.2026		
	53	Related numerical problems	14.05.2026		
	54	----------do----------	15.05.2026		
	55	DCS	19.05.2026		
	56	DCS	20.05.2026		
	57	DCS	21.05.2026		
	58	DCS	22.05.2026		

Home Assignments

Ass. No	Contents of Syllabus Covered	Proposed date	Actual Date	Remarks
1	Unit-1&2	01.03.2026		
2	Unit-3&4	01.04.2026		
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	12.03.2026		
Class Test-II	60% of whole syllabus	08.04.2026		
House Test	80% of whole syllabus	As per HPTSB Academic Calendar Schedule		

Signature of Course Teacher with Name

Approved by

OiC/HoD/Principal

Govt. Polytechnic Hamirpur

DEPARTMENT OF MECHANICAL ENGINEERING

LESSON PLAN

Name of Faculty	**Vikas Thakur**	Academic Session	**Jan - May 2025**
Course Name	**THERMAL ENGINEERING-II**	Scheme	**N- 2022**
Course Code	MEPC204	Semester	**4th**
Course Type	PC	Semester Start Date	**27-01-2026**
L-T-P	L:3, DCS:1, P:0	Semester End Date	**27-05-2026**

STUDY AND EVALUATION SCHEME

Teaching Hours/Week		Internal Assessment		External Assessment				Total		Credit
Theory	Practical	Theory	Practical	Theory	Hrs	Practical	Hrs.	Theory	Practical	
04 Hrs.	**NA**	**40**	**NA**	**60**	**03 Hrs.**	**NA**	**NA**	**100**	**NA**	**03**

COURSE OUTCOMES(COs)

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 Enginesapart From identifying the fuels used for Jet and Rocket propulsion.
CO2	Compute the work done, enthalpy, internal energy and entropy of steam at givenconditions 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 byUsing 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.

Recommended Books	
1.	A Course in Thermal Engineering–S. Domkundwar & C.P. Kothandaraman, Dhanpat Rai & Publication, New Delhi
2.	Thermal Engineering–R.K. Rajput, Laxmi Publication NewDelhi
3.	Thermal Engineering–P.L.Ballaney,Khanna Publishers,2002
4.	Heat Engineering in MKS and SI Units–V.P.Vasandani &D.S. Kumar, Metro politan Book Co. Pvt. Ltd,NewDelhi.

Teaching Plan

Unit No	No. of Lect. Planed	Topic to be covered	Proposed date (as per time table)	Actual Date	Remarks
1. Gas Turbines	1	Introduction to Syllabus	27.01.2026		
	2	Air-standard Brayton cycle; Brief description along with derivation of efficiency of Air standard Brayton Cycle with P- V and T-S diagrams	29.01.2026		
	3	------do------	30.01.2026		
	4	Gas turbines Classification: open cycle gas turbines and closed cycle gas turbines;	2.02.2026		
	5	------do--------	03.02.2026		
	6	comparison of gas turbine with reciprocating I.C. engines and steam turbines	05.02.2026		
	7	--------do----------	06.02.2026		
	8	Applications and limitations of gas turbines;	09.02.2026		
	9	General layout of Open cycle constant pressure gas turbine	10.02.2026		
	10	P-V and T-S diagrams and working;;	13.02.2026		
	11	General layout of Closed cycle gas turbine	16.02.2026		
	12	P-V and T-S diagrams and working	17.02.2026		
	13	----------do----------	19.02.2026		
	14	Principle of jet propulsion; Fuels used for jet propulsion; Applications of jet propulsion;	20.02.2026		
	15	Working of a turbo jet engine; Principle of Ram effect;	20.02.2025		

	16	Working of a Ramjet engine; Principle of Rocket propulsion;	23.02.2026		
	17	Working principle of a rocket engine;.	24.02.2026		
	18	Applications of rocket propulsion; Comparison of jet and rocket propulsions	26.02.2026		
2.Properties of Steam	19	Formation of steam under constant pressure;	27.02.2026		
	20	Industrial uses of steam	2.03.2026		
	21	Basic definitions: saturated liquid line, saturated vapour line, saturated	3.03.2026		
	22	liquid region, vapour region, wet region, super heat region, critical point, saturated liquid,	5.03.2026		
	23	vapour, saturation temperature, sensible heat, latent heat, wet steam, dryness fraction,	6.03.2026		
	24	CT1	9.03.2026		
	25	wetness fraction, saturated steam, superheated steam, degree of superheat;	10.03.2026		
	26	Determination of enthalpy, volume and entropy of wet, dry and super heated steam using steam tables and Mollier chart,	12.03.2026		
	27	----------do--------	13.03.2026		
	28	Throttling process, Simple direct problems on the above using steam tables and Mollier charts.	16.03.2026		
3.Steam Generators	29	Function and use of steam boilers;	17.03.2026		
	30	Classification of steam boilers with examples;;	19.03.2026		
	31	Brief explanation with line sketches of Cochran, Babcock and Wilcox Boilers	23.03.2026		
	32	Comparison of water tube and fire tube boilers;	24.03.2026		
	33	Description with line sketches and working of modern high pressure boilers Lamont and Benson boilers	27.03.2026		
	34	Boiler mountings: Pressure gauge, water level indicator, fusible plug, blow down cock, stop valve, safety valve, (dead weight type, spring loaded type)	30.03.2026		
	35	Boiler accessories: economizer, super heater and air pre-heater; Study of steam traps & separators; Concept of the terms: Actual evaporation, equivalent evaporation, factor of evaporation,	2.04.2026		

