Govt. Polytechnic Kangra , Distt. Kangra (H.P)

Department of Applied Science & Humanities

Course: Diploma **Branch:Electrical, Instr. Engineering.**

Session: 01 Aug25 to 26 Nov 25 **Subject: Applied Physics-I**

Teacher: Kumari Indu **Laboratory: Physics Lab**

Lesson plan for syllabus coverage: Theory-56 Hours, Practical-28 Hours

S.No	Lecture No.	Topic	Syllabus Detail
1	1-8	Physical world, Units and Measurements	Physical quantities: fundamental and derived, Units and systems of units (FPS, CGS and SI units), Dimensions and dimensional formulae of physical quantities, Principle of homogeneity of dimensions, Dimensional equations and their applications(conversion from one system of units to other, checking of dimensional equations and derivation of simple equations), Limitations of dimensional analysis. Errors in measurements (systematic and random), absolute error, relative error, error estimation and significant figures.
2	9-19	Force and Motion	Force and Motion Scalar and Vector quantities – examples, representation of vector, types of vectors. Addition and Subtraction of Vectors, Triangle and Parallelogram law (Statement 13 only), Scalar and Vector Product, Resolution of a Vector and its application to inclined plane (Rectangular components) and lawn roller. Force, Momentum, Statement and derivation of conservation of linear momentum, its applications such as recoil of gun &rockets, Impulse and its applications. Circular motion, definition of angular displacement, angular velocity, angular acceleration, frequency, time period. Relation between linear and angular velocity, linear acceleration and angular acceleration (related numerical), Centripetal and Centrifugal forces with live examples, Expression and applications
3	20-28	Work,Power and Energy	Work: Concept and units, examples of zero work, positive work and negative work Friction: concept, types, laws of limiting friction, coefficient of friction, methods for reducing friction and its engineering applications, Work done in moving an object on horizontal and inclined plane for rough and plane surfaces and related applications. Energy and its units, kinetic energy, gravitational potential energy with examples and derivations, Mechanical energy, conservation of mechanical energy for

			freely falling bodies, transformation of energy (examples). Power and its units, power and work relationship, calculation of power (numerical problems).
4	29-36	Rotational Motion	Translational and rotational motions with examples. Definition of torque and angular momentum and their examples. Conservation of angular momentum (quantitative) and its applications. Moment of inertia and its physical significance, radius of gyration for rigid body, Theorems of parallel and perpendicular axes (statements only), Moment of inertia of rod, disc, ring and sphere (hollow and solid)
5	37-47	Properties of matter	Matter Elasticity: Definition of stress and strain, different types of modulii of elasticity, Hooke's law, significance of stress-strain curve. Pressure: definition, units, atmospheric pressure, gauge pressure, absolute pressure, Fortin's Barometer and its applications. 14 Surface tension: concept, units, cohesive and adhesive forces, angle of contact, Ascent Formula (No derivation), applications of surface tension, effect of temperature and impurity on surface tension.
6	48-56	Heat and Thermometry	Thermometry Concept of heat and temperature and their relationship, Types of Thermometer (Mercury thermometer, bimetallic thermometer, Platinum resistance thermometer, Pyrometer) and their uses. Expansion of solids, liquids and gases, coefficient of linear, surface and cubical expansions and relation amongst them, Co-efficient of thermal conductivity.

(Kumari Indu)
Lecturer Physics

(Sh. Kamlash Chand)
HOD
AS&H

GPK-F-17

PLANNED SYLLABUS COVERAGE(Theory)

GP Kangra

Department A&H Subject App. Chemistry

Course Diploma Duration 3 years

SYLLABUS COVERAGE

Total Period 56 Theory 56.

Sr No.	Period No	Topic	Details	Instruction Reference	Additional Study Recommended	Remarks
1)	1-7	Atomic Stn.	Fundamental particles of atoms :- Electron, proton, neutron (Definitions) Atomic Stn. Bohr's Theory, Successes and limitation (Expression for Energy & Radius to be omitted) & Hydrogen spectrum explanation based on Bohr's model of atom Heisenberg uncertainity Prin. Quantum No. - Orbital Concept Shapes of s, p - orbitals, difference b/w orbit and orbital, Pauli's exclusion Principle, Hund's Rule of maximum multiplicity Aufbau Rule, electronic Config. (1 to 30)	Eagle Publication Hiteshi Publication	Text Book Chemistry For +1, +2 (Part - I, II) N.C.E.R.T Pradeep Publication Dinesh Publication	
2.)	8-14.	Chemical Bonding & Solution	Concept of Chemical Bonding Cause of Chemical Bonding types of Bond - ionic Bond (NaCl eg.) Lewis concept of Covalent Bond (CH_2, F_2 HF) Electronegativity, Difference b/w Sigma & π-bond, Electron Sea Model of metallic Bond Idea of Solute, Solvent and Solution, Methods to express the Conc. of Solution - Molarity (M), molality (m) mass % age	Engg. Chemistry By Sashi Chawla	Text Book Chemistry Class +1, +2 (Part - I, II) N.C.E.R.T	
3.)	15-23	Electrochemistry and Corrosion	Electronic concept of oxidation and Reduction and Redox Rxns, Definition of term - Electrolytes & Non Electrolytes with Example		Pradeep Publication	

be approved from concerned HOD within seven days from beginning of semester & will be kept with the concerned teacher as file.

