GOVERNMENT POLYTECHNIC
PAONTA SAHIB
AT DHAULA KUAN, DISTT. SIRMOUR (HP) - 173031
DEPARTMENT NAME

LESSON PLAN

Academic Year	2025
Branch & Semester	Second Semester & AE
Course Code	BS102
Course Name	Mathematics -II
Course Type	Diploma
L-DCS	3-2
Name of Faculty	Sukanya kumari
Semester Start & End Dates	27th Jan to 27th May

STUDY AND EVALUATION SCHEME

Sr. No.	Name of the Subject	Th	Pr	Internal Assessment			External Assessment					Total Marks
				Th	Pr	Total	Th	Hrs	Pr	Hrs	Total	
1	Mathematics -II	5	0	40	-	40	60	3	-		60	100

Hours	Unit & Topic of Discussion	Topic Details	Remarks
	Unit-1		

14 HOURS	Determinants and Matrices	Elementary properties of determinants up to 3rd order,	
		consistency of equations	
		Crammer's rule.	
		Algebra of matrices	
		, matrix inverse method to solve a system of linear equations in 3 variables.	
	Unit-2		
25 HOURS	Integral Calculus	Calculus Integration as inverse operation of differentiation.	
		Simple integration by substitution	
		Simple integration by parts	
		Simple integration by partial fractions (for linear factors only).	
		Use of formulae for solving problems where m and n are positive integers	
		Applications of integration	
		Simple problem on evaluation of area bounded by a curve and axes.	
		ii.) Calculation of Volume of a solid formed by revolution of an area about axes. (Simple problems).	
	Unit-3		
23 HOURS	Co-Ordinate Geometry	Equation of straight line in various standard forms (without proof)	
		inter section of two straight lines	
		angle between two lines	
		Parallel and perpendicular lines,	
		perpendicular distance formula	
		General equation of a circle and its characteristics.	
		To find the equation of a circle, given: i. Centre and radius,	

		ii. Three points lying on it	
		iii. Coordinates of end points of a diameter;	
		Definition of conics (Parabola, Ellipse, Hyperbola) their standard equations without proof	
		Problems on conics when their foci, directrices or vertices are given.	
	Unit-3		
8 HOURS	Differential Equations	Solution of first order and first degree differential equation by variable separable method (simple problems).	

	Name of Book	Author Name	Publication
Prescribed Books	Higher Engineering Mathematics	B.S.Grewal	Khanna publications
	Engineering Mathematics	Reena Garg	Khanna publications

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GOVERNMENT POLYTECHNIC PAONTA SAHIB

AT DHAULA KUAN, DISTT. SIRMOUR (HP) - 173031

DEPARTMENT NAME

LESSON PLAN

Academic Year	**2025-2026**
Semester	**Second Comman to all**
Course Code	**BS 104**
Course Name	**Applied Physics-II**
Course Type	**Diploma in Engineering**
L-T-P	**3+1 Hrs**
Name of Faculty	**Sachin Parteek Sharma**
Semester Start & End Dates	**27.01.2026-27.05.2026**

STUDY AND EVALUATION SCHEME

Sr. No.	Name of the Subject	Th	Pr	Internal Assessment			External Assessment					Total Marks
				Th	Pr	Total	Th	Hrs	Pr	Hrs	Total	
1	Applied Physics-II	04	02	40		40	60	3		3	100	100

Lecture No.	Unit & Topic of Discussion	Topic Details	Delivery Method
Unit- 1 Wave Motion & its Applications			
1	Wave Motion	Transverse & Longitudnal	Chalk and Talk
2	Wave Motion	Examples	Chalk and Talk
3	Wave Motion	Wave Velocity & Frequency Relation	Chalk and Talk
4	Wave Motion	Principle of Superposition	Chalk and Talk
5	Simple Harmonic Motion	Definition & Expression for displacement	Chalk and Talk
6	SHM	Expression for Velocity & Acceleration	Chalk and Talk
7	SHM	Frequency & Time Period	Chalk and Talk
8	Free Forced & Resonant Vibrations	Difference with examples	Chalk and Talk
9	Acoustics of buildings	Reverberations & their time	Chalk and Talk
10	Acoustics of buildings	Methods to control reverberations	Chalk and Talk
11	Ultra sonic Waves	Introduction & Properties	
12	Ultra sonic Waves	Engineering & Medical Applications	Chalk and Talk
13	Numericals of Waves & Vibrations	Displacement & Velocity	Chalk and Talk
Unit-2 OPTICS			

14	Optical Laws	Reflection & Refraction	Chalk and Talk
15	Refractive Index	Expression	Chalk and Talk
16	Lenses	Formation of Image, Lens formula	Chalk and Talk
17	Power of lens & Magnification	Expression	Chalk and Talk
18	Applications of circular motion	cycling	Chalk and Talk
19	Total Internal Reflection	Critical Angle	
20	TIR	Applications	Chalk and Talk
21	Optical Instruments	Simple Microscope	Chalk and Talk
22	Optical Instruments	Compound Microscope	
23	Optical Instruments	Telescope	Chalk and Talk
24	Revision of Optics	All topics	Chalk and Talk
Unit- 3rd Elecrostatics			
25	Coulombs law & Electric charge	Expression	Chalk and Talk
26	Electric Field & Electric lines of force	properties	Chalk and Talk
27	Electric Flux & Electric potential	properties	Chalk and Talk
28	Gausses Law	Expressions	
29	Capacitance & Capacitor	Definition & Units	Chalk and Talk
30	Capacitance of parallel plate capacitor	Expression	Chalk and Talk
31	Series & Parallel combination	Expression	Chalk and Talk
32	Class Test-I	Class Test-I	Chalk and Talk
33	Numerical related to combination of capacitors	Numericals	Chalk and Talk
34	Dielectric & its effect on capacitance	Dielectric breakdown	Chalk and Talk
Unit- 4th Current Electricity			
35	Elecric current & its units	Dc & ac Statements	Chalk and Talk
36	Resistance	Specific resistance & conductance	Chalk and Talk
37	Series & parallel combination of resistances	Expressions	Chalk and Talk
38	Factors affecting resistance	Carbon coding	Chalk and Talk
39	Ohms Law	verification	Chalk and Talk
40	Kirchhoff's law	Definitions	Chalk and Talk
41	Concept of terminal potential difference	emf	Chalk and Talk
42	Heating effects of current	definitions	Chalk and Talk
43	Electric power & electric energy	Definitions	Chalk and Talk
44	Numericals based on heating effects of current	Numerical	Chalk and Talk
45	Advantages of electric energy into other forms of energy	advantages	Chalk and Talk
46	Class Test-II	Class Test-II	Chalk and Talk
47	Revision of current & Electricity	Definition	Chalk and Talk
Unit- 5th Electromagnetism			
48	Magnetic Materials	Dia Para & Ferromagnetic materials with propeties	Chalk and Talk
49	Magnetic field & units	Magnetic lines of force	Chalk and Talk
50	Lorentz force force on current carrying conductor	Definition & expression	Chalk and Talk
51	Moving coil galvanometer	Construction working & conversion	Chalk and Talk
Unit;- 6th Semiconductor Physics			
52	Energy Bands	Intrinsic & extrinsic S/C	Chalk and Talk
53	PN Junction diode	Characteristics	Chalk and Talk

54	Rectifiers	Photocells	Chalk and Talk
Unit-; 7th Modern Physics			
55	LASER	Chracterstics & Properties	Chalk and Talk
56	Energy levels	Definitions	Chalk and Talk
57	RUBY & HE-Ne Laser	Details	Chalk and Talk
58	Fiber optics	Apllications	Chalk and Talk
59	Fiber optics	Types of fibre optics	Chalk and Talk

	Name of Book	Author Name	Publication
Prescribed Books	Concepts of Physics	HC Verma	Mc-Graw Hill
	Applied Physics -II	R A Banwat	Eagle Publication
	Applied Physics -II	Amit Pathak	Tru- Edu
	Optics	By R. Thangarajan	Pearsons

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GOVERNMENT POLYTECHNIC PAONTA SAHIB

AT DHAULA KUAN, DISTT. SIRMOUR (HP) - 173031

DEPARTMENT OF MECHANICAL ENGINEERING

LESSON PLAN

Academic Year	**2025-2026**
Semester	**SECOND**
Course Code	**ES106**
Course Name	**ENGINEERING MECHANICS (AE)**
Course Type	**ENGINEERING SCIENCE**
L-P-DCS	**3-0-1**
Name of Faculty	**TEJENDER**
Semester Start & End Dates	**27-01-2026 TO 27-05-2026**

STUDY AND EVALUATION SCHEME

Sr. No.	Name of the Subject	Hours/Weeks			Total hours /week	credits	Internal Assessment			External Assessment					Total M:
		L	P	DCS			Th.	Pr.	Total	Th.	Hrs.	Pr.	Hrs.	Total	
1	ENGINEERING MECHANICS	3	0	1	4	3	40	....	40	60	3	.....	....	60	100

Hours	Unit & Topic of Discussion	Topic Details	Delivery Method
	Unit-1 : Basics of mechanics and force system		
13 hours		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, characteristics and effects of a force, Principle of transmissibility of force, Force system and its classification. 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.	**Chalk-Blackboard And Projector**
	Unit-2 : Equilibrium		
10 Hours		Equilibrium and Equilibrant, Free body and Free body diagram, Analytical and graphical methods of analyzing equilibrium. Lami's Theorem – statement and explanation, Application for various engineering problems. Types of beams, 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. Beam reaction graphically for simply supported beam subjected to vertical point loads only.	**Chalk & Blackboard And Projector**
	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, 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.	Chalk-Blackboard And Using digital media
Unit-4 : Centroid and centre of gravity		
rs	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. 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.	Chalk-Blackboard And Using digital media
Unit 5: Simple lifting machine		
Hours	Simple lifting machine, load, effort, mechanical advantage, applications, and advantages. Velocity ratio, efficiency of machines, law of machine. Ideal machine, friction in machine, maximum Mechanical advantage and efficiency, reversible and non-reversible machines, conditions for reversibility. Velocity ratios of Simple axle and wheel, Differential axle and wheel, Worm and worm wheel, Simple screw jack.	Chalk-Blackboard And Using digital media

	Name of Book	Author Name	Publication
Prescribed Books	1. Engineering Mechanics	D.S. Bedi	Khanna Publications, New Delhi (2008)
	2. Applied Mechanics	Khurmi, R.S	S. Chand & Co. New Delhi
	3. A textbook of Engineering Mechanics	Bansal R K	Laxmi Publications
	4. Engineering Mechanics	Ramamrutham	S. Chand & Co. New Delhi

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GOVERNMENT POLYTECHNIC PAONTA SAHIB
AT DHAULA KUAN, DISTT. SIRMOUR (HP) - 173031
Department of Electrical Engg

LESSON PLAN

Academic Year	**2025-2026**
Semester	**Second Common to all**
Course Code	ES104
Course Name	**Fundamentals of Electrical & Electronics Engg**
Course Type	**Diploma in Engineering**
L-T-P, DCS	**3+1 Hrs**
Name of Faculty	**Kislaye Sharma**
Semester Start & End Dates	**27/1/2026-27/05/2026**

STUDY AND EVALUATION SCHEME

Sr. No.	Name of the Subject	Th	Pr	Internal Assessment			External Assessment					Total Marks
				Th	Pr	Total	Th	Hrs	Pr	Hrs	Total	
1	**Fundamentals of Electrical & Electronics Engg**	04		40		40	60	3		3	100	100

