Lesson Plan

Session: Jan.-May, 2025

Subject: Applied Physics II Class: *Second Sem. Civil Engg*

Name of the teacher: Raman Jamwal

Sr. No.	Month	Week	Date	Name of the Chapter	Contents to be taught	Remarks
1	Jan	1st	28-Jan	Wave motion and its applications	Wave motion: transverse and longitudinal waves with examples	
			29-Jan	Wave motion and its applications	definitions of wave velocity, frequency and wave length and their relationship. Sound and light waves and their properties.	
			30-Jan	Wave motion and its applications	phase difference. Principle of superposition of waves and beat formation	
2	Feb	2nd	04-Feb	Wave motion and its applications	Simple Harmonic Motion (SHM): definition, expression for displacement, velocity	
			05-Feb	Wave motion and its applications	expression for acceleration, time period, frequency	
			06-Feb	Wave motion and its applications	DCS (Doubt Clearing Session)	
			07-Feb	Wave motion and its applications	Free, forced and resonant vibrations and their examples.	
3		3rd	11-Feb	Wave motion and its applications	Acoustics of buildings – reverberation, reverberation time, echo, noise, coefficient of absorption of sound	
			13-Feb	Wave motion and its applications	methods to control reverberation time and their applications	
			14-Feb	Wave motion and its applications	Ultrasonic waves – Introduction and properties	
4		4th	18-Feb	Wave motion and its applications	engineering and medical applications of ultrasonic	
			19-Feb	Optics	Basic optical laws- reflection and refraction	
			20-Feb	Optics	DCS (Doubt Clearing Session)	
			21-Feb	Optics	refractive index, Images and image formation by mirrors, lens and thin lenses	
5		5th	25-Feb	Optics	lens formula, power of lens, magnification	
			27-Feb	Optics	Total internal reflection, Critical angle and conditions for total internal reflection.	
			4+A19 A	Optics	DCS (Doubt Clearing Session)	
6	March	6th	04-Mar	Optics	applications of total internal reflection in optical fiber	
			05-Mar	Optics	Optical Instruments- simple and compound microscope	
			06-Mar	Optics	astronomical telescope in normal adjustment and their magnifying powers.	
			07-Mar	Electrostatics	Coulomb's law, unit of charge. Electric field, Electric lines of force and their properties.	
7		7th	11-Mar	Electrostatics	Electric flux, Electric potential and potential difference	
			12-Mar	Electrostatics	Gauss's law. Capacitor and its working, Capacitance and its units.	
			13-Mar	Electrostatics	Capacitance of a parallel plate capacitor Series and parallel combination of capacitors	
			18-Mar	1st Class Test		
			19-Mar	Electrostatics	dielectric and its effect on capacitance, dielectric break down	

