

LESSON PLAN

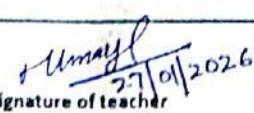
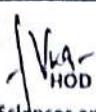
Name of Faculty		Rajni Sharma
Department		Applied Science & Humanities
Semester		2nd (Civil Engg.)
Subject		Mathematics - II
Lesson Plan for the Duration		27 Jan. 2026 to 27 May 2026
Week	Unit	Details
1st (27 Jan. - 02 Feb.)	Determinants	Determinants: Elementary properties of determinants upto 3rd order, consistency of equations, Crammer's rule.
2nd (03 Feb. - 09 Feb.)	Matrices	Matrix: Algebra of matrices, Inverse of a matrix, matrix
3rd (10 Feb. - 17 Feb.)	Matrices	Matrix: Matrix inverse Method to solve a system of linear equations in 3 variables.
4th (18 Feb. - 24 Feb.)	Integral Calculus	Integration as inverse operation of differentiation.
5th (25 Feb. - 03 Mar.)	Integral Calculus	Simple integration by substitution, by parts and by partial fraction (for linear factors only).
6th (05 Mar. - 11 Mar.)	Integral Calculus	Use of formulas for solving problems. When m, n are positive integers.
7th (12 Mar. - 19 Mar.)	Integral Calculus	Applications for: (i) simple problems on evaluation of area bounded by a curve and axis.
8th (20 Mar. - 28 Mar.)	Integral Calculus	Applications for: (ii) Calculation of volume of a solid formed by revolution of an area about axis.
9th (30 Mar. - 06 April)	Co-ordinate Geometry	Co-ordinate Geometry Equations of straight lines in various standard forms (without proof), intersection of two straight lines.
10th (07 April - 16 April)	Co-ordinate Geometry	Angle between two lines. Parallel and perpendicular lines, Perpendicular Distance formula
11th (17 April - 23 April)	Co-ordinate Geometry	General equation of a circle and its characteristics. To find the equation of a circle given: center and radius, Three points lying on it, coordinates of end points of a diameter.
12th (24 April - 30 May)	Co-ordinate Geometry	Definition of conics (parabola, Ellipse, Hyperbola) their standard equations without proof.
13th (02 May - 08 May)	Co-ordinate Geometry	Problems on conics when their foci, directrices or vertices are given.
House Test Second Week of May		
14th (18 May - 26 May)	Differential Equations	Solution of first order and first degree differential equation by variable separation


Signature of HOD


Signature of Subject Teacher

Govt. Polytechnic Talwar, Distt. Kangra, H.P. -176095

Lesson Planning (Theory)

