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 (27Jan. - 02Feb.)	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. - 24Feb.)	Intergral Calculus	Intergration as inverse operation of differentiation.
5th (25 Feb. - 03 Mar.)	Intergral Calculus	Simple intergration by substitution, by parts and by partial fraction(for linear factors only.
6th(05 Mar. - 11 Mar.)	Intergral Calculus	Use of formulas for solving problems. When m, are positive integers.
7th (12 Mar. -19 Mar.)	Intergral Calculus	Applications for: (i) simple problems on evaluation of area bounded by a curve and axis .
8th (20 Mar. - 28 Mar.)	Intergral 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 Discription	Detail of Contents
1	12	UNIT - 1: Wave motion and its applications	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. Simple Harmonic Motion (SHM): definition, expression for displacement, velocity, acceleration, time period, frequency etc. Free, forced and resonant vibrations and their examples. Acoustics of buildings – reverberation, reverberation time, echo, noise, coefficient of absorption of sound, methods to control reverberation time and their applications. Ultrasonic waves – Introduction and properties, engineering and medical applications of ultrasonic.
2	9	UNIT - 2: Optics	Basic optical laws- reflection and refraction, refractive index, Images and image formation by mirrors, lens and thin lenses, lens formula, power of lens, magnification. Total internal reflection, Critical angle and conditions for total internal reflection, applications of total internal reflection in optical fiber. Optical Instruments- simple and compound microscope, astronomical telescope in normal adjustment and their magnifying powers.
3	6	UNIT - 3: Electrostatics	Coulomb's law, unit of charge. Electric field, Electric lines of force and their properties. Electric flux, Electric potential and potential difference, Gauss's law. 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.
4	6	UNIT - 4: Current Electricity	Electric Current and its units, Direct and alternating current. 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. Ohm's law and its verification, Kirchhoff's laws. Concept of terminal potential difference and Electro motive force (EMF) Heating effect of current, Electric power, Electric energy and its units (related numerical problems), Advantages of Electric Energy over other forms of energy.
5	7	UNIT - 5: Electromagnetism	Types of magnetic materials: dia, para and ferromagnetic with their properties. Magnetic field and its units, magnetic intensity, magnetic lines of force, magnetic flux and units, magnetization. Lorentz force (force on moving charge in magnetic field), Force on current carrying conductor. Moving coil galvanometer; principle, construction and working, Conversion of a galvanometer into ammeter and voltmeter.
6	6	UNIT - 6: Semiconductor Physics	Energy bands in solids, Types of materials (insulator, semi-conductor, conductor), intrinsic and extrinsic semiconductors. p-n junction, junction diode and V-I characteristics. Diode as rectifier – half wave and full wave rectifier (centre taped). Photocells, Solar cells; working principle and engineering applications.
7	10	UNIT - 7: Modern Physics	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. Fiber Optics: Introduction to optical fibers, light propagation, acceptance angle and numerical aperture,fiber types, applications in; telecommunication, medical and sensors.
	Recommeded Books		(i) Text book of Physics, N.C.E.R.T., App.Physics I By RA Banwat, Conepts 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.

Signature of teacher 27/01/2026

HOD
Applied Sciences and Humanities

GP Talwar			Lession Plan Subject: FEEE	
Dept. of Applied Science			Civil/AutomobileEngg. 2nd Semester Session : 27th Jan to 27 th May 2026	
			Total theory periods /week: 4	
S.no/unit	Month /week	Lecture		Reference books
1	Jan/4th	1	UNIT I :Overview of Electronic Components & Signals:introduction	1.Basic Electronics and linear Circuits
		2	Passive Components: Resistances, Capacitors, Inductors.	By:NN Bhargava
		3	Active Components: Transistors, FET, MOS	
		4	Active Components: CMOS and their Applications.	
	Feb/1st	5	Signals: DC/AC, voltage/current, periodic/non- periodic signals	
		6	average, rms, peak values, different types of signal waveforms	
		7	Ideal/non-ideal voltage/current sources.	
		8	independent/dependent voltage current sources.	
2	Feb/2nd	9	UNIT II: Overview of Analog Circuits :Introduction	2.Basic Electrical and Electronics Engineering
		10	Operational Amplifiers-Ideal Op-Amp,	By: Jegathesan
		11	Practical op amp, Open loop and closed loop configurations	
		12	Application of Op-Amp as amplifier.	
	Feb/3rd	13	Application of Op-Amp as amplifier, adder.	
		14	Application of Op-Amp as differentiator and 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	3. Basic Electrical Engineering
		26	M.M.F, magnetic force, permeability,	
		27	hysteresis loop, reluctance, leakage factor	By: Ritu Sahdev
		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.	