	36	boiler horse power and boiler efficiency; Formula for the above terms without proof;	6.04.2026		
	37	Simple direct problems on the above terms.	7.04.2026		
4. Steam Nozzles	38	Type of steam nozzles; Flow of steam through nozzle;	9.04.2026		
	39	CT2	10.04.2026		
	40	Velocity of steam at the exit of nozzle in terms of heat drop using analytical method;	13.04.2026		
	41	Simple direct problems on the above only using analytical method,	16.04.2026		
	42	Discharge of steam through nozzles; Critical pressure ratio;	17.04.2026		
	43	Methods of calculation of cross-sectional areas at throat and exit for maximum discharge	20.04.2026		
	44	. Boiler mountings: Pressure gauge, water level indicator, fusible plug,	21.04.2026		
	45	blow down cock, stop valve, safety valve, (dead weight type, spring loaded type);	23.04.2026		
	46	Boiler accessories: economizer, super heater and air pre-heater;	24.04.2026		
	47	Study of steam traps & separators	27.04.2026		
5. Steam Turbines	48	Classification of steam turbines with examples; Difference between impulse & reaction turbines;	28.04.2026		
	49	Principle of working of a simple De-lavel turbine with line diagrams-	30.04.2026		
	50	Velocity diagrams (Diagrammatic representation only);	11.05.2026		
	51	Methods of reducing rotor speed; compounding for velocity, for pressure or both pressure and velocity;	12.05.2026		
	52	----------do----------;	14.05.2026		
	53	Working principle with line diagram of a Parson's Reaction turbine–velocity diagrams	15.05.2026		
	54	Diagrammatic representation only);Bleeding, re-heating and re-heating factors	18.05.2026		
	55	----------do----------	19.05.2026		
	56	Governing of steam turbines:	21.05.2026		
	57	Throttle, By-pass & Nozzle control governing.	22.05.2026		

	58	DCS	25.05.2026		
	59	DCS	26.05.2026		

Home Assignments

Ass. No	Contents of Syllabus Covered	Proposed date	Actual Date	Remarks
1	Unit-1&2	16.03.2026		
2	Unit-3,4	27.04.2026		
3	Unit-5			

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			

Signature of Course Teacher with Name

Approved by

OIC/HOD/Principal

Government Polytechnic Hamirpur

DEPARTMENT OF MECHANICAL ENGINEERING

LESSON PLAN

Name of Faculty	**Dinesh Kumar Patial**	Academic Session	**Jan - May 2026**
Course Name	**Power Plant Engineering**	Scheme	**N- 2022**
Course Code	**MEPE204-1**	Semester	**4th**
Course Type	**Programme Elective**	Semester Start Date	**27-01-2026**
L-T-P	**3-0-0**	Semester End Date	**27-05-2026**

STUDY AND EVALUATION SCHEME

Teaching Hours/Week		Internal Assessment		External Assessment				Total		Credit
Theory	Practical	Theory	Practical	Theory	Hrs	Practical	Hrs.	Theory	Practical	
03 Hrs.	**NA**	**40**	**NA**	**60**	**03 Hrs.**	**NA**	**NA**	**100**	**NA**	**03**

COURSE OUTCOMES (COs)

On the successful completion of this course, students will be able to:-	
CO1	Familiarized with the present and future power scenario of India.
CO2	Enlist various load terminologies in power plants
CO3	Working and classifications in hydro power plant
CO4	Working principles of Diesel, Gas and Nuclear power plants.
CO5	Understand the issues and necessity of safety concepts of power plants.

RECOMMENDED BOOKS

1.	Power plant Engineering-P.K. Nag 4th edition,Tata McGraw Hill Education,2014.
2.	Power plant Engineering– Frederick T.Morse, Litton Educational Publishing Inc.1953.
3.	A Course in Power Plant Engineering–Subhash C. Arora, S. Domakundwar, Dhanpat Rai,1984.
4.	Power Plant Engineering–P.C. Sharma, S.K. Kataria & sons,2009.
5.	Power System Engineering–R.K. Rajput, Firewell M.Sukhatme S.P. J K Nayak,