Branch:	Civil Engineering	Semester:	Second
Subject:	App. Physics II	Session:	27 Jan 2026 to 27 May 2026
Teacher:	Vinay Kr. Guleira	Laboratory:	Physics Lab
Sr. No	No. of Lectures	Chapter/unit Description	Detail of Contents
1	12	UNIT - 1: Wave motion and its applications	<p>Wave motion, transverse and longitudinal waves with examples, definitions of wave velocity, frequency and wave length and their relationship, Sound and light waves and their properties, wave equation ($y = r \sin \omega t$) amplitude, phase, phase difference, Principle of superposition of waves and beat formation.</p> <p>Simple Harmonic Motion (SHM): definition, expression for displacement, velocity, acceleration, time period, frequency etc.</p> <p>Free, forced and resonant vibrations and their examples.</p> <p>Acoustics of buildings – reverberation, reverberation time, echo, noise, coefficient of absorption of sound, methods to control reverberation time and their applications.</p> <p>Ultrasonic waves – introduction and properties, engineering and medical applications of ultrasonic.</p>
2	9	UNIT - 2: Optics	<p>Basic optical laws- reflection and refraction, refractive index, Images and image formation by mirrors, lens and thin lenses, lens formula, power of lens, magnification.</p> <p>Total internal reflection, Critical angle and conditions for total internal reflection, applications of total internal reflection in optical fiber.</p> <p>Optical Instruments- simple and compound microscope, astronomical telescope in normal adjustment and their magnifying powers.</p>
3	6	UNIT - 3: Electrostatics	<p>Coulomb's law, unit of charge.</p> <p>Electric field, Electric lines of force and their properties.</p> <p>Electric flux, Electric potential and potential difference, Gauss's law.</p> <p>Capacitor and its working, Capacitance and its units. Capacitance of a parallel plate capacitor, Series and parallel combination of capacitors (related numerical), dielectric and its effect on capacitance, dielectric break down.</p>
4	6	UNIT - 4: Current Electricity	<p>Electric Current and its units, Direct and alternating current.</p> <p>Resistance and its units, Specific resistance, Conductance, Specific conductance, Series and parallel combination of resistances. Factors affecting resistance of a wire, carbon resistances and colour coding.</p> <p>Ohm's law and its verification, Kirchhoff's laws.</p> <p>Concept of terminal potential difference and Electro motive force (EMF)</p> <p>Heating effect of current, Electric power, Electric energy and its units (related numerical problems), Advantages of Electric Energy over other forms of energy.</p>
5	7	UNIT - 5: Electromagnetism	<p>Types of magnetic materials: dia, para and ferromagnetic with their properties.</p> <p>Magnetic field and its units, magnetic intensity, magnetic lines of force, magnetic flux and units, magnetization.</p> <p>Lorentz force (force on moving charge in magnetic field), Force on current carrying conductor.</p> <p>Moving coil galvanometer; principle, construction and working, Conversion of a galvanometer into ammeter and voltmeter.</p>
6	6	UNIT - 6: Semiconductor Physics	<p>Energy bands in solids, Types of materials (insulator, semi-conductor, conductor), intrinsic and extrinsic semiconductors.</p> <p>p-n junction, junction diode and V-I characteristics.</p> <p>Diode as rectifier – half wave and full wave rectifier (centre tapped).</p> <p>Photocells, Solar cells; working principle and engineering applications.</p>
7	10	UNIT - 7: Modern Physics	<p>Lasers: Energy levels, ionization and excitation potentials; spontaneous and stimulated emission; population inversion, pumping methods, optical feedback. Types of lasers; Ruby, He-Ne and semiconductor, laser characteristics, engineering and medical applications of lasers.</p> <p>Fiber Optics: Introduction to optical fibers, light propagation, acceptance angle and numerical aperture, fiber types, applications in; telecommunication, medical and sensors.</p>
Recommended Books		<p>(i) Text book of Physics, N.C.E.R.T., App. Physics I By RA Banerjee, Concepts of Physics By HC Verma Vol I and Vol II (ii) Text Book of Physics for Class XI & XII (Part-I, Part-II); N.C.E.R.T., Delhi. (iii) e-books/e-tools/ learning physics software/websites etc.</p>	
 Signature of teacher		 HOD	

GP Talwar		Lesson Plan Subject: FEEE	
Dept. of Applied Science	Civil/AutomobileEngg. 2nd Semester Session : 27th Jan to 27 th May 2026	Total theory periods /week: 4	Reference books
S.no/unit	Month /week	Lecture	
1	Jan/4th	1	UNIT I :Overview of Electronic Components & Signals:introduction Passive Components: Resistances, Capacitors, Inductors.
		2	
		3	Active Components: Transistors, FET, MOS
		4	Ac & Dc Components: CMOS and their Applications.
	Feb/1st	5	Signals: DC/AC, voltage/current, periodic/non- periodic signals average, rms, peak values, different types of signal waveforms
		6	
		7	Ideal/non-ideal voltage/current sources.
		8	independent/dependent voltage current sources.
2	Feb/2nd	9	UNIT II: Overview of Analog Circuits :Introduction Operational Amplifiers-Ideal Op-Amp,
		10	Practical Op amp, Open loop and closed loop configurations
		11	
		12	Application of Op-Amp as amplifier.
	Feb/3rd	13	Application of Op-Amp as differentiator, adder.
		14	Application of Op-Amp as integrator.
3	Feb/3rd	15	UNIT III :Overview of Digital Electronics: Introduction to Boolean Algebra
		16	Electronic Implementation of Boolean Operations
	Feb/4th	17	Gates-Functional Block Approach
		18	Storage elements-Flip Flops-A Functional block approach
		19	Counters:Ripple
		20	Up/Down counter
	Mar /1st	21	Decade counter
		22	Introduction to digital IC gates (TTL types)
4	Mar /1st	23	Unit IV :Electric and Magnetic Circuits:Introduction
		24	EMF, Current, Potential Difference,
	Mar/2nd	25	Power and energy
		26	M.M.F, magnetic force, permeability,
		27	hysteresis loop, reluctance, leakage factor
		28	BH curve,Electromagnetic induction
	Mar /3rd	29	Faraday's laws of electromagnetic induction,Lenz'S law
		30	Dynamically induced emf; Statically induced emf
		31	Equations of self and mutual inductance.
		32	Analogy between electric and magnetic circuits.