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

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 to be taught	Remarks
1	January	5th week	28,29,30,31	Unit- 1 Basics of Mechanics & Force System	significance and relevance of engineering, Applied mechanics, Statics, Dynamics, Space, time, mass, particle, Rigid body and rigid body, Scalar and vector quantity,	
2	February	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 concur- rent, non-concurrent and parallel co-planar force systems – Law of triangle, parallelogram and polygon of forces.	
4		3rd week	18,19,20,21	Unit- 2 Equilibrium	Equilibrium and Equilibrant, Free body and Free body diagram, Analytical and graphical meth-ods 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		Beam reaction for cantilever, simply supported beam with or without overhang –	
7		2nd week	11,12,13		subjected to combination of Point load and uniformly distributed load.	class test 1
8		3rd week	18,19,20		Beam reaction graphically for simply supported beam subjected to vertical point loads only.	
9		4th week	25,27,28	Unit- 3 Friction	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		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	Unit 4 - Centre of Gravity	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 ofGravity of composite solids composed of not more than two simple solids.	
14		5th week	29,30	Unit- 5 Simple Lifting Machines	Simple lifting machine, load, effort, mechanical advantage, applications and advantages	3rd Assignment
15	May	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	Unit- 5 Simple Lifting Machines	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	

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Signature of Teacher

GOVT.POLYTECHNIC TALWAR

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	
2	February	1st week	3,7		Aquatic (Lentic and Lotic) and terrestrial ecosystemCarbon, Nitrogen, Sulphur, Phosphorus cycle.	
3		2nd Week	10		Global warming -Causes, effects, process, Green House Effect, Ozone depletion.	
4		3rd week	17,21	Unit– 2 Air and, Noise Pollution	Definition of pollution and pollutant, Natural and manmade sources of air pollution (Refriger- ants, I.C., Boiler) ,	
5		4th week	24,28		Gaseous Pollution Control: Absorber, Catalytic Converter, Effects of air pollution due to Refrigerants, I.C., Boiler.	
6	March	1st week	3,7		Noise pollution: sources of pollution, measurement of pollution level, Effects of Noise pollu-tion, Noise pollution (Regulation and Control) Rules, 2000	
7		2nd Week	10		Sources of water pollution, Types of water pollutants, Characteristics of water pollutants Tur-bidity, pH, total suspended solids, total solids BOD and COD	Class Test - I
8		3rd week	17	Unit- 3 Water and Soil Pollution	Definition, calculation. 62 Waste Water Treatment: Primary methods: sedimentation, froth floatation, Secondary meth- ods: Activated sludge treatment,	
9		4th week	24,28		Trickling filter, Bioreactor, Tertiary Method: Membrane separation technology, RO (reverse osmosis).	
9		5th week	31		Causes, Effects and Preventive measures of Soil Pollution: Causes-Excessive use of Fertilizers, Pesticides and insecticides, Irrigation, E-Waste.	
10	April	1st & 2nd Week	4,7		Solar Energy: Basics of Solar energy. Flat plate collector (Liquid & Air). Theory of flat plate col- lector.	
11		3rd week	18	Unit– 4 Renewable sources of Energy	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.	Class -Test -II
12		4th week	21,25		Biogas production mechanism. Utilization and storage of biogas. Wind energy: Current status and future prospects of wind energy. Wind energy in India. Environmental benefits and problem of wind energy.	
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	May	1st week	2	Unit-5 Solid Waste Management, ISO 14000 & Environmental Management	Solid waste generation- Sources and characteristics of : Municipal solid waste, E- waste, bio-medical waste.Metallic wastes and Non-Metallic wastes (lubricants, plastics, rubber) from industries.	
		2nd Week				House Test
15		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 act1996.Structure and role of Central and state pollution control board.	
		4th week	19,23,26		Concept of Carbon Credit, Carbon Footprint. Environmental management in fabrication industry.ISO14000: Implementation in industries, Benefits.	

Nidhi 27/01/26

Signature of Teacher

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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 forcetable.	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

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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:- GII
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.	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 forcetable.	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	Revision-20/5

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