TEACHING PLAN

Sr. No.	Dates/ No. of Lect.	Chapter Description	Detail of Contents
1.	27 Jan. - 07 Feb. 26 **(06 Lect.)**	**Introduction to Power plant**	Introduction to power plant; Indian Energy scenario in India; Location of power plant; Choice of Power plant; Classification of power plants.
2.	10 Feb. - 24 Feb. 26 **(06 Lect.)**	**Economics of power plant**	Terminology used in power plant: Peak load, Base load factor (Introduction only); Various factor affecting the operation of power plant; Methods of meeting the fluctuating load in power plant; Performance and operating characteristics of power plant.
3.	26 Feb.- 28 Mar. 26 **(10 Lect.)**	**Hydro power plant**	Introduction to Hydroelectric power plant; Rainfall, Runoff and its measurement, Hydrograph, flow duration curve; Selection of sites for hydroelectric power plant; General layout of Hydroelectric power plant and its working; Classification of the Plant- Run off river plant, storage river plant, pumped storage plant; Advantages and disadvantages of hydroelectric power plant.
4.	30 Mar. – 02 May 26 **(12 Lect.)**	**Diesel and Gas turbine plant & Nuclear power plant**	The layout of diesel power plant; Components and the working of diesel power plant; Advantages and disadvantages of diesel power plant; Gas turbine power Plant Schematic diagram, components and its working; Combined cycle power generation- Combined gas and steam turbine power plant operation; Nuclear Power Introduction -Radio activity- Radioactive charge-types of reactions; Working of a nuclear power plant; Thermal fission Reactors- PWR, BWR and gas cooled reactors; Advantages and Disadvantages of Nuclear power plant.
5.	05 May - 27 May. 26 **(08 Lect.)**	**Environmental impact of Power plant & Power plant safety:**	Social and Economic issues of power plant; Greenhouse effect; Acid Precipitation-Acid rain, Acid snow, Dry deposition, Acid fog; Air, water, Thermal pollution from power plants; Radiations from nuclear power plant effluents. Plant safety concept; Safety policy to be observed in power plants; Safety practices to be observed in boiler operation; Safety in oil handling system; Safety in Chemical handling system; Statutory provision related to boiler operation.

Home Assignments

Assignment. No.	Contents of Syllabus Covered	Proposed date	Actual Date	Remarks
1	Unit-1&2	28.02.2026		
2	Unit-3&4	05.05.2026		

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			

27/01/26

Signature of course teacher
Dinesh Kumar Patial,
Lect. Mech. Engg.

HOD

	Government Polytechnic Hamirpur
	DEPARTMENT OF MECHANICAL ENGINEERING
	LESSON PLAN

Name of Faculty	**Amit Sharma**	Academic Session	**Jan - May 2026**
Course Name	**Automobile Engineering**	Scheme	**N- 2022**
Course Code	MEPE202-3	Semester	**4th**
Course Type	PROGRAMME ELECTIVE	Semester Start Date	**27-01-2026**
L-T-P	**3-0-0**	Semester End Date	**27-05-2026**

STUDY AND EVALUATION SCHEME

Teaching Hours/Week		Internal Assessment		External Assessment				Total		Credit
Theory	Practical	Theory	Practical	Theory	Hrs	Practical	Hrs.	Theory	Practical	
03 Hrs.	**NA**	**40**	**NA**	**60**	**03 Hrs.**	**NA**	**NA**	**100**	**NA**	**03**

COURSE OUTCOMES(COs)

On the successful completion of this course, students will be able to:-	
CO1	Identify the components of an automobile with their working
CO2	Explain the concepts of cooling and lubricating systems.
CO3	Explain the concepts of Ignition and Transmission and steering systems
CO4	Identify different suspension systems and their applications.
CO5	Differentiate the special vehicles according to the usage.

Recommended Books

S.No	Name of the Book	Author Name	Publication
1.	Automobile Engineering	Voll,II, Kirpal Singh	Standard Publishers Distributors
2.	Automobile Engineering	A.K.Babu, S.C.Sharma	Khanna Publications

Teaching Plan

Unit No	No. of Lect. Planned	Topic to be covered	Proposed date (as per time table)	Actual Date	Remarks
1. Introduction to basic structure of an automobile	1	Basic engine components; Cylinder block; Cylinder head;	2.02.2026		
	2	Gaskets; cylinder liners, types of cylinder liners;	3.02.2026		
	3	Piston and piston pin; piston rings	4.02.2026		
	4	types of piston rings; Connecting rod;	9.02.2026		
	5	Crank shaft; Cam shaft; Crankcase;.	10.02.2026		
	6	Engine valves;	11.02.2026		
	7	Fly- wheel and Governor	16.02.2026		
	8	Fly- wheel and Governor	17.02.2026		
2. Cooling and lubrication system	9	The necessity of cooling system; Types of cooling system-air cooling and water cooling; Air cooling system;	18.02.2026		
	10	Types of water cooling system – Thermosyphon system and pump circulation system; Advantages and disadvantages of air cooling and water cooling systems;	23.02.2026		
	11	The components of water cooling system–fan, radiator, pump and thermostat; The necessity of lubrication system; S.A.E rating of lubrication system;	24.02.2026		

