



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

LESSON PLAN

Academic Year	2026
Branch & Semester	First Semester
Course Code	BS106
Course Name	Applied Chemistry
Course Type	Diploma
L-T-P	3-0-0
Name of Faculty	Deepa Tounwar
Semester Start & End Dates	1 st Aug to 28 th November

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 Chemistry	3	0	50	-	50	100	3	-	-	100	150

Lecture No.	Unit & Topic of Discussion	Topic Details	Delivery Method	Remarks
Unit-1 ATOMIC STRUCTURE AND CHEMICAL BONDING				
Lecture 1	Fundamental Particles of atoms	Electron, proton, neutron (definition only), atomic number, atomic mass number, isotopes, isobars and isotones	Chalk and Talk	
Lecture 2	Bohr's Model of an atom	Postulates, successes and limitations	Chalk and Talk	
Lecture 3	Concept of orbitals	orbital concept, difference between orbit and orbitals	Chalk and Talk	
Lecture 4	quantum Numbers	Significance of quantum Numbers	Chalk and Talk	
Lecture 5	Electronic Configuration	Pauli's exclusion principle, Hund's rule of maximum multiplicity Aufbau rule, electronic configuration of elements with atomic number (Z) 1 to 30 only	Chalk and Talk	
Lecture 6	Chemical bonding	cause of chemical bonding	Chalk and Talk	
Lecture 7	Types of Bond	Ionic bonding (NaCl example)	Chalk and Talk	
Lecture 8	Types of Bond	Covalent bond (H ₂ , O ₂ , N ₂).	Chalk and Talk	
Lecture 9	Types of Bond	difference between sigma and pi (π) bond.	Chalk and Talk	

Unit-2 SOLUTIONS AND WATER				
Lecture 10	Solution	Definition of Solution, Solute and Solvent with examples	Chalk and Talk	
Lecture 11	Solution	Methods to express the concentration of solutions - Molarity, Molality and Normality (Numerical excluded)	Chalk and Talk	
Lecture 12	Solution	pH of solution, industrial applications of pH solution	Chalk and Talk	
Lecture 13	Solution	Definition of buffer solution and industrial applications of buffer solution	Chalk and Talk	
Lecture 14	Water	Definition of soft and hard water	Chalk and Talk	
Lecture 15	Water	Types of hardness, Units of hardness (mg/ltr and ppm), and simple numerical based on hardness	Chalk and Talk	
Lecture 16	Disadvantages of hard water	Disadvantages caused by use of hard water in domestic and industrial use	Chalk and Talk	
Lecture 17	Removal of hardness	permutit process	Chalk and Talk	
Lecture 18	Drinking water	Characteristics of drinking water.	Chalk and Talk	
Unit-3 ELECTROCHEMISTRY AND CORROSION				
Lecture 19,20	Electrochemistry	Electronic concept of Oxidation, reduction and redox reactions. Definition of terms: electrolytes, non-electrolytes with suitable examples.	Chalk and Talk	
Lecture 21,22	Electrolysis	Faradays First and Second laws of electrolysis and simple numerical problems	Chalk and Talk	
Lecture 23,24	Applications of electrolysis	• Electrometallurgy • Electroplating • Electrolytic refining	Chalk and Talk	
Lecture 25	Corrosion	Definition of Corrosion	Chalk and Talk	
Lecture 26	Internal corrosion preventive measure	Purification, alloying and heat treatment	Chalk and Talk	
Lecture 27	External corrosion preventive measure	Metallic coatings (anodic and cathodic)	Chalk and Talk	
Unit-4 ENGINEERING MATERIALS AND POLYMERS				
Lecture 28	Nature of Occurance of metals	Minerals, ore, ores of iron, aluminium, gangue (matrix), flux,	Chalk and Talk	
Lecture 29	Metallurgy	Pyrometallurgy, electrometallurgy, hydrometallurgy	Chalk and Talk	
Lecture 30	A brief account of general principles of metallurgy	(a).Crushing and grinding(b) Concentration of ore (Froth flotation)	Chalk and Talk	
Lecture 31	Extraction of metal and Refining	Roasting, Calcination & Smelting, Electro refining	Chalk and Talk	
Lecture 32	Extraction of iron	Extraction of iron from haematite ore using blast furnace in brief along with diagram.	Chalk and Talk	
Lecture 33	Alloys	definition, ferrous alloys and non ferrous alloys, purposes of making alloying	Chalk and Talk	
Lecture 34	Non-ferrous Alloys (properties and applications)	Simple Brass & Bronze, Nichrome, Duralumin, Magnesium with suitable examples,	Chalk and Talk	
Lecture	Polymer	Definition of Polymer, Monomer, Degree of	Chalk and	