Mar /4th	33	Unit V: A.C. Circuits:Introduction	4.Digital Electronics
	34	Cycle, Frequency, Periodic time, Amplitude, Angular velocity, RMS value, Average value, Form Factor, Peak Factor	By: K S Jamwal
	35	impedance, phase angle, and power factor	
April /1st	36	Mathematical and phasor representation of alternating emf and current	
	37	Voltage and Current relationship in Star and Delta connections	
	38	A.C in resistors, inductors and capacitors	
	39		
	40	A.C in R-L series, R-C series	
April /2nd	41	A.C in R-C series	
	42	A.C in R-L-C series .	
6	43	A.C in R-L-C parallel circuits.	5.Fundamentals of Operational Amplifiers & Applications
	44	Power in A. C. Circuits.	By: Dr.K.R.Valluvan
April/3rd	45	Power in A. C. Circuits, power triangle.	
	46	Unit VI :Transformer and Machines:Introduction	6.Fundamental of Electrical and Electronics Engg.
April /4th	47	General construction and principle of core	By: Avnish Paul
	48	General construction and principle of shell type of transformers;	
May/1st	49	Emf equation and transformation ratio of transformers	
	50	Auto transformers	
	51	Basic principle of Electromechanical energy conversion.	7.Fundamental of Electrical and Electronics Engg.
May/2nd		House test	
May/3rd	53	Revision	By: R S Barwal and R.Choudhary
	54	Revision	
	55	Revision	
May/4th	56	Revision	


 Vijay Singh Raghwa
 Lecturer Electronics

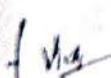

 HOD

Govt. Polytechnic Talwari
Department of Applied Sciences and Humanities

LESSON PLAN

Name of Teacher :- GAURAV PUWARI Subject: Engg. Mechanics Class: 2nd sem Semester Civil Engg.

S. No.	Month	Week	Date	Name of Chapter	Contents in the taught	Remarks
1	January	5th week	26,29,30,31	Unit- 1 Basics of Mechanics & Force System	Significance and relevance of mechanics, Applied mechanics, Statics, Dynamics, forces, types, mass, inertia, law of motion and law of motion, center and center of gravity.	
2		1st week	4,5,6,7		Units of measurement (SI units) - fundamental units and derived units. Force - unit, representation as a vector and by Bow's notation, characteristics and effects of a force. Principle of transmissibility of force, Force system and its classification.	
3		2nd week	11,12,13		Resolution of a force - Orthogonal components of a force, moment of a force, Varignon's Theorem. Composition of forces - Resultant, analytical method for determination of resultant for concurrent, non-concurrent and parallel co-planar force systems - Law of triangle, parallelogram and polygon of forces.	
4		3rd week	18,19,20,21		Equilibrium and Equilibrant, Free body and Free body diagram, Analytical and graphical methods of analyzing equilibrium. Lami's Theorem - statement and explanation.	1st Assignment
5		4th week	25,26,27,28		Application for various engineering problems. Types of beam, supports (simple, hinged, roller and fixed) and loads acting on beam (vertical point load, uniformly distributed load).	
6	March	1st week	5,6,7	Unit- 2 Equilibrium	Beam reaction for cantilever, simply supported beam with or without overhang - subjected to combination of Point load and uniformly distributed load.	
7		2nd week	11,12,13		Beam reaction graphically for simply supported beam subjected to vertical point loads only.	class test 1
8		3rd week	18,19,20			
9		4th week	25,27,28		Friction and its relevance in engineering, types and laws of friction, limiting equilibrium, limiting friction, co-efficient of friction, angle of friction, angle of repose,	2nd assignment
10	April	1st week	1,2,4	Unit- 3 Friction	relation between co-efficient of friction and angle of friction. Equilibrium of bodies on level surface subjected to force parallel and inclined to plane. Equilibrium of bodies on inclined plane subjected to force parallel to the plane only.	
11		2nd week	8,9,10		Centroid of geometrical plane figures (square, rectangle, triangle, circle, semi-circle, quarter circle).	2nd class test
12		3rd week	16,17,18		Centroid of composite figures composed of not more than two geometrical figures.	
13		4th week	22,23,24,25		Centre of Gravity of simple solids (Cube, cuboid, cone, cylinder, sphere, hemisphere) Centre of Gravity of composite solids composed of not more than two simple solids.	
14	May	5th week	29,30	Unit- 5 Simple Lifting Machines	Simple lifting machine, load, effort, mechanical advantage, applications and advantages	3rd Assignment
15		1st week	2,		Velocity ratio, efficiency of machines, law of machine, Ideal machine, friction in machine, maximum Mechanical advantage and efficiency.	PTM
16		2nd week			House Test	
17		3rd week	13,14,15,16		conditions for reversibility velocity ratios of simple axle and wheel, Differential axle and wheel.	
18		4th week	22,23,24,25		Worm and worm wheel, simple screw jack	