	12	Types of lubrication system; Petrol lubrication and high pressure lubrication system. Fuel feed system: Conventional fuels and alternative fuels: Cetane and octane numbers;	25.02.2026		
	13	Types of carburetors; Working of simple carburetor; Multi point and single point fuel injection systems;	02.03.2026		
	14	Different fuel transfer pumps; Working of S.U electrical and A.C mechanical pump; Fuel filters;	03.03.2026		
	15	Fuel injection pump; Fuel injectors; Use of Hydrogen and	16.03.2026		
	16	Ethanol as an alternating fuel (Basic concept only)	17.03.2026		
3. Ignition system	17	Ignition system: Introduction to ignition system; Battery Ignition systems and magneto Ignition system;	18.03.2026		
	18	Electronic Ignition system; Construction and working of lead acid battery; Elements of charging system; Elements of starting system;	23.03.2026		
	19	Types of lights used in the automobile: Transmission and steering system: General arrangement of clutch; Principle of friction clutches; Constructional details of Single plate clutch;	24.03.2026		
	20	Constructional details of multi-plate clutch; Constructional details of centrifugal clutch; Necessity for gear ratios in transmission; Types of gear boxes;	25.03.2026		
	21	Working of sliding mesh gear box; Working of constant mesh gear box;	30.03.2026		
	22	Working of propeller shaft Working of propeller shaft;.	31.03.2026		

	23	Working of universal joint; Working of differential; Types of rear axle;	1.04.2026		
	24	Purpose of front axle; Necessity of steering system; Caster, camber	13.04.2026		
	25	king pin inclination; Rack and pinion steering system;	20.04.2026		
	26	Power steering	21.04.2026		
4. Suspension system	27	Necessity of suspension system; Torsion bar suspension systems;	22.04.2026		
	28	Leaf spring and coil spring suspension system;	27.04.2026		
	29	Working of telescopic shock absorber;	28.04.2026		
	30	Functions of brakes;	29.04.2026		
	31	Types of brakes; Working of internal expanding brake;	11.05.2026		
	32	Independent suspension for front wheel and rear wheel;	12.05.2026		
	33	Independent suspension for front wheel and rear wheel	12.05.2026		
	34	Working of disc brake	13.05.2026		
	35	Working of disc brake	13.05.2026		
5. Special vehicles	36	Introduction to Special vehicles;	13.05.2026		
	37	Tractor; Motor grader; Scrappers; Excavators; Duper trucks.	18.05.2026		
	38	Hybrid and Electric Vehicles: Introduction to Hybrid and Electric Vehicles; History of	19.05.2026		
	38	Hybrid and Electric Vehicles; Social and environmental importance of Hybrid	19.05.2026		
	38	Electric vehicles; Electric Vehicle drive train	19.05.2026		
	39	Electric vehicles; Electric Vehicle drive train	26.05.2026		
	40	Electric vehicles; Electric Vehicle drive train	26.05.2026		

Home Assignments

Ass. No	Contents of Syllabus Covered	Proposed date	Actual Date	Remarks
1	Unit-1&2	05.03.2026		
2	Unit-3&4	23.04.2026		
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			

Signature of Course Teacher with Name
Amit Sharma

Approved by

OIC/HoD/Principal

	Govt. Polytechnic Hamirpur
	DEPARTMENT OF MECHANICAL ENGINEERING
	LESSON PLAN

Name of Faculty	**Vikas Thakur**	Academic Session	**Jan - May 2025**
Course Name	**Essence of Indian Knowledge & Tradition**	Scheme	**N- 2022**
Course Code	**AU202**	Semester	**4th**
Course Type	AU (Audit Course)	Semester Start Date	**27-01-2026**
L-T-P	(L: 2, DCS:0; P:0	Semester End Date	**27-05-2026**

STUDY AND EVALUATION SCHEME

Teaching Hours/Week		Internal Assessment		External Assessment				Total		Credit
Theory	Practical	Theory	Practical	Theory	Hrs	Practical	Hrs.	Theory	Practical	
02 Hrs.	**NA**	**40**	**NA**	**60**	**03 Hrs.**	**NA**	**NA**	**100**	**NA**	**0**

COURSE OUTCOMES(COs)

On the successful completion of this course, students will be able to:-	
CO1	Identify the concept of Indian Knowledge System (IKS).
CO2	Understand the need and importance of protecting traditional knowledge.
CO3	Compare the Indian traditional knowledge and modern science.
CO4	Understand the use of Yoga in stress management, mental health, mindfulness, healthy eating, weight loss and quality sleep.

CO5	Aware of the general knowledge of Himachal Pradesh.