8		8th	20-Mar	Current Electricity	Electric Current and its units, Direct and alternating current, Resistance and its units	
			21-Mar	Current Electricity	Specific resistance, Conductance, Specific conductance, Series and parallel combination of resistances. Factors affecting resistance of a wire, carbon resistances and colour coding.	
9		9th	25-Mar	Current Electricity	Ohm's law and its verification, Kirchhoff's laws.	
			27-Mar	Current Electricity	Concept of terminal potential difference and Electro motive force (EMF)	
			28-Mar	Current Electricity	DCS (Doubt Clearing Session)	
10	April	10th	01-Apr	Current Electricity	Heating effect of current, Electric power, Electric energy and its units, Advantages of Electric Energy over other forms of energy.	
			02-Apr	Electromagnetism	Types of magnetic materials: dia, para and ferromagnetic with their properties	
			03-Apr	Electromagnetism	Magnetic field and its units, magnetic intensity, magnetic lines of force,	
			04-Apr	Electromagnetism	DCS (Doubt Clearing Session)	
11		11th	08-Apr	Electromagnetism	magnetic flux and units, magnetization.Lorentz force (force on moving charge in magnetic field)	
			09-Apr	Electromagnetism	Force on current carrying conductor.	
			10-Apr	Electromagnetism	Moving coil galvanometer; principle, construction and working	
			11-Apr	Electromagnetism	Conversion of a galvanometer into ammeter and voltmeter	
12		12th	16-Apr	2nd Class Test		
			17-Apr	Semiconductor Physics	Energy bands in solids, Types of materials (insulator, semi-conductor, conductor), intrinsic and extrinsic semiconductors.	
13		13th	22-Apr	Semiconductor Physics	DCS (Doubt Clearing Session)	
			23-Apr	Semiconductor Physics	p-n junction, junction diode and V-I characteristics.	
			24-Apr	Semiconductor Physics	Diode as rectifier – half wave and full wave rectifier (centre taped).	
			25-Apr	Semiconductor Physics	Photocells,	
14		14th	30-Apr	Semiconductor Physics	DCS (Doubt Clearing Session)	
	May		01-May	Semiconductor Physics	Solar cells; working principle and engineering applications.	
			02-May	Modern Physics	Lasers: Energy levels, ionization and excitation potentials	
15		15th	06-May	Modern Physics	spontaneous and stimulated emission; population inversion, pumping methods, optical feedback	
			07-May	House Test		
			08-May			
			09-May			
16		16th	13-May	Modern Physics	Types of lasers; Ruby, He-Ne and semiconductor	
			15-May	Modern Physics	DCS (Doubt Clearing Session)	
			16-May	Modern Physics	laser characteristics, engineering and medical applications of lasers	
			20-May	Modern Physics	Fiber Optics: Introduction to optical fibers, light propagation	

17		17th	21-May	Modern Physics	acceptance angle and numerical aperture,fiber types	
			22-May	Modern Physics	DCS (Doubt Clearing Session)	
			23-May	Modern Physics	Applications in; telecommunication, medical and sensors	
18		18 th	27-May	Revision		
			28-May			

Teacher

HOD
Applied Sciences

Department of Civil Engineering

Government Polytechnic Lahaul Spiti at Udaipur Camp At Sundernagar Distt Mandi (H.P) -175018

Lesson Plan for Engineering Mechanics (Semester-2nd)Session: 2025

S.No.	MONTH	WEEK	Date	CONTENTS	REMARKS
1	JAN	Week 5	27,29	Significance and relevance of Mechanics, Applied mechanics, Statics, Dynamics. Space, time, mass, particle, flexible body and rigid body Scalar and vector quantity, Units of measurement (SI units) - Fundamental units and derived units. Force – unit, representation as a vector and by Bow's notation .	
2	FEB	Week 1	1	mass, particle, flexible body and rigid body Scalar and vector quantity	
		Week 2	3,5,6	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.	
		Week 3	10,13,15	Resolution of a force - Orthogonal components of a force .moment of a force, Varignon's Theorem Composition of forces –	
		Week 4	17,19,20,22	Resultant, analytical method for determination of resultant for concurrent, non-concurrent and parallel co-planar force systems	
		Week 5	24,27	Law of triangle, parallelogram and polygon of forces	
3	MARCH	Week 1	1	Equilibrium and Equilibrant, Free body and Free body diagram,	
		Week 2	3,5,6	Analytical and graphical meth- ods of analyzing equilibriumLami's Theorem – statement and explanation .	
		Week 3	10,12,15	Application for various engineering problemsTypes of beam **CLASS TEST-I**	
		Week 4	17,19,20,22	Types of supports (simple, hinged, roller and fixed) and loads acting on beam (vertical point load, uniformly distributed load).Beam reaction for cantilever, simply supported beam with or without overhang – subjected to combination of Point load and uniformly distributed load	
		Week 5	24,26,27,29	Beam reaction graphically for simply supported beam subjected to vertical point loads only, Friction and its relevance in engineering, types and laws of friction	