Sr No.	Period Nos	Topic	Details	Instruction Reference	Additional Study Recommended	Remark
1.	**8 (1-8)**	**Overview of Electronic Components & Signals**	Passive Active Components: Resistances, Capacitors, Inductors, Diodes, Transistors, FET, MOS and CMOS and their Applications. Signals: DC/AC, voltage/current, periodic/nonperiodic signals, average, rms, peak values, different types of signal waveforms, Ideal/non-ideal voltage/current sources, independent/dependent voltage current sources.	Electronic Devices & Circuits by JB Gupta, Katson Publishers	Principles of Electrical Engineering by BR Gupta, S Chand & Co., New Delhi	
2.	**8 (9-16)**	**Overview of Analog Circuits**	Operational Amplifiers-Ideal Op-Amp, Practical op amp, Open loop and closed loop configurations, Application of Op-Amp as amplifier, adder, differentiator and			

		integrator.			
9 (17-25)	**Overview of Digital Electronics**	Introduction to Boolean Algebra, Electronic Implementation of Boolean Operations, Gates-Functional Block Approach, Storage elements-Flip Flops-A Functional block approach, Counters: Ripple, Up/down and decade, Introduction to digital IC Gates (of TTL Type).			
12 (26-37)	**Electric and Magnetic Circuits**	EMF, Current, Potential Difference, Power and Energy; M.M.F, magnetic force, permeability, hysteresis loop, reluctance, leakage factor and BH curve; Electromagnetic induction, Faraday's laws of electromagnetic induction, Lenz's law; Dynamically induced emf; Statically induced emf; Equations of self and mutual inductance; Analogy between electric and magnetic circuits.			
12 (38-49)	**A.C. Circuits**	Cycle, Frequency, Periodic time, Amplitude, Angular velocity, RMS value, Average value, Form Factor Peak Factor, impedance, phase angle, and power factor; Mathematical and phasor representation of alternating emf and current; Voltage and Current relationship in Star and Delta connections; A.C in resistors, inductors and capacitors; A.C in R-L series, R-C series, R-L-C series and parallel circuits; Power in A. C. Circuits, power triangle.			
7 (50-56)	**Transformer and Machines**	General construction and principle of core and shell type of transformers; Emf equation and transformation ratio of transformers; Auto transformers; Basic principle of Electromechanical energy conversion			

GOVERNMENT POLYTECHNIC PAONTA SAHIB
AT DHAULA KUAN, DISTT. SIRMOUR (HP) - 173031
APPLIED SCIENCES &HUMANITIES

LESSON PLAN

Academic Year	2026
Branch &Semester	Second Semester
Course Code	AU102
Course Name	Environmental Sciences Automobile Engineering
Course Type	Diploma
L-T-P	2-0-0
Name of Faculty	Deepa Tounwar
Semester Start & End Dates	27th Jan to 27th May

STUDY AND EVALUATION SCHEME

Sr. No.	Name of the Subject	Th	Pr	Internal Assessment			External Assessment					Total Marks
				Th	Pr	Total	Th	Hrs	Pr	Hrs	Total	
8	Applied Chemistry	2	0	40	-	40	60	3	-	-	60	100

Hours	Unit & Topic of Discussion	Topic Details	Remarks
	Unit-1		
6 HOURS	Ecosystem Structure of ecosystem	Biotic & Abiotic components	
		Types of Ecosystem Aquatic (Lentic and Lotic) and terrestrial ecosystem	
		Food chain and food web	
		Carbon, and Nitrogencycle	
		Sulphur and Phosphorus cycle	
		Global warming -Causes, effects, process,	

		Green House Effect, Ozone depletion	
		Unit-2	
5 HOURS	Air and, Noise Pollution	Definition of pollution and pollutant, Natural and manmade sources of air pollution (Refriger- ants, I.C., Boiler)	
		Air Pollutants: Types, Particulate Pollutants: Effects and control (Bag filter, Cyclone separator, Electrostatic Precipitator).	
		Gaseous Pollution Control: Absorber, Catalytic Converter, Effects of air pollution due to Refrigerants, I.C., Boiler.	
		Noise pollution: sources of pollution, measurement of pollution level,	
		Effects of Noise pollu-tion,	
		Noise pollution (Regulation and Control) Rules, 2000.	
		Unit-3	
5 HOURS	Water and Soil Pollution	Sources of water pollution, Types of water pollutants,	
		Characteristics of water pollutants Tur-bidity, pH, total suspended solids, total solids BOD and COD: Definition, calculation.	
		Waste Water Treatment: Primary methods: sedimentation, froth floatation	
		Waste Water Treatment: Secondary methods: Activated sludge treatment, Trickling filter, Bioreactor,	
		Waste Water Treatment: Tertiary Method: Membrane separation technology, RO (reverse osmosis).	
		Causes, Effects and Preventive measures of Soil Pollution	
		Causes-Excessive use of Fertilizers, Pesticides and Insecticides, Irrigation, E-Waste.	
		Unit-4	
5 HOURS	Renewable sources of Energy	Solar Energy: Basics of Solar energy. Flat plate collector (Liquid & Air). Theory of flat plate collector. 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. 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.	
		. 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.	
	Unit 5		
7 URS	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	
		. 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.	
		Concept of Carbon Credit, Carbon Footprint.	
		Environmental management in fabrication industry..	
		ISO14000: Implementation in industries, Benefits	

	Name of Book	Author Name	Publication
Prescribed Books	Environmental Studies	S.C. Sharma & M.P. Poonia	Khanna Publishing House,NewDelhi.
	Understanding Chemistry	C.N. R. Rao	Universities Press (India) Pvt. Ltd., 2011

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GOVERNMENT POLYTECHNIC
PAONTA SAHIB
AT DHAULA KUAN, DISTT. SIRMOUR (HP) - 173031
DEPARTMENT NAME

LESSON PLAN

Academic Year	2026
Branch & Semester	Second Semester & EE
Course Code	BS102
Course Name	Mathematics -II
Course Type	Diploma
L-DCS	3-2
Name of Faculty	Sukanya kumari
Semester Start & End Dates	27th Jan to 27th May .

STUDY AND EVALUATION SCHEME

Sr. No.	Name of the Subject	Th	Pr	Internal Assessment			External Assessment					Total Marks
				Th	Pr	Total	Th	Hrs	Pr	Hrs	Total	
1	Mathematics -II	5	0	40	-	40	60	3	-		60	100

Hours	Unit & Topic of Discussion	Topic Details	Remarks
	Unit-1		

14 HOURS	Determinants and Matrices	Elementary properties of determinants up to 3rd order,
		consistency of equations
		Crammer's rule.
		Algebra of matrices
		, matrix inverse method to solve a system of linear equations in 3 variables.
	Unit-2	
25 HOURS	Integral Calculus	Calculus Integration as inverse operation of differentiation.
		Simple integration by substitution
		Simple integration by parts
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		Use of formulae for solving problems where m and n are positive integers
		Applications of integration
		Simple problem on evaluation of area bounded by a curve and axes.
		ii.) Calculation of Volume of a solid formed by revolution of an area about axes. (Simple problems).
	Unit-3	
23 HOURS	Co-Ordinate Geometry	Equation of straight line in various standard forms (without proof)
		inter section of two straight lines
		angle between two lines
		Parallel and perpendicular lines,
		perpendicular distance formula
		General equation of a circle and its characteristics.
		To find the equation of a circle, given: i. Centre and radius,

		ii. Three points lying on it	
		iii. Coordinates of end points of a diameter;	
		Definition of conics (Parabola, Ellipse, Hyperbola) their standard equations without proof	
		Problems on conics when their foci, directrices or vertices are given.	
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8 HOURS	Differential Equations	Solution of first order and first degree differential equation by variable separable method (simple problems).	

	Name of Book	Author Name	Publication
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	Engineering Mathematics	Reena Garg	Khanna publicatio

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GOVERNMENT POLYTECHNIC PAONTA SAHIB
AT DHAULA KUAN, DISTT. SIRMOUR (HP) - 173031
DEPARTMENT NAME
LESSON PLAN

Academic Year	2025-2026
Semester	Second Comman to all
Course Code	BS 104
Course Name	Applied Physics-II
Course Type	Diploma in Engineering
L-T-P	3+1 Hrs
Name of Faculty	Sachin Parteek Sharma
Semester Start & End Dates	27.01.2026-27.05.2026

STUDY AND EVALUATION SCHEME

Sr. No.	Name of the Subject	Th	Pr	Internal Assessment			External Assessment					Total Marks
				Th	Pr	Total	Th	Hrs	Pr	Hrs	Total	
1	Applied Physics-II	04	02	40		40	60	3		3	100	100

Lecture No.	Unit & Topic of Discussion	Topic Details	Delivery Method
Unit- 1 Wave Motion & its Applications			
1	Wave Motion	Transverse & Longitudnal	Chalk and Talk
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15	Refractive Index	Expression	Chalk and Talk
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23	Optical Instruments	Telescope	Chalk and Talk
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Unit- 3rd Elecrostatics			
25	Coulombs law & Electric charge	Expression	Chalk and Talk
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54	Rectifiers	Photocells	Chalk and Talk
Unit-; 7th Modern Physics			
55	LASER	Chracterstics & Properties	Chalk and Talk
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57	RUBY & HE-Ne Laser	Details	Chalk and Talk
58	Fiber optics	Apllications	Chalk and Talk
59	Fiber optics	Types of fibre optics	Chalk and Talk

	Name of Book	Author Name	Publication
Prescribed Books	Concepts of Physics	HC Verma	Mc-Graw Hill
	Applied Physics -II	R A Banwat	Eagle Publication
	Applied Physics -II	Amit Pathak	Tru- Edu
	Optics	By R. Thangarajan	Pearsons

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GOVERNMENT POLYTECHNIC PAONTA SAHIB

AT DHAULA KUAN, DISTT. SIRMOUR (HP) - 173031

DEPARTMENT OF MECHANICAL ENGINEERING

LESSON PLAN

Academic Year	JAN 2026-JUNE 2026
Semester	SECOND
Course Code	ES106
Course Name	ENGINEERING MECHANICS
Course Type	ENGINEERING SCIENCE
Class	ELECTRICAL ENGINEERING
L-P-DCS	3-0-1
Name of Faculty	MUNEESH KUMAR
Semester Start & End Dates	27-01-2026 TO 27-05-2026

STUDY AND EVALUATION SCHEME

Sr. No.	Name of the Subject	Hours/Weeks			Total hours /week	credits	Internal Assessment			External Assessment					Total Mark
		L	P	DCS			Th.	Pr.	Total	Th.	Hrs.	Pr.	Hrs.	Total	
1	ENGINEERING MECHANICS	3	0	1	4	3	40	....	40	60	3	.....	....	60	100

Hours	Date	Topic Details	Assignments	Delivery Method
	Unit-1 : Basics of mechanics and force system			
13 hours	28/01 /2026 (L1)	Introductory session to Engineering Mechanics, Significance and relevance of Mechanics, Applied mechanics, Statics, Dynamics.		Chalk-Blackboard And Projecto
	29/01/2026 (L2)	Space, time, mass, particle, flexible body, and rigid body. Scalar and vector quantity, Units of measurement (SI units) - Fundamental units and derived units.		
	30/01 /2026 (L3)	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.		
	30/01/2026 (L4)	**Doubt Clearing Session (DCS) cum Revision Session-1**		
	04, 05/02/2026 (L5,L6)	Resolution of a force - Orthogonal components of a force, Numericals based on resolution of forces.		
	06/02/2026 (L7,L8)	Moment of a force, Varignon's Theorem. Numericals on Moment of force and varignon's Theorem.		
	11, 12/02/2026 (L9,L10)	Discussion on force systems and Composition of forces – Resultant, analytical method for determination of resultant for concur- rent, non-concurrent and parallel co-planar force systems.		
	13/02/2026 (L11)	**Doubt Clearing Session (DCS) and Revision Session-2**		
	13,18/02/2026 (L12,L13)	Law of triangle, parallelogram and polygon of forces.	Assignment-1 (A1)	
	Unit-2 : Equilibrium			
	19/02/2026 (L14)	Equilibrium and Equilibrant, Free body and Free body diagram, Analytical and graphical methods of analyzing equilibrium.		
	20/02/2026 (L15)	Lami's Theorem – statement and explanation, Application for various engineering problems. Numericals on Lami's Theorem.		