Reference Books

S.No.	Name of the Book
1.	Cultural Heritage of India-Course Material by V. SivaramakrishnaBharatiya, VidyaBhavan, Mumbai, 5th Edition, 2014
2.	Modern Physics and Vedant by Swami JitatmanandBharatiya, VidyaBhavan
3.	The wave of Life by Fritz of Capra
4.	Tao of Physics Fritz of Capra
5	Tarkasangraha of Annam Bhatta, International by V N Jha, Chinmay Foundation, Velliarnad, Ernakulam
6	Science of Consciousness Psychotherapy and Yoga Practices by RN Jha, Vidyanidhi Prakashan, Delhi, 2016
7	Himachal Pradesh History, Culture & Economy by Mian Goverdhan Singh & Prof. Dr. C.L. Gupta.

Teaching Plan

Unit No	No. of Lect. Planed	Topic to be covered	Proposed date (as per time table)	Actual Date	Remarks
1. Indian Knowledge System	1	The Basic Structure of Indian Knowledge System(IKS) (only Introduction)	28.01.2026		
	2	The 4 Vedas,Namly ऋग्वेद ,Rigveda) ,यजुर्वेद Yajurveda),सामवेद (Samaveda) ,अथर्ववेद (Atharvaveda) .	31.01.2026		
	3	; The 4 UpVedas, Namely आयुर्वेद (Ayurveda (health-care)), धनुर्वेद (Dhanurveda (archery)), गंधर्ववेद (Gandharva-veda (dance, music	4.02.2026		
	4	स्थापत्यवेद (Sthapatyaveda (architecture)).	07.02.2026		
	5	The 6 Vedagangs ,namely Shiksha (शिक्षा), Kalpa (कल्प),			

		Vykaraṇa (व्याकरण), Chhandas छंदस्), Nirukta (निरुक्त), and Jyotisha(ज्योतिष).	11.02.2026		
	6	Itihasa (इतिहास) (Ramayana रामायण and Mahabharata महाभारत) and Purana पुराण (Vishnupurana विष्णुपुराण , Bhagavata Purana (भागवत पुराण)	18.02.2026		
	7	Dharmashatraधर्मशास्त्र (Manusmriti मनुस्मृति, Yajnavalkya-smriti याज्ञवल्क्य स्मृति,	21.02.2026		
	8	Darshan दर्शन (आस्तिक तथा नास्तिक). Nyaya न्याय (Logic तर्कशास्त्र and Epistemology ज्ञानमीमांसा	25.02.2026		
2. Modern Science	9	Modern science: Introduction, Characteristics, importance and Example	28.02.2026		
	10	Difference between modern Science and Indian knowledge system	7.03.2026		
	11	Role of IKS in modern science	11.03.2026		
	12	CT1	18.03.2026		
3. Traditional knowledge	13	Traditional knowledge: Definition, nature, characteristics, scope and importance	25.03.2026		
	14	Indigenous Knowledge (IK): characteristics	28.03.2026		
		Traditional knowledge vis-a-vis Indigenous	1.04.2026		

	15	knowledge, The need for protecting traditional knowledge			
4. **Yoga and Holistic Health**	16	Yoga: Meaning and Importance of Yoga , Yoga and physical health	4.04.2026		
	17	CT1	8.04.2026		
	18	Yoga and psychological health, Yoga and intellectual health, Yoga and social approach	18.04.2026		
	19	Introduction to Ashtanga Yoga, Yogic Kriyas (Shat Karma)	22.04.2026		
	20	Pranayama and its types; Active lifestyle and stress management through Yoga	25.04.2026		
	21	Physical Fitness, Health and wellness: Meaning and Importance of Wellness, Components of Wellness, Health and physical Fitness	29.04.2026		
	22	Traditional sports & Regional Games for promoting wellness	2.05.2026		
	23	Leadership through Physical Activity and Sports;	13.05.2026		

Unit 5 : **Himachal Pradesh: A Basic Information**	**24**	• History, Culture, Heritage/ Tradition, Customs & Manners,	16.05.2026		
	25	Regional Knowledge, Geographical Features, Constitutional History	20.05.2026		
	26	Tourism Place & Scope, Festivals and Fairs	23.05.2026		

Home Assignments

Ass. No	Contents of Syllabus Covered	Proposed date	Actual Date	Remarks
1	Unit-1&2	11.03.2026		
2	Unit-3,4	22.04.2026		
3	Unit-5			

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			

Signature of Course Teacher with Name

Approved by

OIC/HOD/Principal

राजकीय बहुतकनीकी, हमीरपुर (हि.प्र.)
GOVT. POLYTECHNIC, HAMIRPUR (H.P.)