		Week 1	2,3,5	limiting equilibrium, limiting friction, co-efficient of friction, angle of friction, angle of repose, relation between co-efficient of friction and angle of friction
		Week 2	7,9,10	Relation between co-efficient of friction and angle of friction . Equilibrium of bodies on level surface subjected to force parallel and inclined to plane.
4	APRIL	Week 3	16,17,19	Equilibrium of bodies on inclined plane subjected to force parallel to the plane only. Numerical on inclined and level plane. **,CLASS TEST-II**
		Week 4	21,23,24,26	Centroid of geometrical plane figures (square, rectangle, triangle, circle, semi-circle, quarter circle) Centroid of composite figures composed of not more than two geometrical figures.
		Week 5	28,30	Centre of Gravity of simple solids (Cube, cuboid, cone, cylinder, sphere, hemisphere)
		Week 1	1,3	Centre of Gravity of composite solids composed of not more than two simple solidsSimple lifting machine, load, effort, mechanical advantage applications and advantages. Velocity ratio, efficiency of machines law of machine
5	MAY	Week 2	5,7,8	Ideal machine, friction in machine , Maximum Mechanical advantage and efficiency
		Week 3	14,15	reversible and non-reversible machines, conditions for reversibility,**HOUSE TEST**
		Week 4	19,21,22,24	Velocity ratios of Simple axle and wheel, Differential axle and wheel,Numerical problem of simple lifting machine
		Week 5	26,28	Worm and worm wheel Simple screw jack

Signature of Teacher

Sign of HOD & PSM

GOVT POLYTECHNIC LAHAUL & SPITI at Udaipur ,camp at Sundernagar,Distt. Mandi(HP)

LESSON PLAN (Environmental Science)

Name of the Teacher -Manisha Pathania

Branch: Civil. Engg. (Jan 2025 -May2025) Sem:-2nd

Month	Week	Date	Name of the Chapter	Contents to be taught	HOD Signature	Remarks
Jan	1st	27th Jan	Ecosystem	Structure of ecosystem, Biotic & Abiotic components		
Feb		1st Feb	Ecosystem	Food chain and food web Aquatic (Lentic and Lotic) and terrestrial ecosystem		
	2nd	3rd Feb	Ecosystem	Carbon, Nitrogen, Sulphur, Phosphorus cycle		
	3rd	10th Feb	Ecosystem	Global warming -Causes, effects, process, Green House Effect, Ozone depletion, Quick Revision of topics.		
		15th Feb	Air,Noise Pollution	Definition of pollution and pollutant, Natural and manmade sources of air pollution		
	4th	17th Feb	Air,Noise Pollution	Air Pollutants: Types, Particulate Pollutants: Effects and control		
		22-Feb	Air,Noise Pollution	Gaseous Pollution Control: Absorber, Catalytic Converter, Effects of air pollution due to Refrigerants, I.C., Boiler.		
	5th	24th Feb	Air,Noise Pollution	Noise pollution: sources of pollution, measurement of pollution level, Effects of Noise pollution, Noise pollution (Regulation and Control) Rules, 2000.		

March		1st Mar	Water and soil Pollution	Sources of water pollution, Types of water pollutants, Characteristics of water pollutants, Turbidity, pH, total suspended solids, total solids.		
	6th	3rd Mar	Water and soil Pollution	BOD and COD: Definition, calculation. 62 Waste Water Treatment: Primary methods: sedimentation, froth floatation,		
	7th	10th Mar	Water and soil Pollution	Secondary methods: Activated sludge treatment, Trickling filter, Bioreactor, Tertiary Method: Membrane separation technology, RO (reverse osmosis).		
		15th Mar	Water and soil Pollution	Causes, Effects and Preventive measures of Soil Pollution: Causes-Excessive use of Fertilizers, Pesticides and Insecticides, Irrigation, E-Waste, Quick Revision of topics		
	8th	17th Mar	Renewable sources of energy	Solar Energy: Basics of Solar energy. Flat plate collector (Liquid & Air). Theory of flat plate col- lector		
		22nd Mar	Renewable sources of energy	Class test-1		
	9th	24th Mar	-do-	Importance of coating. Advanced collector. Solar pond. Solar water heater, solar dryer. solar stills		
		29th Mar	-do-	Biomass: Overview of biomass as energy source. Thermal characteristics of biomass as fuel. Anaerobic digestion.		
	10th	5th April	-do-	Biogas production mechanism. Utilization and storage of biogas.		
April	11th	7th April	-do-	Wind energy: Current status and future prospects of wind energy.		