9 Hours	20/02/2026 (L16)	**Doubt Clearing Session (DCS) and Revision Session-3**	Submission of A1	
	25/02/2026 (L17)	Types of beams, supports (simple, hinged, roller and fixed) and loads acting on beam (vertical point load, uniformly distributed load)		
	26/02/2026 (L18)	Beam reaction for cantilever, simply supported beam with or without overhang – subjected to combination of Point load and uniformly distributed load.		
	27/02/2026 (L19)	Beam reaction graphically for simply supported beam subjected to vertical point loads only.		
	27/02/2026 (L20)	**Doubt Clearing Session (DCS) and Revision session-4**		
	06/03/2026 (L21)	Numerical Session on Simply supported beam Subjected to Combination of point and UDL loading using analytical and graphical method.		
	06/03/2026 (L22)	Numerical Session on Cantilever beam Subjected to Combination of point and UDL loading using analytical and graphical method.	Assignment-2 (A2)	
	Unit-3 : Friction			
10 hours	11/03/2026 (L23)	Friction and its relevance in engineering, types and laws of friction		Chalk-Blackboard And Using digital media
		CLASS TEST-1 ON 12/03/2026, TIME 1 HOUR		
	13/03/2026 (L24)	Limiting equilibrium, limiting friction, co-efficient of friction, angle of friction, angle of repose, relation between co-efficient of friction and angle of friction.		
	13/03/2026 (L25)	**Doubt Clearing Session and Revision Session-5**	Submission Of A2	
	18/03/2026 (L26)	Numericals on friction i.e. Limiting friction, coefficient of friction etc.		
	19/03/2026 (L27)	Equilibrium of bodies on level surface subjected to force parallel and inclined to plane.		
	20/03/2026 (L28,L29)	Numericals		
	25/03/2026 (L30)	Equilibrium of bodies on inclined plane subjected to force parallel to the plane only.		
	27/03/2026 (L31,L32)	Numericals, **Doubt Clearing Session and Revision Session-6**	**Assignment-3 (A3)**	
	Unit-4 : Centroid and centre of gravity			
14 Hours	01/04/2026 (L33)	Concept of Centroid and Center Of gravity- A concept talk		
	02/04/2026 (L33)	Methods Of determination of Centroid and center of Gravity		
	08/04/2026 (L34)	Centroid of geometrical plane figures (square, rectangle, triangle, circle, semi-circle, quarter circle).		
		CLASS TEST-2 ON 09/04/2026, TIME 1 HOUR		
	10/04/2026 (L35)	Centroid of geometrical plane figures (square, rectangle, triangle, circle, semi-circle, quarter circle).		
	16/04/2026 (L36)	**Doubt Clearing Session and Revision Session-7**	Submission of-A3	
	17/04/2026 (L37)	Centroid of composite figures composed of not more than two geometrical figures.		Chalk-Blackboard And Using digital media
	17/04/2026 (L38)	Numericals on Centroid determination		
	22/04/2026 (L39)	Numericals on Centroid determination		
	23/04/2026 (L40)	Centre of Gravity of simple solids (Cube, cuboid, cone, cylinder, sphere, hemisphere)		
	24/04/2026 (L41)	Centre of Gravity of simple solids (Cube, cuboid, cone, cylinder, sphere, hemisphere)		
	24/04/2026 (L42)	**Doubt Clearing session and Revision Session-8**		

/2026 (L43)	Centre of Gravity of composite solids composed of not more than two simple solids.		
04/2025 05/2026 (L44, L45)	Numericals on Center of Gravity	Assignment-4	
Unit 5: Simple lifting machine			
08/05/2026 (L46)	Simple lifting machine, load, effort, mechanical advantage, applications, and advantages. Velocity ratio, efficiency of machines, law of machines.		Chalk-Blackboard And Using digital media
13/05/2026 (L47)	**Doubt Clearing Session and Revision Session-9**	Submission of A4	
14/05/2026 (L48)	Ideal machine, friction in machine, maximum Mechanical advantage and efficiency, Numericals		
15/05/2026 (L49)	Reversible and non-reversible machines, conditions for reversibility, Numericals		
15,20/05/2026 (L50,L51)	Velocity ratio of Simple axle and wheel, Numericals		
21,22/05/20256 (L52,L53)	Velocity ratio of Differential axle and wheel, Numericals		
22/05/2026 (L54,L55,L 56)	Velocity ratio of Worm and worm wheel, Numericals, Velocity Ratio of Simple screw jack, Numericals, **doubt Clearing Session and revision session-10**		

	Name of Book	Author Name	Publication
Prescribed Books	1. Engineering Mechanics	D.S. Bedi	Khanna Publications, New Delhi (2008)
	2. Applied Mechanics	Khurmi, R.S	S. Chand & Co. New Delhi
	3. A textbook of Engineering Mechanics	Bansal R K	Laxmi Publications
	4. Engineering Mechanics	Ramamrutham	S. Chand & Co. New Delhi

Faculty

HOD

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

CO1	Identify the force systems for given conditions by applying the basics of mechanics
CO2	Determine unknown force(s) of different engineering systems
CO3	Apply the principles of friction in various conditions for useful purposes.
CO4	Find the centroid and center of gravity of various components in engineering systems.
CO5	Select the relevant simple lifting machine(s) for given purposes.

Government Polytechnic PaontaSahib
Department of Electrical Engineering
Lesson Plan

Name of Faculty	Er. Vikas Kashyap
Discipline	Electrical Engineering
Semester	2nd
Subject	Fundamentals Of Electrical & Electronics Engineering (L-3,Ds-1, Hrs./Week)
Lesson Plan Duration	Jan. – May 2026

Week	Chapter	Topic to be covered
1st (27Jan. – 31 Jan.)	Unit – I Overview of Electronic Components & Signals	Passive Active Components: Resistances, Capacitors, Inductors, Diodes, Transistors, FET, MOS and CMOS and their Applications.
2nd (02Feb. – 07Feb.)	Unit – I Overview of Electronic Components & Signals	Signals: DC/AC, voltage/current, periodic/non- periodic signals, average, rms, peak values, different types of signal waveforms,
3rd (09Feb. – 13Feb.)	Unit – I Overview of Electronic Components & Signals	Ideal/non-ideal voltage/current sources, independent/dependent voltage current sources.
4th (16Feb. – 21Feb.)	Unit – II Overview of Analog Circuits:	Operational Amplifiers-Ideal Op-Amp,Practical op amp, Open loop and closed loop configurations,
5th (23Feb. – 29Feb.)	Unit – II Overview of Analog Circuits:	Application of Op-Amp as amplifier, adder, differentiator and integrator.
6th (02 Mar. – 07Mar.)	Unit – III Overview of Digital Electronics	Introduction to Boolean Algebra, Electronic Implementation of Boolean Operations, Gates-Functional Block Approach
7th (09Mar. – 13Mar.)	Unit– III Overview of Digital Electronics	Storage elements-Flip Flops-A Functional block approach
Class Test – 1		**In Second Week of March 2026.**
8th (16Mar. – 20Mar.)	Unit– III Overview of Digital Electronics	Counters: Ripple, Up/down and decade, Introduction to digital IC Gates (of T Type).
9th (23Mar. – 28 Mar.)	Unit– IV Electric and Magnetic Circuits	EMF, Current, Potential Difference, Power and Energy; M.M.F, magnetic fo permeability, hysteresis loop, reluctance, leakage factor and BH curve
10th (30Mar. – 04Apr.)	Unit– IV Electric and Magnetic Circuits	Electromagnetic induction, Faraday's laws of electromagnetic induction, Le law; Dynamically induced emf; Statically induced emf;

11th (5Apr. – 10Apr.)	Unit– IV Electric and Magnetic Circuits	Equations ofself and mutual inductance; Analogy between electric and magnetic circuits.
Class Test – 2		**In Second Week of April 2026.**
12th (13Apr. – 15Apr)	Unit– V A.C. Circuits	Cycle, Frequency, Periodic time, Amplitude, Angular velocity,RMS value, Average value, Form Factor Peak Factor, impedance, phase angle, andpower factor; Mathematical and phasor representation of alternating emf and current;
13th (20Apr. – 25 Apr.)	Unit– V A.C. Circuits	Voltage and Current relationship in Star and Delta connections; A.C inresistors, inductors and capacitors; A.C in R-L series, R-C series, R-L-C series and parallel circuits; Power in A. C. Circuits, power triangle.
House Test		**In Second Week of May 2026.**
14th (11May. – 16 May.)	Unit– VI Transformer and Machines	General construction and principle of core and shell type of transformers; Emf equation and transformation ratio of transformers;
15th (18May-26May)	Unit– VI Transformer and Machines	Autotransformers; Basic principle of Electromechanical energy conversion.

- **NOTE:** Lesson Plan is Tentative, subject to availability of Time, Students & Faculty.

Prepared by
Er. Vikas Kashyap
Sr. Lecturer,EE

Signature of HOD

GOVERNMENT POLYTECHNIC PAONTA SAHIB
AT DHAULA KUAN, DISTT. SIRMOUR (HP) - 173031
APPLIED SCIENCES &HUMANITIES

LESSON PLAN

Academic Year	2026
Branch &Semester	Second Semester
Course Code	AU102
Course Name	Environmental Sciences Electrical Engineering
Course Type	Diploma
L-T-P	2-0-0
Name of Faculty	Deepa Tounwar
Semester Start & End Dates	27th Jan to 27th May

STUDY AND EVALUATION SCHEME

Sr. No.	Name of the Subject	Th	Pr	Internal Assessment			External Assessment					T M
				Th	Pr	Total	Th	Hrs	Pr	Hrs	Total	
8	Applied Chemistry	2	0	40	-	40	60	3	-	-	60	

Hours	Unit & Topic of Discussion	Topic Details	Re
	Unit-1		
6 HOURS	Ecosystem Structure of ecosystem	Biotic & Abiotic components	
		Types of Ecosystem Aquatic (Lentic and Lotic) and terrestrial ecosystem	
		Food chain and food web	
		Carbon, and Nitrogencycle	
		Sulphur and Phosphorus cycle	
		Global warming -Causes, effects, process,	

		Green House Effect, Ozone depletion	
	Unit-2		
5 HOURS	Air and, Noise Pollution	Definition of pollution and pollutant, Natural and manmade sources of air pollution (Refriger- ants, I.C., Boiler)	
		Air Pollutants: Types, Particulate Pollutants: Effects and control (Bag filter, Cyclone separator, Electrostatic Precipitator).	
		Gaseous Pollution Control: Absorber, Catalytic Converter, Effects of air pollution due to Refrigerants, I.C., Boiler.	
		Noise pollution: sources of pollution, measurement of pollution level,	
		Effects of Noise pollu-tion,	
		Noise pollution (Regulation and Control) Rules, 2000.	
	Unit-3		
5 HOURS	Water and Soil Pollution	Sources of water pollution, Types of water pollutants,	
		Characteristics of water pollutants Tur-bidity, pH, total suspended solids, total solids BOD and COD: Definition, calculation.	
		Waste Water Treatment: Primary methods: sedimentation, froth floatation	
		Waste Water Treatment: Secondary methods: Activated sludge treatment, Trickling filter, Bioreactor,	
		Waste Water Treatment: Tertiary Method: Membrane separation technology, RO (reverse osmosis).	
		Causes, Effects and Preventive measures of Soil Pollution	
		Causes-Excessive use of Fertilizers, Pesticides and Insecticides, Irrigation, E-Waste.	
	Unit-4		
5 HOURS	Renewable sources of Energy	Solar Energy: Basics of Solar energy. Flat plate collector (Liquid & Air). Theory of flat plate collector. 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. 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.	
		. 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.	
	Unit 5		
7 HOURS	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	
		. 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.	
		Concept of Carbon Credit, Carbon Footprint.	
		Environmental management in fabrication industry..	
		ISO14000: Implementation in industries, Benefits	

	Name of Book	Author Name	Publication
Prescribed Books	Environmental Studies	S.C. Sharma & M.P. Poonia	Khanna Publishing House,NewDelhi.
	Understanding Chemistry	C.N. R. Rao	Universities Press (India) Pvt. Ltd., 2011

Faculty

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GOVERNMENT POLYTECHNIC
PAONTA SAHIB
AT DHAULA KUAN, DISTT. SIRMOUR (HP) - 173031
DEPARTMENT NAME