DEPARTMENT OF MECHANICAL ENGINEERING

LESSON PLAN

Name of Faculty	**Manoj Kumar**	Academic Session	**Jan - May 2026**
Course Name	**Material Testing Lab**	Scheme	**N- 2022**
Course Code	**MEPC206**	Semester	**4th**
Course Type	**Programme Core Course (PC)**	Semester Start Date	**27-01-2026**
L-T-P	**0-0-2**	Semester End Date	**27-05-2026**

STUDY AND EVALUATION SCHEME

Teaching Hours/Week		Internal Assessment		External Assessment				Total		Credit
Theory	Practical	Theory	Practical	Theory	Hrs.	Practical	Hrs.	Theory	Practical	
NA	**02 Hrs**	**NA**	**40**	**NA**	**NA**	**60**	**03 Hrs.**	**NA**	**100**	**01**

COURSE OUTCOMES(COs)

On the successful completion of this course, students will be able to:-	
CO1	Identify the given specimen by viewing the microstructure using metallurgical microscope
CO2	Identify the cracks in the specimen using different techniques
CO3	Determine the various types of stress and plot the stress strain diagram for mild steel.
CO4	Determine the torsion, bending, impact and shear values of given materials
CO5	Determine the modulus of rigidity, strain energy, shear stress and stiffness of coil spring

Recommended Books	
1.	Measurement system (Application and Design)–Ernest O Doebelin.

2.	Strength of Materials–R.S. Khurmi, S.Chand Company Ltd. Delhi
3.	A Textbook strength of Material–R.K.Bansal, Laxmi Publication New Delhi

Practical Performing Plan

No. of Lab Classes Planned	Practical to be perform conduct	Proposed date (as per time table)		Actual Date		Remarks
		G-I	G-II	G-I	G-II	
1	Introduction to lab course	29.01.2026	28.01.2026			
2	Determination of Rockwell's Hardness Number for various materials like mild steel, high carbon steel, brass, copper and aluminum.	05.02.2026	04.02.2026			
3	----------DO----------	12.02.2026	11.02.2026			
4	Finding the resistance of materials to impact loads by Izod test and Charpy test.	19.02.2026	18.02.2026			
5	----------DO----------	26.02.2026	25.02.2026			
6	Detect the cracks in the specimen using (i)Visual inspection and ring test (ii) Die penetration test (iii) Magnetic particle test	05.03.2026	11.03.2026			
7	Prepare a specimen and examine the microstructure of the Ferrous and Nonferrous Metals using the Metallurgical Microscope.	12.03.2026	18.03.2026			
8	----------DO----------	19.03.2026	25.03.2026			
9	Determination of modulus of rigidity, strain energy, shear stress and stiffness by load deflection method (Open & Closed coil spring)	02.04.2026	01.04.2026			
10	Finding young's Modulus of elasticity, yield points, percentage elongation and percentage reduction in area , stress strain diagram plotting, tests on mild steel	09.04.2026	08.04.2026			
11	----------DO----------	16.04.2026	22.04.2026			
12	Single or double Shear test on M.S. bar to finding the resistance of material to shear load.	23.04.2026	29.04.2026			
13	Torsion test on mild steel–relation between torque and angle of twist determination of shear modulus and shear stress.	30.04.2026	13.05.2026			
14	----------DO----------	14.05.2026	20.05.2028			
15	DCS	21.05.2026	NA			

Signature of Course Teacher with Name

Approved by

(HoD/Principal

Govt. Polytechnic Hamirpur

DEPARTMENT OF MECHANICAL ENGINEERING

LESSON PLAN

Name of Faculty	**Vikas Thakur**	Academic Session	**Jan - May 2025**
Course Name	**THERMAL ENGINEERING LAB-II**	Scheme	**N- 2022**
Course Code	MEPC210	Semester	**4th**
Course Type	**Programme Core Course (PC)**	Semester Start Date	**27-01-2026**
L-T-P	(L:0,P:2)	Semester End Date	**27-05-2026**

STUDY AND EVALUATION SCHEME

Teaching Hours/Week		Internal Assessment		External Assessment				Total		Credit
Theory	Practical	Theory	Practical	Theory	Hrs.	Practical	Hrs.	Theory	Practical	
NA	**02 Hrs**	**NA**	**40**	**NA**	**NA**	**60**	**03 Hrs.**	**NA**	**100**	**01**

COURSE OUTCOMES(COs)

On the successful completion of this course, students will be able to:-	
CO1	Evaluate the performance characteristics of single cylinder diesel/petrol engine atdifferent loads and draw the heat balance sheet.
CO2	Find the indicated power of individual cylinders of an engine by using morse test.
CO3	Evaluate the performance characteristics of air compressor
CO4	Evaluate the coefficient of performance of refrigerator
CO5	Find the thermal conductivity of material

Recommended Books	
1.	Thermal Engineering–P.L. Ballaney, Khanna Publishers,2002
2.	A Course in Thermal Engineering–.Domkundwar C.P.Kothandaraman, Dhanpat Rai & Publication New Delhi
3.	Thermal Engineering–R.S. Khurmi and J.K.Gupta,18thEdition, S.Chand &Co,NewDelhi