	12th	19th April	-do-	Class Test – 2
	13th	21st April	-do-	Wind energy in India. Environmental benefits and problem of wind energy
		26th April	-do-	New Energy Sources: Need of new sources. Different types new energy sources.
	14th	28th April	-do-	Applications of (Hydrogen energy, Ocean energy resources, Tidal energy conversion.) Concept, origin and power plants of geothermal energy. Quick Revision of topics
		03rd April	Solid waste managem ent,ISO 14000 & Envirnmen tal Managem ent	Solid waste generation- Sources and characteristics of Municipal solid waste, E- waste, bio-medical waste.
	15th	5th May	-do-	Collection and disposal: MSW (3R, principles, energy recovery, sanitary landfill), Hazardous.Metallic wastes and Non-Metallic wastes (lubricants, plastics, rubber) from industries
May	16th	17th May	-do-	House Test
	17th	19th May	-do-	Waste Air quality act 2004, air pollution control act 1981,water pollution and control act 1996
		24th May	-do-	Structure and role of Central and state pollution control board. Concept of Carbon Credit, Carbon Footprint.

GOVT. POLYTECHNIC LAHAUL & SPITI AT UDAIPUR CAMP AT SUNDERNAGAR

SSON PLAN — Session - 27th Jan.2025 to 29th May 2025

ame of the Teacher : Suniti Rani — Subject: Mathematics-II

ranch: Civil Engg. (2nd Sem.)

.	Month	Date	Week	Unit	Name of Chapter	Content to be taught	Remarks
	January & February	27,28,29, 31,1	1st	1	Determinants	Def.of Det., Minors, co-factors & Laplace's Expansion (Ex-1.1) Properties of Det. (Ex.-1.2)	
	February	3,4,5,7	2nd	1	Matrices	Solution of the system of equations by Cramer's Rule (Ex-1.3) Matrix , Algebra of Matrix , (Ex- 2.1)	
	February	10,11,14, 15	3rd	1	Matrices	Multiplication of Matrices , Transpose of Matrix ,Symmetric & Skew Symm. Matrices (Ex-2.2)	
	February	17,18,19, 21,22	4th	1 & 2	Matrices	Adjoint of Matrix, Inverse of Matrix,Solution of System of Linear Equations in three variables (Ex-2.3)	
	February & March	24,25,28, 1	5th	2	Integral Calculus	Fundamental Integrals(Ex 1.1), Int.by Substitution (Ex-2.1)	
	March	3,4,5,7	6th	2	Integral Calculus	(Ex-2.2), Integration by Parts Ex-3.1	
	March	10,11,12, 15	7th	2	Definite Integral	Some Special Methods (Ex 2.3) , Int. By Partial Fractions (Ex-4.1)	
	March	17,18,19, 21,22	8th	2	Definite Integral	Standard Formulae (Ex-4.2), Area of the Curve,Revision of Some Imortant Questions (**CLASS TEST -1**)	
	March	24,25,26, 28,29	9th	3	Definite Integral & Straight Line	Volume Under the Curve(Ex-4.3) Equation of a St. Line in Different Forms (Ex-1.1)	
	April	,1,2,3,5	10th	3	Straight Line	Angle B/N Two Line , Any line parallel /perpendicular to the St. Line(Ex-1.2)	
	April	7,8,9,11	11th	3	The Circle	The Equation of a Circle in Standard Form , Central Form & General Form (Ex-2.1)	
	April	16,19	12th	3	The Circle	Revision (**CLASS TEST-2)**	
	April	21,22,23, 25,26	13th	3	The Circle, Conics (Parabola)	The Equation of a Circle in Diameter Form (Ex-2.1), Equation of Parabola (Ex-3.1)	
	April & May	28,30,2,3	14th	3	Conics (Ellipse & Hyperbola)	Equation of Ellipse (Ex-3.2) , Equation of Hyperbola (Ex-3.3)	
	May	5,6,7,9	15th		Revision	Revision of Previous Question Papers	
	May	13,14,16, 17	16th		HOUSE TEST	**HOUSE TEST**	
	May	19,20,21, 23,24	17th	4	Differential Equations	Order & Degree of Diffrential Equation Ex(1.1)	
	May	26,27,28	18th	4	Differential Equations	Order & Degree of Diffrential Equation Ex(1.2)	