LESSON PLAN

Academic Year	2026
Branch & Semester	Second Semester & CE
Course Code	BS102
Course Name	Mathematics -II
Course Type	Diploma
L-DCS	3-2
Name of Faculty	Sukanya kumari
Semester Start & End Dates	27th Jan to 27th May

STUDY AND EVALUATION SCHEME

Sr. No.	Name of the Subject	Th	Pr	Internal Assessment			External Assessment					Total Marks
				Th	Pr	Total	Th	Hrs	Pr	Hrs	Total	
1	Mathematics -II	5	0	40	-	40	60	3	-		60	100

Hours	Unit & Topic of Discussion	Topic Details	Remarks
	Unit-1		

14 HOURS	Determinants and Matrices	Elementary properties of determinants up to 3rd order,	
		consistency of equations	
		Crammer's rule.	
		Algebra of matrices	
		, matrix inverse method to solve a system of linear equations in 3 variables.	
	Unit-2		
25 HOURS	Integral Calculus	Calculus Integration as inverse operation of differentiation.	
		Simple integration by substitution	
		Simple integration by parts	
		Simple integration by partial fractions (for linear factors only).	
		Use of formulae for solving problems where m and n are positive integers	
		Applications of integration	
		Simple problem on evaluation of area bounded by a curve and axes.	
		ii.) Calculation of Volume of a solid formed by revolution of an area about axes. (Simple problems).	
	Unit-3		
23 HOURS	Co-Ordinate Geometry	Equation of straight line in various standard forms (without proof)	
		inter section of two straight lines	
		angle between two lines	
		Parallel and perpendicular lines,	
		perpendicular distance formula	
		General equation of a circle and its characteristics.	
		To find the equation of a circle, given: i. Centre and radius,	

		ii. Three points lying on it	
		iii. Coordinates of end points of a diameter;	
		Definition of conics (Parabola, Ellipse, Hyperbola) their standard equations without proof	
		Problems on conics when their foci, directrices or vertices are given.	
	Unit-3		
8 HOURS	Differential Equations	Solution of first order and first degree differential equation by variable separable method (simple problems).	

	Name of Book	Author Name	Publication
Prescribed Books	Higher Engineering Mathematics	B.S.Grewal	Khanna publications
	Engineering Mathematics	Reena Garg	Khanna publications

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GOVERNMENT POLYTECHNIC PAONTA SAHIB
AT DHAULA KUAN, DISTT. SIRMOUR (HP) - 173031
DEPARTMENT NAME
LESSON PLAN

Academic Year	**2025-2026**
Semester	**Second Comman to all**
Course Code	**BS 104**
Course Name	**Applied Physics-II**
Course Type	**Diploma in Engineering**
L-T-P	**3+1 Hrs**
Name of Faculty	**Sachin Parteek Sharma**
Semester Start & End Dates	**27.01.2026-27.05.2026**

STUDY AND EVALUATION SCHEME

Sr. No.	Name of the Subject	Th	Pr	Internal Assessment			External Assessment					Total Marks
				Th	Pr	Total	Th	Hrs	Pr	Hrs	Total	
1	Applied Physics-II	04	02	40		40	60	3		3	100	100

Lecture No.	Unit & Topic of Discussion	Topic Details	Delivery Method
Unit- 1 Wave Motion & its Applications			
1	Wave Motion	Transverse & Longitudnal	Chalk and Talk
2	Wave Motion	Examples	Chalk and Talk
3	Wave Motion	Wave Velocity & Frequency Relation	Chalk and Talk
4	Wave Motion	Principle of Superposition	Chalk and Talk
5	Simple Harmonic Motion	Definition & Expression for displacement	Chalk and Talk
6	SHM	Expression for Velocity & Acceleration	Chalk and Talk
7	SHM	Frequency & Time Period	Chalk and Talk
8	Free Forced & Resonant Vibrations	Difference with examples	Chalk and Talk
9	Acoustics of buildings	Reverberations & their time	Chalk and Talk
10	Acoustics of buildings	Methods to control reverberations	Chalk and Talk
11	Ultra sonic Waves	Introduction & Properties	
12	Ultra sonic Waves	Engineering & Medical Applications	Chalk and Talk
13	Numericals of Waves & Vibrations	Displacement & Velocity	Chalk and Talk
Unit-2 OPTICS			

14	Optical Laws	Reflection & Refraction	Chalk and Talk
15	Refractive Index	Expression	Chalk and Talk
16	Lenses	Formation of Image, Lens formula	Chalk and Talk
17	Power of lens & Magnification	Expression	Chalk and Talk
18	Applications of circular motion	cycling	Chalk and Talk
19	Total Internal Reflection	Critical Angle	
20	TIR	Applications	Chalk and Talk
21	Optical Instruments	Simple Microscope	Chalk and Talk
22	Optical Instruments	Compound Microscope	
23	Optical Instruments	Telescope	Chalk and Talk
24	Revision of Optics	All topics	Chalk and Talk
Unit- 3rd Elecrostatics			
25	Coulombs law & Electric charge	Expression	Chalk and Talk
26	Electric Field & Electric lines of force	properties	Chalk and Talk
27	Electric Flux & Electric potential	properties	Chalk and Talk
28	Gausses Law	Expressions	
29	Capacitance & Capacitor	Definition & Units	Chalk and Talk
30	Capacitance of parallel plate capacitor	Expression	Chalk and Talk
31	Series & Parallel combination	Expression	Chalk and Talk
32	Class Test-I	Class Test-I	Chalk and Talk
33	Numerical related to combination of capacitors	Numericals	Chalk and Talk
34	Dielectric & its effect on capacitance	Dielectric breakdown	Chalk and Talk
Unit- 4th Current Electricity			
35	Elecric current & its units	Dc & ac Statements	Chalk and Talk
36	Resistance	Specific resistance & conductance	Chalk and Talk
37	Series & parallel combination of resistances	Expressions	Chalk and Talk
38	Factors affecting resistance	Carbon coding	Chalk and Talk
39	Ohms Law	verification	Chalk and Talk
40	Kirchhoff's law	Definitions	Chalk and Talk
41	Concept of terminal potential difference	emf	Chalk and Talk
42	Heating effects of current	definitions	Chalk and Talk
43	Electric power & electric energy	Definitions	Chalk and Talk
44	Numericals based on heating effects of current	Numerical	Chalk and Talk
45	Advantages of electric energy into other forms of energy	advantages	Chalk and Talk
46	Class Test-II	Class Test-II	Chalk and Talk
47	Revision of current & Electricity	Definition	
Unit- 5th Electromagnetism			
48	Magnetic Materials	Dia Para & Ferromagnetic materials with propeties	Chalk and Talk
49	Magnetic field & units	Magnetic lines of force	Chalk and Talk
50	Lorentz force force on current carrying conductor	Definition & expression	Chalk and Talk
51	Moving coil galvanometer	Construction working & conversion	Chalk and Talk
Unit;- 6th Semiconductor Physics			
52	Energy Bands	Intrinsic & extrinsic S/C	Chalk and Talk
53	PN Junction diode	Characteristics	Chalk and Talk

54	Rectifiers	Photocells	Chalk and Ta
Unit-; 7th Modern Physics			
55	LASER	Chracterstics & Properties	Chalk and T
56	Energy levels	Definitions	Chalk and T
57	RUBY & HE-Ne Laser	Details	Chalk and T
58	Fiber optics	Apllications	Chalk and T
59	Fiber optics	Types of fibre optics	Chalk and T

	Name of Book	Author Name	Publication
Prescribed Books	Concepts of Physics	HC Verma	Mc-Graw Hill
	Applied Physics -II	R A Banwat	Eagle Publication
	Applied Physics -II	Amit Pathak	Tru- Edu
	Optics	By R. Thangarajan	Pearsons

Faculty

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GOVERNMENT POLYTECHNIC PAONTA SAHIB

AT DHAULA KUAN, DISTT. SIRMOUR (HP) - 173031

DEPARTMENT OF MECHANICAL ENGINEERING

LESSON PLAN

Academic Year	2025-2026
Semester	SECOND
Course Code	ES106
Course Name	ENGINEERING MECHANICS (CE)
Course Type	ENGINEERING SCIENCE
L-P-DCS	3-0-1
Name of Faculty	ASHISH PATIAL
Semester Start & End Dates	27-01-2026 TO 27-05-2026

STUDY AND EVALUATION SCHEME

Sr. No.	Name of the Subject	Hours/Weeks			Total hours /week	credits	Internal Assessment			External Assessment					Total Marks
		L	P	DCS			Th.	Pr.	Total	Th.	Hrs.	Pr.	Hrs.	Total	
1	ENGINEERING MECHANICS	3	0	1	4	3	40	....	40	60	3	.....	....	60	100

Hours	Unit & Topic of Discussion	Topic Details	Delivery Method
	Unit-1 : Basics of mechanics and force system		
13 hours		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, characteristics and effects of a force, Principle of transmissibility of force, Force system and its classification. 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.	Chalk-Blackboard And Projector
	Unit-2 : Equilibrium		
10 Hours		Equilibrium and Equilibrant, Free body and Free body diagram, Analytical and graphical methods of analyzing equilibrium. Lami's Theorem – statement and explanation, Application for various engineering problems. Types of beams, 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. Beam reaction graphically for simply supported beam subjected to vertical point loads only.	Chalk & Blackboard And Projector
	Unit-3 : Friction		

10 hours		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, 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.	Chalk-Blackboard And Using digital media
	Unit-4 : Centroid and centre of gravity		
14 Hours		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. 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.	Chalk-Blackboard And Using digital media
	Unit 5: Simple lifting machine		
9 Hours		Simple lifting machine, load, effort, mechanical advantage, applications, and advantages. Velocity ratio, efficiency of machines, law of machine. Ideal machine, friction in machine, maximum Mechanical advantage and efficiency, reversible and non-reversible machines, conditions for reversibility. Velocity ratios of Simple axle and wheel, Differential axle and wheel, Worm and worm wheel, Simple screw jack.	Chalk-Blackboard And Using digital media

	Name of Book	Author Name	Publication
Prescribed Books	1. Engineering Mechanics	D.S. Bedi	Khanna Publications, New Delhi (2008)
	2. Applied Mechanics	Khurmi, R.S	S. Chand & Co. New Delhi
	3. A textbook of Engineering Mechanics	Bansal R K	Laxmi Publications
	4. Engineering Mechanics	Ramamrutham	S. Chand & Co. New Delhi

Faculty **HOD**

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

CO1	Identify the force systems for given conditions by applying the basics of mechanics
CO2	Determine unknown force(s) of different engineering systems
CO3	Apply the principles of friction in various conditions for useful purposes.
CO4	Find the centroid and center of gravity of various components in engineering systems.
CO5	Select the relevant simple lifting machine(s) for given purposes.