35				
Lecture 36	Polymer	Polymerization	name of monomer and simple reaction involved in preparation of Polythene, PVC, PTFE, PS and Nylon-6,6 only.	Talk Chalk and Talk
Lecture 37	Fuel	Unit-4 CHEMISTRY OF FUELS AND LUBRICANTS		
Lecture 38	Characteristics of fuels	Definition of fuel and classification of fuel	Characteristics of good fuels	Chalk and Talk Chalk and Talk
Lecture 39	Calorific Value	calculation of HCV and LCV using Dulong's formula.		Chalk and Talk
Lecture 40	Fuel rating	octane and cetane numbers		Chalk and Talk
Lecture 41	Gaseous fuels: Water gas	Calorific value application and diagram of water gas		Chalk and Talk
Lecture 42	Producer gas & Biogas	Calorific value application and diagram of producer gas and biogas		Chalk and Talk
Lecture 43	Lubricants	Definition of lubricant, Function of good lubricant		Chalk and Talk
Lecture 44	Physical Properties of Lubricant	viscosity and viscosity index, flash and fire point		Chalk and Talk
Lecture 45	Chemical Properties of Lubricant	Total acid number, saponification value		Chalk and Talk

	Name of Book	Author Name	Publication
Prescribed Books	Engineering Chemistry	Jain & Jain	Dhanpat Rai and Sons New Delhi
	Engineering Chemistry	Agarwal Shikha	Cambridge Press, New Delhi
	Understanding Chemistry	C.N.R. Rao	University Press(India) Pvt. Ltd

Deepa
Faculty

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

Academic Year	AUG - DEC 2026
Semester	First
Course Code	BS103
Course Name	Applied Physics-I
Course Type	Diploma Course in Engineering
L-T-P	3-0-0
Name of Faculty	SACHIN PARTEEK SHARMA
Semester Start & End Dates	01-08-2026

STUDY AND EVALUATION SCHEME

Sr. No.	Name of the Subject	Th	DCS	Pr	Internal Assessment			External Assessment					Total Marks
					Th.	Pr	Total	Th.	Hrs.	Pr	Hrs.	Total	
1	APPLIED PHYSICS-i	3	0	0	50	0	50	100	3	0	3	100	150

Hour s	Unit & Topic of Discussion	Topic Details	Delivery Method
	Unit1: Units & Dimensions		Chalk & Blackboa rd And Projector
1	Physical Quantities		
2	System of units		
3	SI Units of Physical Quantities		
4	Dimensional Analysis		
5	Principle of Homogeinity		
6	Applications of Dimensional analysis		
7	Error		Chalk & Blackboa rd And
8	Types of error		
9	Revision of the Physical quantities		
	Units-II Force & Motion		
10	Scalars & Vectors		
11	Representation of a vector		
12	Types of vectors		

13	Linear Momentum and law of conservation of Linear momentum	Projector
14	Circular Motion	Chalk & Blackboard And Projector
15	Relation between angular velocity & Linear velocity	
16	Torque	
17	Angular Momentum & applications	
18	Moment of Inertia	
19	MOI Physical Significance	Chalk & Blackboard And Projector
	Unit-III Work, Power & Energy	
20	Work and Types of work	
21	Energy and types of energies	
22	Examples of Transformation of energy	
23	Derivation of KE & PE	Chalk & Blackboard And Projector
24	Mechanical Energy and Law of Conservation	
25	Power	
26	Numerical based on Power	
27	Revision of Work and related topics	
28	Revision of Numericals	
	Unit-IV Properties of Matter	
29	Elasticity & Plasticity	
30	Stress & Strain	
31	Types of Stress & Strain	
32	Hook's Law	
33	Modulus of Elasticity	
34	Pressure	
35	Types of pressure	
36	Revision of Properties of matter	
	Unit-V Heat & Temperature	Chalk & Talk
37	Heat and Temperature on the basis of Kinetic Theory	
38	Difference between heat & temperature	
39	Modes of transfer of heat	
40	Examples of Modes of transfer of heat	
41	Scales of temperature	
42	Relation between different scales of tem	
43	Conversion of one scale into another	
44	Numerical based on scales of temperature	
45	Revision of Heat & Temperature	