Practical Performing Plan

No. of Lab. Classes Planned	Practical to be perform/conduct	Proposed date (as per time table)		Actual Date		Remarks
		G-I	G-II	G-I	G-II	
1	Introduction to lab course	02.02.2026	27.01.26			
2	Study of Cochran, Babcock and Wilcox boiler with model	09.02.2026	3.02.26			
3	----------DO----------	16.02.26	10.02.26			
4	Study of boiler mountings and accessories	23.02.26	17.03.26			
5	----------DO----------	2.03.26	24.03.26			
6	Conduct performance test on VCR test rig to determine COP of the refrigerator	9.03.26	3.04.26			
7	Conduct performance test on reciprocating compressor	16.03.26	10.04.26			
8	----------DO----------	23.03.26	17.04.26			
9	Conduct Morse test to determine the indicated power of individual cylinders	30.03.26	24.04.26			
10	Conduct Performance test on 2/4-Stroke CI/SI engine	06.04.26	7.04.26			
11	Conduct Heat balance test on CI/SI engine..	20.04.26	21.04.26			
12	Study of steam turbine through models..	27.04.26	28.04.26			
13	Thermal conductivity test on Thick slab/Thick cylinder	11.05.26	12.05.26			
14	Leak detection of refrigeration equipment	18.05.26	19.05.26			
15	DCS	25.05.26	26.05.26			

Signature of Course Teacher with Name

Approved by

OIC/HOD/Principal

Government Polytechnic Hamirpur

DEPARTMENT OF MECHANICAL ENGINEERING

LESSON PLAN

Name of Faculty	**Nitish Sharma**	Academic Session	**Jan - May 2026**
Course Name	**Computer Aided Machine Drawing Practice**	Scheme	**N- 2022**
Course Code	**MEPC208**	Semester & Branch	**4th (M.E)**
Course Type	**Program Core Course**	Semester Start Date	**27-01-2026**
L-T-P	**0-0-4**	Semester End Date	**27-05-2026**

STUDY AND EVALUATION SCHEME

Teaching Hours/Week		Internal Assessment		External Assessment				Total		Credit
Theory	Practical	Theory	Practical	Theory	Hrs.	Practical	Hrs.	Theory	Practical	
NA	**04 Hrs**	**NA**	**40**	**NA**	**NA**	**60**	**03 Hrs.**	**NA**	**100**	**02**

COURSE OUTCOMES(COs)

	On the successful completion of this course, students will be able to:-
CO1	Understand the representation of materials used in machine drawing.
CO2	Draw the development of surfaces for sheet metal working applications.
CO3	Draw the machine elements including keys, couplings, cotters, riveted, bolted and welded joints.
CO4	Construct an assembly drawing using part drawings of machine components.
CO5	Represent tolerances and the levels of surface finish of machine elements.

Recommended Books-

1.	Bhatt , N.D.,Machine Drawing, Charotar Publishing House,2003.
2.	Sidheswar, N.,Kannaiah, P.and Sastry,V.V.S., Machine Drawing, Tata Mc Graw Hill Book Com-pany, New Delhi
3.	Kannaih, P.,Production Drawing, New Age International,2009

Practical Performing Plan

No. of Lab. Classes Planned	Practical to be perform/conduct	Proposed date (as per time table)	Actual Date	Remarks
		G-II	G-II	
1	Introduction to CAD software.	29.01.2026		
2	Drawing aids and editing commands.	02.02.2026		
3	----------do----------	05.02.2026		
4	Basic dimensioning, hatching, blocks and views.	09.02.2026		
5	----------do----------	12.02.2026		
6	Isometric drawing, printing and plotting	16.02.2026		
7	----------do----------	19.02.2026		
8	Machine Drawing practice using Auto CAD - Exercise No.1	23.02.2026		
9	----------do----------	26.02.2026		
10	Exercise No.2	02.03.2026		
11	----------do----------	05.03.2026		
12	Exercise No.3	16.03.2026		
13	----------do----------	19.03.2026		
14	Exercise No.4	23.03.2026		
15	----------do----------	30.03.2026		
16	Exercise No.5	02.04.2026		
17	----------do----------	06.04.2026		
18	Exercise No.6	09.04.2026		
19	----------do----------	16.04.2026		
20	Exercise No.7	20.04.2026		
21	----------do----------	23.04.2026		
22	Exercise No.8	27.04.2026		
23	----------do----------	30.04.2026		
24	Exercise No.9	11.05.2026		
25	----------do----------	14.05.2026		
26	Exercise No.10	18.05.2026		
27	----------do----------	21.05.2026		
28	DCS	25.05.2026		

Signature of Course Teacher with Name
(NITISH SHARMA)

Approved by

OIC/HOD/Principal

	Government Polytechnic Hamirpur
	DEPARTMENT OF MECHANICAL ENGINEERING
	LESSON PLAN

Name of Faculty	**Dinesh Kumar Patial**	Academic Session	**Jan - May 2026**
Course Name	**Computer aided Machine drawing Practice**	Scheme	**N- 2022**
Course Code	**MEPC208**	Semester	**4th**
Course Type	**Core subject**	Semester Start Date	**27-01-2026**
L-T-P	**0-0-4**	Semester End Date	**27-05-2026**

STUDY AND EVALUATION SCHEME

Teaching Hours/Week		**Internal Assessment**		**External Assessment**				**Total**		**Credit**
Theory	Practical	Theory	Practical	Theory	Hrs	Practical	Hrs.	Theory	Practical	
NA	04 Hrs.	NA	40	NA	NA	60	03	NA	100	02

COURSE OUTCOMES (COs)

CO1	Understand the representation of materials used in machine drawing
CO2	Draw the development of surfaces for sheet metal working applications.
CO3	Draw the machine elements including keys, couplings, cotters, riveted, bolted and welded
CO4	Construct an assembly drawing using part drawings of machine components
CO5	Represent tolerances and the levels of surface finish of machine elements.