GOVERNMENT POLYTECHNIC PAONTA SAHIB
AT DHAULA KUAN, DISTT. SIRMOUR (HP) - 173031
DEPARTMENT NAME : Applied Sciences and Humanities

LESSON PLAN

Academic Year	2026
Semester	Second (Computer Engineering)
Category of Course	Engineering Science
Code No.	ES 102
Course Title	Introduction to IT Systems
L-P-DCS	2-0-0
Name of Faculty	Jeevan Lal
Semester Start & End Dates	27.1.26

STUDY AND EVALUATION SCHEME

Sr. No.	Name of the Subject	Th	Pr	Internal Assessment			External Assessment					Total Marks
				Th	Pr	Total	Th	Hrs	Pr	Hrs	Total	
1	Introduction to IT Systems	2	0	40	0	40	60	3	0	0	60	100

Hours	Unit & Topic of Discussion	Topic Details	Delivery Method
	UNIT 1		
7	**Basics of Computer System**	Block Diagram of Computer System, General Understanding of various hardware components- CPU, Memory, Display Devices (CRT and LCD Monitors), Keyboard, Mouse, HDD	White & Black Board /Projector
	UNIT 2		
5	Software Concepts	Software and its types, Operating System: Definition, types and function of Operating System, Booting the system (Cold and warm).	White & Black Board /Projector
	UNIT 3		
7	Internet Skills	Understanding the terminology of internet-web browser, search engine, world wide web, Types of Networks. Awareness about the government portals (state portals and national portals) and institute portals.	White & Black Board /Projector

		UNIT 4	
5	Working with MS- Word	File Management (Creating new document, saving a document, printing a document), Editing a document, use of Home, Insert, Design Layout ribbons.	White & Black Board /Projector
		UNIT 5	
5	Working with MS- Excel	Working with spread sheets, entering data into the cells, merging cells, formula bar, usage of simple functions such as sum, average, min, max, percentage, round, floor, ceiling, conditional formatting of cells.	White & Black Board /Projector
		UNIT 6	
3	Information Security	Concept of online frauds, threats of online crime, virus attacks and use of antivirus.	White & Black Board /Projector

Prescribed Books	**Name of Book**	**Author Name**	**Publication**
	Computer Fundamentals	R.S. Salaria	Khanna Publishing House
	Fundamentals of Computer	V. Rajaraman;	Prentice Hall of India Pvt. Ltd., New Delhi.
	Computers Fundamentals Architecture and Organisation	B Ram,	revised Edition, New Age International Publishers, New Delhi.

Faculty

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GOVERNMENT POLYTECHNIC PAONTA SAHIB
AT DHAULA KUAN, DISTT. SIRMOUR (HP) - 173031
APPLIED SCIENCES &HUMANITIES

LESSON PLAN

Academic Year	2026
Branch &Semester	Second Semester
Course Code	AU102
Course Name	Environmental Sciences Computer Engineering
Course Type	Diploma
L-T-P	2-0-0
Name of Faculty	Deepa Tounwar
Semester Start & End Dates	27th Jan to 27th May

STUDY AND EVALUATION SCHEME

Sr. No.	Name of the Subject	Th	Pr	Internal Assessment			External Assessment					Total Marks
				Th	Pr	Total	Th	Hrs	Pr	Hrs	Total	
8	Applied Chemistry	2	0	40	-	40	60	3	-	-	60	100

Hours	Unit & Topic of Discussion	Topic Details	Remark
	Unit-1		
6 HOURS	Ecosystem Structure of ecosystem	Biotic & Abiotic components	
		Types of Ecosystem Aquatic (Lentic and Lotic) and terrestrial ecosystem	
		Food chain and food web	
		Carbon, and Nitrogencycle	
		Sulphur and Phosphorus cycle	
		Global warming -Causes, effects, process,	

		Green House Effect, Ozone depletion	
		Unit-2	
5 HOURS	Air and, Noise Pollution	Definition of pollution and pollutant, Natural and manmade sources of air pollution (Refriger- ants, I.C., Boiler)	
		Air Pollutants: Types, Particulate Pollutants: Effects and control (Bag filter, Cyclone separator, Electrostatic Precipitator).	
		Gaseous Pollution Control: Absorber, Catalytic Converter, Effects of air pollution due to Refrigerants, I.C., Boiler.	
		Noise pollution: sources of pollution, measurement of pollution level,	
		Effects of Noise pollu-tion,	
		Noise pollution (Regulation and Control) Rules, 2000.	
		Unit-3	
5 HOURS	Water and Soil Pollution	Sources of water pollution, Types of water pollutants,	
		Characteristics of water pollutants Tur-bidity, pH, total suspended solids, total solids BOD and COD: Definition, calculation.	
		Waste Water Treatment: Primary methods: sedimentation, froth floatation	
		Waste Water Treatment: Secondary methods: Activated sludge treatment, Trickling filter, Bioreactor,	
		Waste Water Treatment: Tertiary Method: Membrane separation technology, RO (reverse osmosis).	
		Causes, Effects and Preventive measures of Soil Pollution	
		Causes-Excessive use of Fertilizers, Pesticides and Insecticides, Irrigation, E-Waste.	
		Unit-4	
5 HOURS	Renewable sources of Energy	Solar Energy: Basics of Solar energy. Flat plate collector (Liquid & Air). Theory of flat plate collector. 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. 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.	
		. 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.	
		Unit 5	
7 HOURS	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	
		. 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.	
		Concept of Carbon Credit, Carbon Footprint.	
		Environmental management in fabrication industry..	
		ISO14000: Implementation in industries, Benefits	

	Name of Book	Author Name	Publication
Prescribed Books	Environmental Studies	S.C. Sharma & M.P. Poonia	Khanna Publishing House,NewDelhi.
	Understanding Chemistry	C.N. R. Rao	Universities Press (India) Pv Ltd., 2011

Faculty

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GOVERNMENT POLYTECHNIC
PAONTA SAHIB
AT DHAULA KUAN, DISTT. SIRMOUR (HP) - 173031
DEPARTMENT NAME

LESSON PLAN

Academic Year	2026
Branch & Semester	Second Semester ✗ EE
Course Code	BS102
Course Name	Mathematics -II
Course Type	Diploma
L-DCS	3-2
Name of Faculty	Sukanya kumari
Semester Start & End Dates	27th Jan to 27th May .

STUDY AND EVALUATION SCHEME

Sr. No.	Name of the Subject	Th	Pr	Internal Assessment			External Assessment					Total Marks
				Th	Pr	Total	Th	Hrs	Pr	Hrs	Total	
1	Mathematics -II	5	0	40	-	40	60	3	-		60	100

Hours	Unit & Topic of Discussion	Topic Details	Remarks
	Unit-1		

14 HOURS	Determinants and Matrices	Elementary properties of determinants up to 3rd order,	
		consistency of equations	
		Crammer's rule.	
		Algebra of matrices	
		, matrix inverse method to solve a system of linear equations in 3 variables.	
	Unit-2		
25 HOURS	Integral Calculus	Calculus Integration as inverse operation of differentiation.	
		Simple integration by substitution	
		Simple integration by parts	
		Simple integration by partial fractions (for linear factors only).	
		Use of formulae for solving problems where m and n are positive integers	
		Applications of integration	
		Simple problem on evaluation of area bounded by a curve and axes.	
		ii.) Calculation of Volume of a solid formed by revolution of an area about axes. (Simple problems).	
	Unit-3		
23 HOURS	Co-Ordinate Geometry	Equation of straight line in various standard forms (without proof)	
		inter section of two straight lines	
		angle between two lines	
		Parallel and perpendicular lines,	
		perpendicular distance formula	
		General equation of a circle and its characteristics.	
		To find the equation of a circle, given: i. Centre and radius,	

		ii. Three points lying on it	
		iii. Coordinates of end points of a diameter;	
		Definition of conics (Parabola, Ellipse, Hyperbola) their standard equations without proof	
		Problems on conics when their foci, directrices or vertices are given.	
	Unit-3		
8 HOURS	Differential Equations	Solution of first order and first degree differential equation by variable separable method (simple problems).	

	Name of Book	Author Name	Publication
Prescribed Books	Higher Engineering Mathematics	B.S.Grewal	Khanna publication
	Engineering Mathematics	Reena Garg	Khanna publicatio

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GOVERNMENT POLYTECHNIC PAONTA SAHIB
AT DHAULA KUAN, DISTT. SIRMOUR (HP) - 173031
DEPARTMENT NAME
LESSON PLAN

Academic Year	2025-2026
Semester	Second Comman to all
Course Code	BS 104
Course Name	Applied Physics-II
Course Type	Diploma in Engineering
L-T-P	3+1 Hrs
Name of Faculty	Sachin Parteek Sharma
Semester Start & End Dates	27.01.2026-27.05.2026

STUDY AND EVALUATION SCHEME

Sr. No.	Name of the Subject	Th	Pr	Internal Assessment			External Assessment					Total Marks
				Th	Pr	Total	Th	Hrs	Pr	Hrs	Total	
1	Applied Physics-II	04	02	40		40	60	3		3	100	100

Lecture No.	Unit & Topic of Discussion	Topic Details	Delivery Method
Unit- 1 Wave Motion & its Applications			
1	Wave Motion	Transverse & Longitudnal	Chalk and Talk
2	Wave Motion	Examples	Chalk and Talk
3	Wave Motion	Wave Velocity & Frequency Relation	Chalk and Talk
4	Wave Motion	Principle of Superposition	Chalk and Talk
5	Simple Harmonic Motion	Definition & Expression for displacement	Chalk and Talk
6	SHM	Expression for Velocity & Acceleration	Chalk and Talk
7	SHM	Frequency & Time Period	Chalk and Talk
8	Free Forced & Resonant Vibrations	Difference with examples	Chalk and Talk
9	Acoustics of buildings	Reverberations & their time	Chalk and Talk
10	Acoustics of buildings	Methods to control reverberations	Chalk and Talk
11	Ultra sonic Waves	Introduction & Properties	
12	Ultra sonic Waves	Engineering & Medical Applications	Chalk and Talk
13	Numericals of Waves & Vibrations	Displacement & Velocity	Chalk and Talk
Unit-2 OPTICS			

14	Optical Laws	Reflection & Refraction	Chalk and Talk
15	Refractive Index	Expression	Chalk and Talk
16	Lenses	Formation of Image, Lens formula	Chalk and Talk
17	Power of lens & Magnification	Expression	Chalk and Talk
18	Applications of circular motion	cycling	Chalk and Talk
19	Total Internal Reflection	Critical Angle	
20	TIR	Applications	Chalk and Talk
21	Optical Instruments	Simple Microscope	Chalk and Talk
22	Optical Instruments	Compound Microscope	
23	Optical Instruments	Telescope	Chalk and Talk
24	Revision of Optics	All topics	Chalk and Talk
Unit- 3rd Elecrostatics			
25	Coulombs law & Electric charge	Expression	Chalk and Talk
26	Electric Field & Electric lines of force	properties	Chalk and Talk
27	Electric Flux & Electric potential	properties	Chalk and Talk
28	Gausses Law	Expressions	
29	Capacitance & Capacitor	Definition & Units	Chalk and Talk
30	Capacitance of parallel plate capacitor	Expression	Chalk and Talk
31	Series & Parallel combination	Expression	Chalk and Talk
32	Class Test-I	Class Test-I	Chalk and Talk
33	Numerical related to combination of capacitors	Numericals	Chalk and Talk
34	Dielectric & its effect on capacitance	Dielectric breakdown	Chalk and Talk
Unit- 4th Current Electricity			
35	Elecric current & its units	Dc & ac Statements	Chalk and Talk
36	Resistance	Specific resistance & conductance	Chalk and Talk
37	Series & parallel combination of resistances	Expressions	Chalk and Talk
38	Factors affecting resistance	Carbon coding	Chalk and Talk
39	Ohms Law	verification	Chalk and Talk
40	Kirchhoff's law	Definitions	Chalk and Talk
41	Concept of terminal potential difference	emf	Chalk and Talk
42	Heating effects of current	definitions	Chalk and Talk
43	Electric power & electric energy	Definitions	Chalk and Talk
44	Numericals based on heating effects of current	Numerical	Chalk and Talk
45	Advantages of electric energy into other forms of energy	advantages	Chalk and Talk
46	Class Test-II	Class Test-II	Chalk and Talk
47	Revision of current & Electricity	Definition	Chalk and Talk
Unit- 5th Electromagnetism			
48	Magnetic Materials	Dia Para & Ferromagnetic materials with propeties	Chalk and Talk
49	Magnetic field & units	Magnetic lines of force	Chalk and Talk
50	Lorentz force force on current carrying conductor	Definition & expression	Chalk and Talk
51	Moving coil galvanometer	Construction working & conversion	Chalk and Talk
Unit;- 6th Semiconductor Physics			
52	Energy Bands	Intrinsic & extrinsic S/C	Chalk and Talk
53	PN Junction diode	Characteristics	Chalk and Talk

54	Rectifiers	Photocells	Chalk and Talk
Unit-; 7th Modern Physics			
55	LASER	Chracterstics & Properties	Chalk and Talk
56	Energy levels	Definitions	Chalk and Talk
57	RUBY & HE-Ne Laser	Details	Chalk and Talk
58	Fiber optics	Apllications	Chalk and Talk
59	Fiber optics	Types of fibre optics	Chalk and Talk