	Name of Book	Author Name	Publication
Prescribe	Text Book of Physics class XI	NCERT	NCERT

d Books	Concepts of Physics	HC VERMA	Bharti Bhavan Publication
	Applied Physics-I	Manoj Kumar	True Edu

Signature of Subject Incharge

Sachin Pardeep Sharma

Signature of Head of Department

Dr. Shalini Thakur



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

LESSON PLAN

Academic Year	2026-2027
Semester	I st Semester
Course Code	ES102
Course Name	Basics of Electrical & Electronics Engg.
Course Type	Diploma in Engineering
Lectures per week	3 Hrs
Name of Faculty	Kislaye Sharma
Semester Start & End Dates	1/8/2026-28/11/2026

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	Basics of Electrical & Electronics Engg	03		50	-	50	100	3	-	-	100	150

Sr No.	Period Nos	Topic	Details	Instruction Reference	Additional Study Recommended	Remarks
1.	10 (1-10)	Electrical Fundamentals	Electrical quantities (Definitions & S.I. Units): Charge, Current, Voltage, E.M.F., Power, Energy. Electrical circuit elements: Resistor, inductor, capacitor. Ohms law, combination of resistances in series and parallel, Factors affecting resistance and concept of resistivity. Kirchhoff's Voltage Law (KVL) and Kirchhoff's Current Law (KCL), Voltage and current divider rules.	ABC of Electrical Engineering, B.L. Theraja and A.K. Theraja – S. Chand Publishers	Basic Electric Engineering, DP Kothari and Nagrath - Tata McGraw Hill.	
2.	8 (11-18)	Electromagnetism and Magnetic Circuits	Basic concepts of magnetism (Definitions & S.I. Units): magnetic flux, flux density, magnetic field intensity, permeability, reluctance. Faraday's	do.....	do.....	

3.	9 (19-27)	Electrical Energy: Advantages & Applications	laws of electromagnetic induction and Lenz's law, Analogy between electric and magnetic circuits. Difference between AC and DC supply. Various domestic, commercial, and industrial applications of electrical energy. Advantages of electrical energy over other forms of energy. Earthing (Definition), Equipment Earthing, purpose of Earthing. Batteries: Various types of batteries, their comparisons & applications, Grouping of cells in series and parallel.	do.....	do.....
4.	9 (28-36)	Introduction to Semiconductors Technology	Introduction to semi-conducting materials, Doping, Intrinsic and extrinsic semiconductors. PN junction diode: PN junction formation, depletion region, potential barrier, forward and reverse biasing, knee voltage, reverse breakdown voltage, V-I characteristics & its applications. LEDs and Applications of LEDs.	do.....	do.....
5.	9 (37-45)	Basic of Digital Electronics	Number systems: Binary, Decimal, Hexadecimal & Octal. Base conversions of number systems (Binary to Decimal and vice versa), Basic Laws & Theorems of Boolean algebra. Introduction to logic gates, their symbols and truth tables: AND, OR, NOT, NAND, NOR, Exclusive OR and Exclusive NOR gates. Universal logic gates.	do.....	do.....

Approved

Date:

11/8/26

HOD Sign.



