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

<u>LESSON PLAN</u>

Academic Year	2025
Branch & Semester	Second Semester Common to All
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 29th May
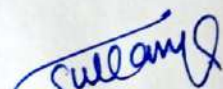
STUDY AND EVALUATION SCHEME

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.	
		ASSIGNMENT–I	
		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	CLASS TEST- I
		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).	
		ASSIGNMENT – II	
		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,	CLASS TEST- II

		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.	HOUSE TEST
		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

Faculty

(Sukanya Kumari)

HOD

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

Academic Year	2024-25
Semester	Second Common 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	27/01/2025-29/05/2025

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

Lect. No.	Unit & Topic of Discussion	Topic Details	Delivery Method
Unit- 1 Wave Motion & its Applications			
1	Wave Motion	Transverse & Longitudinal	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	Numerical of Waves & Vibrations	Displacement & Velocity	Chalk and Talk
Unit-2 OPTICS			

13	Optical Laws	Reflection & Refraction	Chalk and Talk
14	Refractive Index	Expression	Chalk and Talk
15	Lenses	Formation of Image, Lens formula	Chalk and Talk
16	Power of lens & Magnification	Expression	Chalk and Talk
17	Applications of circular motion	cycling	Chalk and Talk
18	Total Internal Reflection	Critical Angle	
19	TIR	Applications	Chalk and Talk
20	Optical Instruments	Simple Microscope	Chalk and Talk
21	Optical Instruments	Compound Microscope	
22	Optical Instruments	Telescope	Chalk and Talk
23	Revision of Optics	All topics	Chalk and Talk

Unit- 3rd Elecrostatics

24	Coulombs law & Electric charge	Expression	Chalk and Talk
25	Electric Field & Electric lines of force	properties	Chalk and Talk
26	Electric Flux & Electric potential	properties	Chalk and Talk
27	Gausses Law	Expressions	
28	Capacitance & Capacitor	Definition & Units	Chalk and Talk
29	Capacitance of parallel plate capacitor	Expression	Chalk and Talk
30	Series & Parallel combination	Expression	Chalk and Talk
31	Class Test-I	Class Test-I	Chalk and Talk
32	Numerical related to combination of capacitors	Numericals	Chalk and Talk
33	Dielectric & its effect on capacitance	Dielectric breakdown	Chalk and Talk

Unit- 4th Current Electricity

34	Electric current & its units	Dc & ac Statements	Chalk and Talk
35	Resistance	Specific resistance & conductance	Chalk and Talk
36	Series & parallel combination of resistances	Expressions	Chalk and Talk
	Factors affecting resistance	Carbon coding	Chalk and Talk
37	Ohms Law	verification	Chalk and Talk
38	Kirchhoff's law	Definitions	Chalk and Talk
39	Concept of terminal potential difference	emf	Chalk and Talk
40	Heating effects of current	definitions	Chalk and Talk
	Electric power & electric energy	Definitions	Chalk and Talk
41	Numericals based on heating effects of current	Numerical	Chalk and Talk
42	Advantages of electric energy into other forms of energy	advantages	Chalk and Talk
43	Class Test-II	Class Test-II	Chalk and Talk
44	Revision of current & Electricity	Definition	Chalk and Talk

Unit- 5th Electromagnetism

45	Magnetic Materials	Dia Para & Ferromagnetic materials with propeties	Chalk and Talk
	Magnetic field & units	Magnetic lines of force	Chalk and Talk
46	Lorentz force force on current carrying conductor	Definition & expression	Chalk and Talk
47	Moving coil galvanometer	Construction working & conversion	Chalk and Talk

Unit;- 6th Semiconductor Physics

48	Energy Bands	Intrinsic & extrinsic S/C	Chalk and Talk
49	PN Junction diode	Characteristics	Chalk and Talk

50	Rectifiers	Photocells	Chalk and Talk

Unit-; 7th Modern Physics

51	LASER	Chracterstics & Properties	Chalk and Talk
52	Energy levels	Definitions	Chalk and Talk
53	RUBY & HE-Ne Laser	Details	Chalk and Talk
54	Fiber optics	Apllications	Chalk and Talk
55	Fiber optics	Types of fibre optics	Chalk and Talk
56	Revision	Revision	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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Sachin Parteek Sharma

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<u>LESSON PLAN</u>

Academic Year	2025
Branch &Semester	Second Semester Common to all
Course Code	AU102
Course Name	Environmental Sciences
Course Type	Diploma
L-T-P	2-0-0
Name of Faculty	Deepa Tounwar
Semester Start & End Dates	27th Jan to 29th 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 Assignment I ,	ASSIGNMENT I

		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.	CLASS TEST I
		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 poliutants,	
		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).	ASSIGNMENT II
		Causes, Effects and Preventive measures of Soil Pollution	
		Causes-Excessive use of Fertilizers, Pesticides and Insecticides, Irrigation, E-Waste.	CLASS TEST II
		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.	HOUSE TEST
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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