	Name of Book	Author Name	Publication
Prescribed Books	Concepts of Physics	HC Verma	Mc-Graw Hill
	Applied Physics -II	R A Banwat	Eagle Publication
	Applied Physics -II	Amit Pathak	Tru- Edu
	Optics	By R. Thangarajan	Pearsons

Faculty

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GOVERNMENT POLYTECHNIC PAONTA SAHIB

AT DHAULA KUAN, DISTT. SIRMOUR (HP) - 173031

DEPARTMENT OF MECHANICAL ENGINEERING

LESSON PLAN

Academic Year	JAN 2026-JUNE 2026
Semester	SECOND
Course Code	ES106
Course Name	ENGINEERING MECHANICS
Course Type	ENGINEERING SCIENCE
Class	ELECTRICAL ENGINEERING
L-P-DCS	3-0-1
Name of Faculty	MUNEESH KUMAR
Semester Start & End Dates	27-01-2026 TO 27-05-2026

STUDY AND EVALUATION SCHEME

Sr. No.	Name of the Subject	Hours/Weeks			Total hours /week	credits	Internal Assessment			External Assessment					Total Mark
		L	P	DCS			Th.	Pr.	Total	Th.	Hrs.	Pr.	Hrs.	Total	
1	ENGINEERING MECHANICS	3	0	1	4	3	40	....	40	60	3	.....	....	60	100

Hours	Date	Topic Details	Assignments	Delivery Method
	Unit-1 : Basics of mechanics and force system			
13 hours	28/01 /2026 (L1)	Introductory session to Engineering Mechanics, Significance and relevance of Mechanics, Applied mechanics, Statics, Dynamics.		Chalk-Blackboard And Projecto
	29/01/2026 (L2)	Space, time, mass, particle, flexible body, and rigid body. Scalar and vector quantity, Units of measurement (SI units) - Fundamental units and derived units.		
	30/01 /2026 (L3)	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.		
	30/01/2026 (L4)	**Doubt Clearing Session (DCS) cum Revision Session-1**		
	04, 05/02/2026 (L5,L6)	Resolution of a force - Orthogonal components of a force, Numericals based on resolution of forces.		
	06/02/2026 (L7,L8)	Moment of a force, Varignon's Theorem. Numericals on Moment of force and varignon's Theorem.		
	11, 12/02/2026 (L9,L10)	Discussion on force systems and Composition of forces – Resultant, analytical method for determination of resultant for concur- rent, non-concurrent and parallel co-planar force systems.		
	13/02/2026 (L11)	**Doubt Clearing Session (DCS) and Revision Session-2**		
	13,18/02/2026 (L12,L13)	Law of triangle, parallelogram and polygon of forces.	Assignment-1 (A1)	
	Unit-2 : Equilibrium			
	19/02/2026 (L14)	Equilibrium and Equilibrant, Free body and Free body diagram, Analytical and graphical methods of analyzing equilibrium.		
	20/02/2026 (L15)	Lami's Theorem – statement and explanation, Application for various engineering problems. Numericals on Lami's Theorem.		

9 Hours	20/02/2026 (L16)	**Doubt Clearing Session (DCS) and Revision Session-3**	Submission of A1
	25/02/2026 (L17)	Types of beams, supports (simple, hinged, roller and fixed) and loads acting on beam (vertical point load, uniformly distributed load)	
	26/02/2026 (L18)	Beam reaction for cantilever, simply supported beam with or without overhang – subjected to combination of Point load and uniformly distributed load.	
	27/02/2026 (L19)	Beam reaction graphically for simply supported beam subjected to vertical point loads only.	
	27/02/2026 (L20)	**Doubt Clearing Session (DCS) and Revision session-4**	
	06/03/2026 (L21)	Numerical Session on Simply supported beam Subjected to Combination of point and UDL loading using analytical and graphical method.	
	06/03/2026 (L22)	Numerical Session on Cantilever beam Subjected to Combination of point and UDL loading using analytical and graphical method.	Assignment-2 (A2)
	Unit-3 : Friction		
10 hours	11/03/2026 (L23)	Friction and its relevance in engineering, types and laws of friction	
	CLASS TEST-1 ON 12/03/2026, TIME 1 HOUR		
	13/03/2026 (L24)	Limiting equilibrium, limiting friction, co-efficient of friction, angle of friction, angle of repose, relation between co-efficient of friction and angle of friction.	
	13/03/2026 (L25)	**Doubt Clearing Session and Revision Session-5**	Submission Of A2
	18/03/2026 (L26)	Numericals on friction i.e. Limiting friction, coefficient of friction etc.	
	19/03/2026 (L27)	Equilibrium of bodies on level surface subjected to force parallel and inclined to plane.	
	20/03/2026 (L28,L29)	Numericals	
	25/03/2026 (L30)	Equilibrium of bodies on inclined plane subjected to force parallel to the plane only.	
	27/03/2026 (L31,L32)	Numericals, **Doubt Clearing Session and Revision Session-6**	**Assignment-3 (A3)**
	Unit-4 : Centroid and centre of gravity		
14 Hours	01/04/2026 (L33)	Concept of Centroid and Center Of gravity- A concept talk	
	02/04/2026 (L33)	Methods Of determination of Centroid and center of Gravity	
	08/04/2026 (L34)	Centroid of geometrical plane figures (square, rectangle, triangle, circle, semi-circle, quarter circle).	
		CLASS TEST-2 ON 09/04/2026, TIME 1 HOUR	
	10/04/2026 (L35)	Centroid of geometrical plane figures (square, rectangle, triangle, circle, semi-circle, quarter circle).	
	16/04/2026 (L36)	**Doubt Clearing Session and Revision Session-7**	Submission of-A3
	17/04/2026 (L37)	Centroid of composite figures composed of not more than two geometrical figures.	
	17/04/2026 (L38)	Numericals on Centroid determination	
	22/04/2026 (L39)	Numericals on Centroid determination	
	23/04/2026 (L40)	Centre of Gravity of simple solids (Cube, cuboid, cone, cylinder, sphere, hemisphere)	
	24/04/2026 (L41)	Centre of Gravity of simple solids (Cube, cuboid, cone, cylinder, sphere, hemisphere)	
	24/04/2026 (L42)	**Doubt Clearing session and Revision Session-8**	

Chalk-Blackboard And Using digital media

Chalk-Blackboard And Using digital media

/2026 (L43)	Centre of Gravity of composite solids composed of not more than two simple solids.		
04/2025 05/2026 (L44, L45)	Numericals on Center of Gravity	Assignment-4	
Unit 5: Simple lifting machine			
08/05/2026 (L46)	Simple lifting machine, load, effort, mechanical advantage, applications, and advantages. Velocity ratio, efficiency of machines, law of machines.		Chalk-Blackboard And Using digital media
13/05/2026 (L47)	**Doubt Clearing Session and Revision Session-9**	Submission of A4	
14/05/2026 (L48)	Ideal machine, friction in machine, maximum Mechanical advantage and efficiency, Numericals		
15/05/2026 (L49)	Reversible and non-reversible machines, conditions for reversibility, Numericals		
15,20/05/2026 (L50,L51)	Velocity ratio of Simple axle and wheel, Numericals		
21,22/05/20256 (L52,L53)	Velocity ratio of Differential axle and wheel, Numericals		
22/05/2026 (L54,L55,L 56)	Velocity ratio of Worm and worm wheel, Numericals, Velocity Ratio of Simple screw jack, Numericals, **doubt Clearing Session and revision session-10**		

	Name of Book	Author Name	Publication
Prescribed Books	1. Engineering Mechanics	D.S. Bedi	Khanna Publications, New Delhi (2008)
	2. Applied Mechanics	Khurmi, R.S	S. Chand & Co. New Delhi
	3. A textbook of Engineering Mechanics	Bansal R K	Laxmi Publications
	4. Engineering Mechanics	Ramamrutham	S. Chand & Co. New Delhi

Faculty

HOD

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

CO1	Identify the force systems for given conditions by applying the basics of mechanics
CO2	Determine unknown force(s) of different engineering systems
CO3	Apply the principles of friction in various conditions for useful purposes.
CO4	Find the centroid and center of gravity of various components in engineering systems.
CO5	Select the relevant simple lifting machine(s) for given purposes.

Government Polytechnic PaontaSahib
Department of Electrical Engineering
Lesson Plan

Name of Faculty	Er. Vikas Kashyap
Discipline	Electrical Engineering
Semester	2nd
Subject	Fundamentals Of Electrical & Electronics Engineering (L-3,Ds-1, Hrs./Week)
Lesson Plan Duration	Jan. – May 2026

Week	Chapter	Topic to be covered
1st (27Jan. – 31 Jan.)	Unit – I Overview of Electronic Components & Signals	Passive Active Components: Resistances, Capacitors, Inductors, Diodes, Transistors, FET, MOS and CMOS and their Applications.
2nd (02Feb. – 07Feb.)	Unit – I Overview of Electronic Components & Signals	Signals: DC/AC, voltage/current, periodic/non- periodic signals, average, rms, peak values, different types of signal waveforms,
3rd (09Feb. – 13Feb.)	Unit – I Overview of Electronic Components & Signals	Ideal/non-ideal voltage/current sources, independent/dependent voltage current sources.
4th (16Feb. – 21Feb.)	Unit – II Overview of Analog Circuits:	Operational Amplifiers-Ideal Op-Amp,Practical op amp, Open loop and closed loop configurations,
5th (23Feb. – 29Feb.)	Unit – II Overview of Analog Circuits:	Application of Op-Amp as amplifier, adder, differentiator and integrator.
6th (02 Mar. – 07Mar.)	Unit – III Overview of Digital Electronics	Introduction to Boolean Algebra, Electronic Implementation of Boolean Operations, Gates-Functional Block Approach
7th (09Mar. – 13Mar.)	Unit– III Overview of Digital Electronics	Storage elements-Flip Flops-A Functional block approach
Class Test – 1		**In Second Week of March 2026.**
8th (16Mar. – 20Mar.)	Unit– III Overview of Digital Electronics	Counters: Ripple, Up/down and decade, Introduction to digital IC Gates (of T Type).
9th (23Mar. – 28 Mar.)	Unit– IV Electric and Magnetic Circuits	EMF, Current, Potential Difference, Power and Energy; M.M.F, magnetic for permeability, hysteresis loop, reluctance, leakage factor and BH curve
10th (30Mar. – 04Apr.)	Unit– IV Electric and Magnetic Circuits	Electromagnetic induction, Faraday's laws of electromagnetic induction, Len law; Dynamically induced emf; Statically induced emf;

11th (5Apr. – 0Apr.)	Unit– IV Electric and Magnetic Circuits	Equations ofself and mutual inductance; Analogy between electric and magnetic circuits.
Class Test – 2		**In Second Week of April 2026.**
12th (13Apr. – 15Apr)	Unit– V A.C. Circuits	Cycle, Frequency, Periodic time, Amplitude, Angular velocity,RMS value, Average value, Form Factor Peak Factor, impedance, phase angle, andpower factor; Mathematical and phasor representation of alternating emf and current;
13th (20Apr. – 25 Apr.)	Unit– V A.C. Circuits	Voltage and Current relationship in Star and Delta connections; A.C inresistors, inductors and capacitors; A.C in R-L series, R-C series, R-L-C series and parallel circuits; Power in A. C. Circuits, power triangle.
House Test		**In Second Week of May 2026.**
14th (11May. – 16 May.)	Unit– VI Transformer and Machines	General construction and principle of core and shell type of transformers; Emf equation and transformation ratio of transformers;
15th (18May-26May)	Unit– VI Transformer and Machines	Autotransformers; Basic principle of Electromechanical energy conversion.

- **NOTE:** Lesson Plan is Tentative, subject to availability of Time, Students & Faculty.