Signature of HOD


Signature of Teacher

GOVT. POLYTECHNIC TALWARI
DEPARTMENT OF APPLIED SCIENCES AND HUMANITIES

LESSON PLAN

Name of Teacher :- Nidhi Katoch Subject: Environmental Science Class: 2nd Semester Civil Engg.

S.N.	Month	Week	Date	Name of Chapter	Contents to be taught	Remarks
1	January	5th week	27.31	UNIT - I: Ecosystem	Structure of ecosystem, Biotic & Abiotic components-Food chain and food web Aquatic (Lentic and Lotic) and terrestrial ecosystem Carbon, Nitrogen, Sulphur, Phosphorous cycle.	
2		1st week	3.7		Global warming- Causes, effects, processes, Green House Effect, Ozone depletion.	
3	February	2nd Week	10		Definition of pollution and pollutant, Natural and manmade sources of air pollution (Refrigerant, acids, I.C. Engine, Boiler).	
4		3rd week	17.21	Unit- 2 Air and Noise Pollution	Gases Pollution Control: Abiotor, Catalytic Converter, Effects of air pollution due to Refrigerants, I.C., Boiler.	
5		4th week	24.28		Noise pollution: sources of pollution, measurement of pollution level, Effects of Noise pollution, Noise pollution Regulation and Control Rules, 2000	
6		1st week	3.7		Sources of water pollution, Types of water pollutants, Characteristics of water pollutants, Turbidity, pH, total suspended solids, total solids, BOD and COD	
7	March	2nd Week	10		Definition, calculation, 52-Waste Water Treatment: Primary methods, sedimentation, froth flotation, Secondary meth. ods: Activated sludge treatment, Trickling filter, Bioreactor, Tertiary Method: Membrane separation technology, RO (reverse osmosis).	
8		3rd week	17		Unit- 3 Water and Soil Pollution	
9		4th week	24.28		Solar energy: Basics of Solar energy: Flat plate collector (Liquid & Air), Theory of flat plate coil collector.	
10		1st & 2nd Week	4.7		Importance of coating, Advanced collector: Solar pond, Solar water heater, solar dryer, Solar stills, Biomass: Overview of biomass as energy source, Thermal characteristics of biomass as fuel, Anaerobic digestion.	
11	April	3rd week	18	Unit- 4 Renewable sources of Energy	Bio-gas production mechanism, Utilization and storage of bio-gas, Wind energy: Current status and future prospects of wind energy, Wind energy in India, Environmental benefits and problem of wind energy.	Class-Test-4
12		4th week	21,25		Importance of coating, Advanced collector: Solar pond, Solar water heater, solar dryer, Solar stills, Biomass: Overview of biomass as energy source, Thermal characteristics of biomass as fuel, Anaerobic digestion.	
13		5th week	28		New Energy Sources: Need of new sources, Different types new energy sources, Applications of Hydrogen energy, Ocean energy resources, Tidal energy conversion, Concept, origin and power plants of geothermal energy	
14		1st week	2		Solid waste generation: Sources and characteristics of : Municipal solid waste, E-waste, bio-medical waste, Metallic wastes and Non-Metallic wastes (rubbers, plastics, rubber) from industries.	
		2nd Week		Unit-5 Solid Waste Management, ISO 44000 & Environmental Management	House Test	
15	May	3rd week	12,16		Collection and disposal: MSW [3R, principles, energy recovery, sanitary landfill], Hazardous, Waste Air quality act 2004, air pollution control act 1981 and water pollution and control act 1996, Structure and role of Central and state pollution control board, Concept of Carbon Credit, Carbon Footprint, Environmental management in fabrication Industry ISO14000: implementation in industries, Benefits.	
		4th week	19,23,26			