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APPLIED SCIENCES AND HUMANITIES
LESSON PLAN

Academic Year	2026
Branch & Semester	First Semester Common to All
Course Code	BS101
Course Name	Mathematics-I
Course Type	Diploma
L-DCS	3-1
Name of Faculty	Sukanya kumari
Semester Start & End Dates	1 st Aug to 28 th November

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	
2	Mathematics -I	4	0	50	-	50	100	3	-		100	150

Lecture No.	Unit & Topic of Discussion	Topic Details	Delievery Method	Remarks
	Unit-1 Basic Trigonometry		Chalk & talk	
Lecture 1	Trigonometry	measurement of angles in degrees and grade	Chalk & talk	
Lecture 2,3		measurement of angles in radians and their conversions	Chalk & talk	
Lecture 4,5		measurement of angles in degrees, grades and radians and their conversions	Chalk & talk	
Lecture 6,7		Sum, formulae and their applications (without proof).	Chalk & talk	
Lecture 8,9		difference formulae and their applications	Chalk & talk	
Lecture 10,11		Sum, difference formulae and their applications	Chalk & talk	
Lecture 12		Product formulae and their applications	Chalk & talk	
Lecture 13		Transformation of product to sum and their applications	Chalk & talk	
Lecture 14,15		Mixed problems of product formulae , sub-multiple angles (2A), (3A), (A/2).	Chalk & talk	
Lecture 16		Mixed problems of sub-multiple angles	Chalk & talk	

Lecture 17		Mixed problems of sub-multiple angles	Chalk & talk	
Lecture 18		Graphs of $\sin x$ and $\cos x$	Chalk & talk	
Unit-2 Function and Limits				
Lecture 19,20,21	Differential Calculus	Definition of function, Value of a function, Even and Odd Function	Chalk & talk	
Lecture 22		Function of a function.	Chalk & talk	
Lecture 23		Limit of a function		
Lecture 24,25		Standard limits (with proof) and related questions	Chalk & talk	
Lecture 26-29		Problem based on standard limits	Chalk & talk	
Unit-3 Differentiation				
Lecture 30		Differentiation by definition of $\sin x, \cos x, \dots$	Chalk & talk	
Lecture 31		Rules of differentiation (sum, product, quotient, chain rule)	Chalk & talk	
Lecture 32		problems of Differentiation by definition	Chalk & talk	
Lecture 33		Differentiation of sum and differences of two or more functions	Chalk & talk	
Lecture 34		Differentiation of product & quotient of functions	Chalk & talk	
Lecture 35		Differentiation of function of a function & trigonometric functions	Chalk & talk	
Lecture 36		Differentiation of inverse trigonometric functions,	Chalk & talk	
Lecture 37		Differentiation Logarithmic differentiation	Chalk & talk	
Lecture 38		problems based on differentiation	Chalk & talk	
Unit 4: Complex Numbers and Partial Fractions				
Lecture 39	Complex Number	Definition, real and imaginary parts of a Complex number	Chalk & talk	
Lecture 40		Addition, Subtraction and Multiplication of complex number	Chalk & talk	
Lecture 41,42		conjugate of a complex number, Divisions of complex numbers	Chalk & talk	
Lecture 43		modulus and amplitude of a complex number	Chalk & talk	
Lecture 44		polar and Cartesian representation of a complex number and its conversion from one form to other	Chalk & talk	
Lecture 45		polar and Cartesian representation of a complex number and its conversion from one form to other	Chalk & talk	
Lecture 46	Partial Fraction	Definition of polynomial fraction proper & improper fractions and definition of partial fraction	Chalk & talk	

Lecture 47		To resolve proper fraction into Partial fractions with denominator containing non-repeated linear factors	Chalk & talk	
Lecture 48,49		To resolve proper fraction into Partial fractions with denominator containing repeated linear factors	Chalk & talk	
Unit 4: Permutation , Combination and Binomial Theorem				
Lecture 50	Permutation	Value of nPr	Chalk & talk	
Lecture 51		Problems of permutations	Chalk & talk	
Lecture 52	Combination	Value of nCr	Chalk & talk	
Lecture 53		Problems of Combinations	Chalk & talk	
Lecture 54		Mixed problems of Permutation and Combinations	Chalk & talk	
Lecture 55,56	Binomial theorem	Binomial theorem (without proof) for positive integral index (expansion and general form);	Chalk & talk	
Lecture 57,58		binomial theorem for any index (expansion without proof).	Chalk & talk	
Lecture 59,60		first and second binomial approximation with applications to engineering problems	Chalk & talk	

	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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