Prepared by
Er. Vikas Kashyap
Sr. Lecturer,EE

Signature of HOD

GOVERNMENT POLYTECHNIC PAONTA SAHIB
AT DHAULA KUAN, DISTT. SIRMOUR (HP) - 173031
APPLIED SCIENCES &HUMANITIES

LESSON PLAN

Academic Year	2026
Branch &Semester	Second Semester
Course Code	AU102
Course Name	Environmental Sciences Electrical Engineering
Course Type	Diploma
L-T-P	2-0-0
Name of Faculty	Deepa Tounwar
Semester Start & End Dates	27th Jan to 27th May

STUDY AND EVALUATION SCHEME

Sr. No.	Name of the Subject	Th	Pr	Internal Assessment			External Assessment					T M
				Th	Pr	Total	Th	Hrs	Pr	Hrs	Total	
8	Applied Chemistry	2	0	40	-	40	60	3	-	-	60	

Hours	Unit & Topic of Discussion	Topic Details	Re
	Unit-1		
6 HOURS	Ecosystem Structure of ecosystem	Biotic & Abiotic components	
		Types of Ecosystem Aquatic (Lentic and Lotic) and terrestrial ecosystem	
		Food chain and food web	
		Carbon, and Nitrogencycle	
		Sulphur and Phosphorus cycle	
		Global warming -Causes, effects, process,	

		Green House Effect, Ozone depletion	
	Unit-2		
5 HOURS	Air and, Noise Pollution	Definition of pollution and pollutant, Natural and manmade sources of air pollution (Refriger- ants, I.C., Boiler)	
		Air Pollutants: Types, Particulate Pollutants: Effects and control (Bag filter, Cyclone separator, Electrostatic Precipitator).	
		Gaseous Pollution Control: Absorber, Catalytic Converter, Effects of air pollution due to Refrigerants, I.C., Boiler.	
		Noise pollution: sources of pollution, measurement of pollution level,	
		Effects of Noise pollu-tion,	
		Noise pollution (Regulation and Control) Rules, 2000.	
	Unit-3		
5 HOURS	Water and Soil Pollution	Sources of water pollution, Types of water pollutants,	
		Characteristics of water pollutants Tur-bidity, pH, total suspended solids, total solids BOD and COD: Definition, calculation.	
		Waste Water Treatment: Primary methods: sedimentation, froth floatation	
		Waste Water Treatment: Secondary methods: Activated sludge treatment, Trickling filter, Bioreactor,	
		Waste Water Treatment: Tertiary Method: Membrane separation technology, RO (reverse osmosis).	
		Causes, Effects and Preventive measures of Soil Pollution	
		Causes-Excessive use of Fertilizers, Pesticides and Insecticides, Irrigation, E-Waste.	
	Unit-4		
5 HOURS	Renewable sources of Energy	Solar Energy: Basics of Solar energy. Flat plate collector (Liquid & Air). Theory of flat plate collector. 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. 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.	
		. 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.	
		Unit 5	
7 HOURS	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	
		. 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.	
		Concept of Carbon Credit, Carbon Footprint.	
		Environmental management in fabrication industry..	
		ISO14000: Implementation in industries, Benefits	

	Name of Book	Author Name	Publication
Prescribed Books	Environmental Studies	S.C. Sharma & M.P. Poonia	Khanna Publishing House,NewDelhi.
	Understanding Chemistry	C.N. R. Rao	Universities Press (India) Pvt. Ltd., 2011

Faculty

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GOVERNMENT POLYTECHNIC
PAONTA SAHIB
AT DHAULA KUAN, DISTT. SIRMOUR (HP) - 173031
DEPARTMENT NAME

LESSON PLAN

Academic Year	2026
Branch & Semester	Second Semester & ME
Course Code	BS102
Course Name	Mathematics -II
Course Type	Diploma
L-DCS	3-2
Name of Faculty	Sukanya kumari
Semester Start & End Dates	27th Jan to 24th May

STUDY AND EVALUATION SCHEME

Sr. No.	Name of the Subject	Th	Pr	Internal Assessment			External Assessment					Total Marks
				Th	Pr	Total	Th	Hrs	Pr	Hrs	Total	
1	Mathematics -II	5	0	40	-	40	60	3	-		60	100

Hours	Unit & Topic of Discussion	Topic Details	Remarks
	Unit-1		

14 HOURS	Determinants and Matrices	Elementary properties of determinants up to 3rd order,	
		consistency of equations	
		Crammer's rule.	
		Algebra of matrices	
		, matrix inverse method to solve a system of linear equations in 3 variables.	
	Unit-2		
25 HOURS	Integral Calculus	Calculus Integration as inverse operation of differentiation.	
		Simple integration by substitution	
		Simple integration by parts	
		Simple integration by partial fractions (for linear factors only).	
		Use of formulae for solving problems where m and n are positive integers	
		Applications of integration	
		Simple problem on evaluation of area bounded by a curve and axes.	
		ii.) Calculation of Volume of a solid formed by revolution of an area about axes. (Simple problems).	
	Unit-3		
23 HOURS	Co-Ordinate Geometry	Equation of straight line in various standard forms (without proof)	
		inter section of two straight lines	
		angle between two lines	
		Parallel and perpendicular lines,	
		perpendicular distance formula	
		General equation of a circle and its characteristics.	
		To find the equation of a circle, given: i. Centre and radius,	

		ii. Three points lying on it	
		iii. Coordinates of end points of a diameter;	
		Definition of conics (Parabola, Ellipse, Hyperbola) their standard equations without proof	
		Problems on conics when their foci, directrices or vertices are given.	
		Unit-3	
8 HOURS	Differential Equations	Solution of first order and first degree differential equation by variable separable method (simple problems).	

	Name of Book	Author Name	Publication
Prescribed Books	Higher Engineering Mathematics	B.S.Grewal	Khanna publications
	Engineering Mathematics	Reena Garg	Khanna publications

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GOVERNMENT POLYTECHNIC PAONTA SAHIB
AT DHAULA KUAN, DISTT. SIRMOUR (HP) - 173031
DEPARTMENT NAME
LESSON PLAN

Academic Year	2025-2026
Semester	Second Comman to all
Course Code	BS 104
Course Name	Applied Physics-II
Course Type	Diploma in Engineering
L-T-P	3+1 Hrs
Name of Faculty	Sachin Parteek Sharma
Semester Start & End Dates	27.01.2026-27.05.2026

STUDY AND EVALUATION SCHEME

Sr. No.	Name of the Subject	Th	Pr	Internal Assessment			External Assessment					Total Marks
				Th	Pr	Total	Th	Hrs	Pr	Hrs	Total	
1	Applied Physics-II	04	02	40		40	60	3		3	100	100

Lecture No.	Unit & Topic of Discussion	Topic Details	Delivery Method
Unit- 1 Wave Motion & its Applications			
1	Wave Motion	Transverse & Longitudnal	Chalk and Talk
2	Wave Motion	Examples	Chalk and Talk
3	Wave Motion	Wave Velocity & Frequency Relation	Chalk and Talk
4	Wave Motion	Principle of Superposition	Chalk and Talk
5	Simple Harmonic Motion	Definition & Expression for displacement	Chalk and Talk
6	SHM	Expression for Velocity & Acceleration	Chalk and Talk
7	SHM	Frequency & Time Period	Chalk and Talk
8	Free Forced & Resonant Vibrations	Difference with examples	Chalk and Talk
9	Acoustics of buildings	Reverberations & their time	Chalk and Talk
10	Acoustics of buildings	Methods to control reverberations	Chalk and Talk
11	Ultra sonic Waves	Introduction & Properties	
12	Ultra sonic Waves	Engineering & Medical Applications	Chalk and Talk
13	Numericals of Waves & Vibrations	Displacement & Velocity	Chalk and Talk
Unit-2 OPTICS			

14	Optical Laws	Reflection & Refraction	Chalk and Talk
15	Refractive Index	Expression	Chalk and Talk
16	Lenses	Formation of Image, Lens formula	Chalk and Talk
17	Power of lens & Magnification	Expression	Chalk and Talk
18	Applications of circular motion	cycling	Chalk and Talk
19	Total Internal Reflection	Critical Angle	
20	TIR	Applications	Chalk and Talk
21	Optical Instruments	Simple Microscope	Chalk and Talk
22	Optical Instruments	Compound Microscope	
23	Optical Instruments	Telescope	Chalk and Talk
24	Revision of Optics	All topics	Chalk and Talk
Unit- 3rd Elecrostatics			
25	Coulombs law & Electric charge	Expression	Chalk and Talk
26	Electric Field & Electric lines of force	properties	Chalk and Talk
27	Electric Flux & Electric potential	properties	Chalk and Talk
28	Gausses Law	Expressions	
29	Capacitance & Capacitor	Definition & Units	Chalk and Talk
30	Capacitance of parallel plate capacitor	Expression	Chalk and Talk
31	Series & Parallel combination	Expression	Chalk and Talk
32	Class Test-I	Class Test-I	Chalk and Talk
33	Numerical related to combination of capacitors	Numericals	Chalk and Talk
34	Dielectric & its effect on capacitance	Dielectric breakdown	Chalk and Talk
Unit- 4th Current Electricity			
35	Elecric current & its units	Dc & ac Statements	Chalk and Talk
36	Resistance	Specific resistance & conductance	Chalk and Talk
37	Series & parallel combination of resistances	Expressions	Chalk and Talk
38	Factors affecting resistance	Carbon coding	Chalk and Talk
39	Ohms Law	verification	Chalk and Talk
40	Kirchhoff's law	Definitions	Chalk and Talk
41	Concept of terminal potential difference	emf	Chalk and Talk
42	Heating effects of current	definitions	Chalk and Talk
43	Electric power & electric energy	Definitions	Chalk and Talk
44	Numericals based on heating effects of current	Numerical	Chalk and Talk
45	Advantages of electric energy into other forms of energy	advantages	Chalk and Talk
46	Class Test-II	Class Test-II	Chalk and Talk
47	Revision of current & Electricity	Definition	Chalk and Talk
Unit- 5th Electromagnetism			
48	Magnetic Materials	Dia Para & Ferromagnetic materials with propeties	Chalk and Talk
49	Magnetic field & units	Magnetic lines of force	Chalk and Talk
50	Lorentz force force on current carrying conductor	Definition & expression	Chalk and Talk
51	Moving coil galvanometer	Construction working & conversion	Chalk and Talk
Unit;- 6th Semiconductor Physics			
52	Energy Bands	Intrinsic & extrinsic S/C	Chalk and Talk
53	PN Junction diode	Characteristics	Chalk and Talk

54	Rectifiers	Photocells	Chalk and Talk
Unit-; 7th	Modern Physics		
55	LASER	Chracterstics & Properties	Chalk and Talk
56	Energy levels	Definitions	Chalk and Talk
57	RUBY & HE-Ne Laser	Details	Chalk and Talk
58	Fiber optics	Apllications	Chalk and Talk
59	Fiber optics	Types of fibre optics	Chalk and Talk

	Name of Book	Author Name	Publication
Prescribed Books	Concepts of Physics	HC Verma	Mc-Graw Hill
	Applied Physics -II	R A Banwat	Eagle Publication
	Applied Physics -II	Amit Pathak	Tru- Edu
	Optics	By R. Thangarajan	Pearsons

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Government Polytechnic Paontasahib at Dhaulakuan,Distt. Sirmour H.P.