Teacher's Signature

HOD (A S & H)

Lesson Plan : Jan-Jun 2025

Sub: FEEE — 2nd Semester

Branch: Civil

Lecture	Topic	Remarks
1	Passive Active Components	
2	Resistances	
3	Capacitors	
4	Inductors	
5	Diodes, Transistors	
6	FET, MOS and CMOS and their Applications	
7	Signals, DC/AC, voltage/current, periodic/non- periodic signals	
8	average, rms, peak values	
9	different types of signal waveforms	
10	Ideal/non ideal voltage/current sources	
11	independent/dependent voltage sources	
12	independent/dependent current sources	
13	Operational Amplifiers-Ideal Op-Amp	
14	Practical op amp	
15	Open loop and closed loop configurations	
16	Open loop and closed loop configurations	
17	Application of Op-Amp as amplifier	
18	Application of Op-Amp as adder	
19	Application of Op-Amp as differentiator	
20	Application of Op-Amp as integrator.	
21	Introduction to Boolean Algebra	
22	Electronic Implementation of Boolean Operations	
23	Gates-Functional Block Approach	
24	Gates-Functional Block Approach	
25	Storage elements-Flip Flops-A Functional block approach	
26	Storage elements-Flip Flops-A Functional block approach	
27	Counters	
28	Counters	
29	Introduction to digital IC Gates (of TTL Type)	
30	Introduction to digital IC Gates (of TTL Type)	
31	EMF, Current	
32	Potential Difference, Power and Energy	
33	M.M.F, magnetic force	
34	permeability, hysteresis loop	
35	reluctance, leakage factor	
36	BH curve	
37	Electromagnetic induction, Faraday's laws ofelectromagnetic induction	
38	Lenz's law	
39	Dynamically induced emf	
40	Statically induced emf	
41	Equations of self and mutual inductance	
42	Analogy between electric and magneticcircuits	
43	Cycle, Frequency, Periodic time	
44	Amplitude, Angular velocity, RMS value	
45	Average value, Form Factor Peak Factor, impedance	
46	phase angle, and power factor	
47	Mathematical and phasor representation of alternating emf and current	
48	Mathematical and phasor representation of alternating emf and current	
49	Voltage and Current relationship in Star and Delta connections	
50	Voltage and Current relationship in Star and Delta connections	

	51	A.C in resistors, inductors and capacitors	
	52	A.C in resistors, inductors and capacitors	
	53	A.C in R-L series, R-C series, R-L-C series and parallel circuits	
	54	A.C in R-L series, R-C series, R-L-C series and parallel circuits	
	55	A.C in R-L series, R-C series, R-L-C series and parallel circuits	
	56	Power in A. C. Circuits, power triangle.	
6	57	General construction and principle of core type of transformers	
	58	General construction and principle of shell type of transformers	
	59	Emf equation	
	60	transformation ratio of transformer	
	61	Auto transformers	
	62	Basic principle of Electromechanical energy conversion.	
	63	Revision	
	64	Revision	

Signature of
Teacher

HOD