Nidhi Katoch
Signature of Teacher

1/2
Signature of HOD

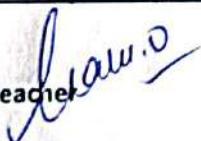
Govt. Polytechnic Talwar
Distt. Kangra H.P. 176096

Lesson Plan

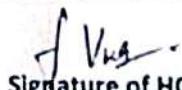
Session: January 2026 - June 2026

Name of Teacher:- Gaurav Puwari	Designation:-Lecturer (Auto. Engg.)	Group:- G1	
Name of Lab/Workshop:- Engineering Mechanics	Class/Branch:- 2nd Sem/Civil Engg.		
Sr. No.	Name of Practical	Date	Remarks
1	To study various equipment related to Engineering Mechanics.	27-01-2026	
2	To find the M.A., V.R., Efficiency and law of machine for Differential Axle and Wheel.	03-02-2026	
3	To find the M.A., V.R., Efficiency and law of machine for Simple Screw Jack.	10-02-2026	
4	Derive Law of machine using Worm and worm wheel	17-02-2026	
5	Determine resultant of concurrent force system applying Law of Polygon of forces using force table.	24-02-2026	
6	Determine resultant of concurrent force system graphically.	03-03-2026	
7	Determine resultant of parallel force system graphically.	10-03-2026	
8	Verify Lami's theorem.	17-03-2026	
9	Study forces in various members of Jib crane.	24-03-2026	
10	Determine support reactions for simply supported beam.	31-03-2026	
11	Obtain support reactions of beam using graphical method.	07-04-2026	
12	Determine coefficient of friction for motion on horizontal and inclined plane.	21-04-2026	
13	Determine centroid of geometrical plane figure	28-04-2026	Revision- 12/5,19/5, 26/5

Signature of Teacher



Signature of HOD



Govt. Polytechnic Talwar
Distt. Kangra H.P. 176096

Lesson Plan

Session: January 2026 - June 2026

Name of Teacher:- Gaurav Puri	Designation:- Lecturer (Auto. Engg.)	Group:- GII	
Name of Lab/Workshop:- Engineering Mechanics	Class/Branch:- 2nd Sem/Civil Engg.		
St. No.	Name of Practical	Date	Remarks
1	To study various equipment related to Engineering Mechanics.	28-01-2026	
2	To find the M.A., V.R., Efficiency and law of machine for Differential Axle and Wheel.	04-02-2026	
3	To find the M.A., V.R., Efficiency and law of machine for Simple Screw Jack.	11-02-2026	
4	Derive Law of machine using Worm and worm wheel	18-02-2026	
5	Determine resultant of concurrent force system applying Law of Polygon of forces using force table.	25-02-2026	
6	Determine resultant of concurrent force system graphically.	11-03-2026	
7	Determine resultant of parallel force system graphically.	18-03-2026	
8	Verify Lami's theorem.	25-03-2026	
9	Study forces in various members of Jib crane.	01-04-2026	
10	Determine support reactions for simply supported beam.	08-04-2026	
11	Obtain support reactions of beam using graphical method.	22-04-2026	
12	Determine coefficient of friction for motion on horizontal and inclined plane.	29-04-2026	
13	Determine centroid of geometrical plane figure	13-05-2026	Review lesson 20/S

Signature of Teacher

Signature of HOD