Department of Electrical Engineering

Lesson Plan

Name of Faculty	Er. Nikon Pathania
Discipline	Mechanical Engineering
Semester	2nd
Subject	Fundamentals Of Electrical & Electronics Engineering (L-3,Ds-1, Hrs./Week)
Lesson Plan Duration	Jan. – May 2026

Week	Chapter	Topic to be covered
1st (27Jan. – 31 Jan.)	Unit – I Overview of Electronic Components & Signals	Passive Active Components: Resistances, Capacitors, Inductors, Diodes, Transistors, FET, MOS and CMOS and their Applications.
2nd (02Feb. – 07Feb.)	Unit – I Overview of Electronic Components & Signals	Signals: DC/AC, voltage/current, periodic/non- periodic signals, average, rms, peak values, different types of signal waveforms,
3rd (09Feb. – 13Feb.)	Unit – I Overview of Electronic Components & Signals	Ideal/non-ideal voltage/current sources, independent/dependent voltage current sources.
4th (16Feb. – 21Feb.)	Unit – II Overview of Analog Circuits:	Operational Amplifiers-Ideal Op-Amp,Practical op amp, Open loop and closed loop configurations,
5th (23Feb. – 29Feb.)	Unit – II Overview of Analog Circuits:	Application of Op-Amp as amplifier, adder, differentiator and integrator.
6th (02 Mar. – 07Mar.)	Unit – III Overview of Digital Electronics	Introduction to Boolean Algebra, Electronic Implementation of Boolean Operations, Gates-Functional Block Approach
7th (09Mar. – 13Mar.)	Unit– III Overview of Digital Electronics	Storage elements-Flip Flops-A Functional block approach
Class Test – 1		**In Second Week of March 2026.**
8th (16Mar. – 20Mar.)	Unit– III Overview of Digital Electronics	Counters: Ripple, Up/down and decade, Introduction to digital IC Gates (of TTL Type).
9th (23Mar. – 28 Mar.)	Unit– IV Electric and Magnetic Circuits	EMF, Current, Potential Difference, Power and Energy; M.M.F, magnetic force, permeability, hysteresis loop, reluctance, leakage factor and BH curve
10th (30Mar. – 04Apr.)	Unit– IV Electric and Magnetic Circuits	Electromagnetic induction, Faraday's laws of electromagnetic induction, Lenz's law; Dynamically induced emf; Statically induced emf;
11th (06Apr. – 10Apr.)	Unit– IV Electric and Magnetic Circuits	Equations ofself and mutual inductance; Analogy between electric and magnetic circuits.
Class Test – 2		**In Second Week of April 2026.**

12th (13Apr. – 15Apr)	Unit– V A.C. Circuits	Cycle, Frequency, Periodic time, Amplitude, Angular velocity,RMS value, Average value, Form Factor Peak Factor, impedance, phase angle, andpower factor; Mathematical and phasor representation of alternating emf and current;
13th (20Apr. – 25 Apr.)	Unit– V A.C. Circuits	Voltage and Current relationship in Star and Delta connections; A.C inresistors, inductors and capacitors; A.C in R-L series, R-C series, R-L-C series and parallel circuits; Power in A. C. Circuits, power triangle.
House Test		**In Second Week of May 2026.**
14th (11May. – 16 May.)	Unit– VI Transformer and Machines	General construction and principle of core and shell type of transformers; Emf equation and transformation ratio of transformers;
15th (18May- 26May)	Unit– VI Transformer and Machines	Autotransformers; Basic principle of Electromechanical energy conversion.

- **NOTE:** Lesson Plan is Tentative, subject to availability of Time, Students & Faculty.

Prepared by
(Er. Nikon Pathania)

Signature of HOD

GOVERNMENT POLYTECHNIC PAONTA SAHIB

AT DHAULA KUAN, DISTT. SIRMOUR (HP) - 173031
DEPARTMENT OF MECHANICAL ENGINEERING

LESSON PLAN

Academic Year	JAN 2025-JUNE2026
Semester	SECOND
Course Code	ES106
Course Name	ENGINEERING MECHANICS
Course Type	ENGINEERING SCIENCE
Class	MECHANICAL ENGINEERING
L-P-DCS	3-0-1
Name of Faculty	SANJEEV SHARMA
Semester Start & End Dates	27-01-2026 TO 29-05-2026

STUDY AND EVALUATION SCHEME

Sr. No.	Name of the Subject	Hours/Weeks			Total hours /week	credits	Internal Assessment			External Assessment					Total Marks
		L	P	DCS			Th.	Pr.	Total	Th.	Hrs.	Pr.	Hrs.	Total	
1	ENGINEERING MECHANICS	3	0	1	4	3	40	....	40	60	3	....	....	60	100

Hours	Topic Details	Assignments	Delivery Method
Unit-1 : Basics of mechanics and force system			
1Hr	Introductory session to Engineering Mechanics, Significance and relevance of Mechanics, Applied mechanics, Statics, Dynamics.		Chalk-Blackboard And Projector
1Hr	Space, time, mass, particle, flexible body, and rigid body. Scalar and vector quantity		
1Hr	Units of measurement (SI units) - Fundamental units and derived units.		
1Hr	Force – unit, representation as a vector and by Bow's notation, characteristics and effects of a force,		
1Hr	Principle of transmissibility of force, Force system and its classification.		
1Hr	Resolution of a force - Orthogonal components of a force, Numericals based on resolution of forces.		
1Hr	Moment of a force, Varignon's Theorem.		
1Hr	Numericals on Moment of force and varignon's Theorem.		
1Hr	Discussion on force systems and Composition of forces – Resultant, analytical method for determination of resultant for concur- rent force systems		
1Hr	Resultant, analytical method for determination of resultant for non-concurrent force systems		
1Hr	Resultant, analytical method for determination of resultant for parallel co-planar force systems		

1Hr	Law of triangle, parallelogram and polygon of forces.	
Unit-2 : Equilibrium		
1Hr	Equilibrium and Equilibrant, Free body and Free body diagram,	
1Hr	Analytical and graphical methods of analyzing equilibrium.	
1Hr	Lami's Theorem – statement and explanation, Application for various engineering problems.	Submission of A1
1Hr	Numericals on Lami's Theorem.	
1Hr	Types of beams, supports (simple, hinged, roller and fixed) and loads acting on beam (vertical point load, uniformly distributed load)	
1Hr	Beam reaction for cantilever, simply supported beam with or without overhang – subjected to combination of Point load	
1Hr	Beam reaction for cantilever, simply supported beam with or without overhang – subjected to uniformly distributed load.	
1Hr	Beam reaction graphically for simply supported beam subjected to vertical point loads only.	
1Hr	Simply supported beam Subjected to Combination of point and UDL load	
1Hr	Numerical Session on Simply supported beam Subjected to Combination of point and UDL loading using analytical and graphical method.	
1Hr	Numerical Session on Cantilever beam Subjected to Combination of point and UDL loading using analytical and graphical method.	Assignment-2 (A2)
Unit-3 : Friction		
1Hr	Friction and its relevance in engineering, types	
1Hr	laws of friction	
1Hr	Limiting equilibrium, limiting friction,	Submission Of A2
1Hr	co-efficient of friction, angle of friction, angle of repose	
1Hr	Relation between co-efficient of friction and angle of friction.	
1Hr	Numericals on friction i.e. Limiting friction, coefficient of friction etc.	
1Hr	Equilibrium of bodies on level surface subjected to force parallel and inclined to plane.	
1Hr	Numericals	
1Hr	Equilibrium of bodies on inclined plane subjected to force parallel to the plane only.	
1Hr	Numericals	
Unit-4 : Centroid and centre of gravity		**Assignment-3 (A3)**

	Centroid and center of Gravity		Chalk-Blackboard And Using digital media
	Centroid of geometrical plane figures (square, rectangle)		
	Centroid of geometrical plane figures (triangle,)		
	Centroid of geometrical plane figures (semi-circle, quarter circle).	Submission of-A3	
	Centroid of composite figures composed of not more than two geometrical figures		
	Numericals on Centroid determination		
	Numericals on Centroid determination		
Hr	Centre of Gravity of simple solids (Cube, cuboid)		
Hr	Centre of Gravity of simple solids (cone, cylinder, sphere, hemisphere)		
Hr	Centre of Gravity of composite solids composed of not more than two simple solids.		
Hr	Numericals on Center of Gravity	Assignment-4	
	Unit 5:Simple lifting machine		
Hr	Simple lifting machine, load, effort		Chalk-Blackboard And Using digital media
Hr	Mechanical advantage, applications, and advantages.		
Hr	Velocity ratio, efficiency of machines, law of machines.		
Hr	Ideal machine, friction in machine,	Submission of A4	
Hr	Maximum Mechanical advantage and efficiency, Numericals		
Hr	Reversible and non-reversible machines,		
Hr	conditions for reversibility, Numericals		
Hr	Velocity ratio of Simple axle and wheel, Numericals		
Hr	Velocity ratio of Differential axle and wheel, Numericals		
Hr	Velocity ratio of Worm and worm wheel, Numericals		
Hr	Velocity Ratio of Simple screw jack, Numericals	Assignment-5 Submission after 4 days	

	Name of Book	Author Name	Publication
Prescribed Books	1. Engineering Mechanics	D.S. Bedi	Khanna Publications, New Delhi (2008)
	2. Applied Mechanics	Khurmi, R.S	S. Chand & Co. New Delhi
	3. A textbook of Engineering Mechanics	Bansal R K	Laxmi Publications
	4. Engineering Mechanics	Ramamrutham	S. Chand & Co. New Delhi

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GOVERNMENT POLYTECHNIC PAONTA SAHIB
AT DHAULA KUAN, DISTT. SIRMOUR (HP) - 173031
APPLIED SCIENCES &HUMANITIES

LESSON PLAN

Academic Year	2026
Branch &Semester	Second Semester
Course Code	AU102
Course Name	Environmental Sciences Mechanical Engineering
Course Type	Diploma
L-T-P	2-0-0
Name of Faculty	Deepa Tounwar
Semester Start & End Dates	27th Jan to 27th May

STUDY AND EVALUATION SCHEME

Sr. No.	Name of the Subject	Th	Pr	Internal Assessment			External Assessment					Total Marks
				Th	Pr	Total	Th	Hrs	Pr	Hrs	Total	
8	Applied Chemistry	2	0	40	-	40	60	3	-	-	60	100

Hours	Unit & Topic of Discussion	Topic Details	Remarks
		Unit-1	
6 HOURS	Ecosystem Structure of ecosystem	Biotic & Abiotic components	
		Types of Ecosystem Aquatic (Lentic and Lotic) and terrestrial ecosystem	
		Food chain and food web	
		Carbon, and Nitrogencycle	
		Sulphur and Phosphorus cycle	
		Global warming -Causes, effects, process,	

		Green House Effect, Ozone depletion	
		Unit-2	
5 HOURS	Air and, Noise Pollution	Definition of pollution and pollutant, Natural and manmade sources of air pollution (Refriger- ants, I.C., Boiler)	
		Air Pollutants: Types, Particulate Pollutants: Effects and control (Bag filter, Cyclone separator, Electrostatic Precipitator).	
		Gaseous Pollution Control: Absorber, Catalytic Converter, Effects of air pollution due to Refrigerants, I.C., Boiler.	
		Noise pollution: sources of pollution, measurement of pollution level,	
		Effects of Noise pollu-tion,	
		Noise pollution (Regulation and Control) Rules, 2000.	
		Unit-3	
5 HOURS	Water and Soil Pollution	Sources of water pollution, Types of water pollutants,	
		Characteristics of water pollutants Tur-bidity, pH, total suspended solids, total solids BOD and COD: Definition, calculation.	
		Waste Water Treatment: Primary methods: sedimentation, froth floatation	
		Waste Water Treatment: Secondary methods: Activated sludge treatment, Trickling filter, Bioreactor,	
		Waste Water Treatment: Tertiary Method: Membrane separation technology, RO (reverse osmosis).	
		Causes, Effects and Preventive measures of Soil Pollution	
		Causes-Excessive use of Fertilizers, Pesticides and Insecticides, Irrigation, E-Waste.	
		Unit-4	
5 HOURS	Renewable sources of Energy	Solar Energy: Basics of Solar energy. Flat plate collector (Liquid & Air). Theory of flat plate collector. 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. 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.	
		. 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.	
	Unit 5		
7 HOURS	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	
		. 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.	
		Concept of Carbon Credit, Carbon Footprint.	
		Environmental management in fabrication industry..	
		ISO14000: Implementation in industries, Benefits	

	Name of Book	Author Name	Publication
Prescribed Books	Environmental Studies	S.C. Sharma & M.P. Poonia	Khanna Publishing House,NewDelhi.
	Understanding Chemistry	C.N. R. Rao	Universities Press (India) Pvt. Ltd., 2011

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