RECOMMENDED BOOKS

1.	Bhatt , N.D.,Machine Drawing, Charotar Publishing House,2003.
2.	Sidheswar, N.,Kannaiah, P.and Sastry,V.V.S., Machine Drawing, Tata Mc Graw Hill Book Com-pany, New Delhi
3.	Kannaih, P.,Production Drawing, New Age International,2009

TEACHING PLAN – GROUP 1

Sr. No.	Date / No. of Lect.	Unit	Detail of Contents
1.	29 Jan. - 02 Feb. 26 **(02)**	I	Introduction to CAD software.
2.	05 Feb. - 23 Feb. 26 **(06)**	II	Drawing aids and editing commands.
3.	26 Feb. – 02 Mar 26 **(04)**	III	Basic dimensioning, hatching, blocks and views.
4.	05 Mar. – 12 Mar. 26 **(06)**	IV	Isometric drawing, printing and plotting
5.	16 Mar.- 27 May 26 **(22)**	V	Machine Drawing practice using Auto CAD: Detailed drawings of following machine parts are for assemble and draw the sectional or plain elevations, plans and side views with dimensioning and bill of materials using **CAD** software
	16 -19 March 26		1) Sleeve & Cotter Joint
	23 - 30 March 26		2) Spigot & Cotter Joint
	02 - 06 Apr. 26		3) Knuckle Joint
	09 - 13 Apr. 26		4) Stuffing Box
	16 - 20 Apr. 26		5) Screw Jack
	23 - 27 Apr. 26		6) Foot Step Bearing
	30 Apr - 04 May 26		7) Simple Eccentric
	07 - 11 May 26		8) Universal Coupling **OR** Connecting Rod
	14 - 18 May 26		9) Plummer Block
	21- 25 May 26		10) Machine Vice **OR** Protected Type Flanged Coupling.

Home Assignments

Assignment. No.	Syllabus Covered	Proposed date	Actual Date	Remarks
1	NA	NA	NA	NA
2	NA	NA	NA	NA

Class / House Test

Name of Test	Syllabus Covered in Tests	Proposed date	Actual Date	Remarks
Class Test-I	NA	NA	NA	NA
Class Test-II	NA		NA	NA
House Test	NA		NA	NA

27/01/26

Signature of course teacher
Dinesh Kumar Patial,
Lect. Mech. Engg.

HOD

TEACHING PLAN – GROUP 2

Sr. No.	Date / No. of Lect.	Unit	Detail of Contents
1.	28 Jan. - 03 Feb. 26 **(02)**	I	Introduction to CAD software.
2.	04 Feb. - 11 Feb. 26 **(06)**	II	Drawing aids and editing commands.
3.	17 Feb. – 18 Feb. 26 **(04)**	III	Basic dimensioning, hatching, blocks and views.
4.	24 Feb. – 03 Mar. 26 **(06)**	IV	Isometric drawing, printing and plotting
5.	10 Mar.- 27 May 26 **(22)**	V	Machine Drawing practice using Auto CAD: Detailed drawings of following machine parts are for assemble and draw the sectional or plain elevations, plans and side views with dimensioning and bill of materials using **CAD** software
	10 -11 March 26		1) Sleeve & Cotter Joint
	17- 18 March 26		2) Spigot & Cotter Joint
	24 - 25 March 26		3) Knuckle Joint
	01 - 07 Apr. 26		4) Stuffing Box
	08 - 21 Apr. 26		5) Screw Jack
	22 - 28 Apr. 26		6) Foot Step Bearing
	29 Apr - 05 May 26		7) Simple Eccentric
	06 - 12 May 26		8) Universal Coupling **OR** Connecting Rod
	13 - 19 May 26		9) Plummer Block
	20 - 26 May 26		10) Machine Vice **OR** Protected Type Flanged Coupling.

Home Assignments

Assignment. No.	Syllabus Covered	Proposed date	Actual Date	Remarks
1	NA	NA	NA	NA
2	NA	NA	NA	NA

Class / House Test

Name of Test	Syllabus Covered in Tests	Proposed date	Actual Date	Remarks
Class Test-I	NA	NA	NA	NA
Class Test-II	NA		NA	NA
House Test	NA		NA	NA

27/01/26

Signature of course teacher
Dinesh Kumar Patial,
Lect. Mech. Engg.

HOD