Sl. No	Period No	Topic	Details	Instruction Reference	Add. Study	Remarks
			Faraday's laws of electrolysis and Numericals. Industrial applications of Electrolysis, Electrometallurgy, Electroplating Electro-Refining, App. of redox rxn in electrochemical cells – Primary cell : dry cell, Sec. Cell – lead acid storage battery. Introduction to corrosion of Metal definition, types of corrosion. H_2 liberation O_2 absorption, corrosion, Internal Corrosion, Preventive measure, Purification Alloying and heat treatment and External Corrosion Preventive measure, Metal Coating. (Anodic & Cathodic).	Eagle Publication Hiteshi Publication	Text Book Chemistry For Class (+1, +2) N.C.E.R.T. Pradeep Publication Dinesh Publication	
4)	24-30	Engineering Materials	Natural occurance of metals, minerals Ores of iron Al, Cu, gangue (Matrix), flux Slag, Metallurgy – brief account of general Principle of metallurgy Crushing, grinding Concentration; Froth flotation, Magnetic Seperation, Roasting and calcination & smelting, Refining, Zone Refining, Extraction of iron from haematite ore using a blast furnace along with Rxns, Alloys definition, Purpose of making Alloys, Ferrous and Non Ferrous Alloys, Brass, Bronze, Nichrome, Duralumin, Magnalium with e.g.	Eagle Publication	Text Book Chemistry Class +1, +2 NCERT	
5)	31-38	Water.	Classification of water :- Soft water and hard water, Causing water hardness, units and Numericals, Problems Caused by the use of hard water in boilers. water softening techniques :- Zeolite Process, Munciple water treatment, sedimentation, Coagulation filtration, Sterilization, Properties of water used for human for drinking and cooking Purposes from any water sources and Indian standard specification of drinking water	Engg. Chemistry By Sashi Chawla.		
6)	39-45	Fuel	Definition of Fuel and Combustion of Fuel, Classification, calorific value (HCV and LCV) calculation of HCV & LCV using Dulong's Formula. Characterctics of good fuel, Petrol and diesel-fuel rating Detail (Octane & Cetane Number) Chemical composition, Calorific values Applications of, LPG, CNG, water gas and biogas / Producer gas.	Eagle Publication	Text Book of Chem. For Class +1, +2 (Part-I, II) N.C.E.R.T	
7)	46-53	Lubrication	Function and characterstic Properties of good lubricant, Classification with Examples, Lubrication Mechanism – hydrodynamic and.			

Sr. No.	Period Nos.	Topic	Details	Instruction Reference	Additional Study Recommended	Remarks
			boundary lubrication, Physical Properties – viscosity and index Oiliness, flash & Fire point, Cloud and Pour Pt., Chemical Properties Coke number, TAN, saponification value of lubricants.	Eagle Publication	Text Book of Chemistry Class +1, +2 N.C.E.R.T Pradeep Publication Dinesh Publication	
8)	53-56	Polymers	Monomers, Homo & Copolymers degree of Polymerisation, Simple reaction involved in preparation and their application of Thermoplastics & Thermosetting Plastics (using Polythene, PVC, PS, PTFE, Nylon-66 and Bakelite only) Vulcanization of rubber and properties of Vulcanized rubber.	Hitesh Publication Eagle Publication		

Extra Topics to be covered beyond the scope of the syllabus (as required by industry/ as recommended by Teacher which he/ she finds necessary)

Sr. No.	Period No.	Topic Covered	Instruction Reference	Additional Study recommended	Remarks

Approved / Not approved	
Date	HOD Sign
Date	Principal Sign

Use additional sheets (if required).

G P Kangra

GPK-F-18

Practical Planning & Coverage Status

Department:
Course:
Laboratory:
Subject:

Sr. No.	Details of Practical	Availability of		Likely Turn/Date	Actual Date	Responsibility	HOD Sign.	Remarks
		Equipment Set up	STD Ref. Write up					
1)	Preperation of standard Sol. of oxalic acid	250 ml Beaker Flask, watch glass. Electronic Balence	App. Chem. By A. D. Sharma					
2.)	To determine strength of given sodium hydroxide sol. by titrating against standard oxalic acid Sol. using Phenolphthalein indicator	Burrete, Pipette, Titration Flask, Beaker	NCERT Delhi 2017-18 App Chem. By A. D Sharma					
3.)	Experimental verification of Faraday's law of Electrolysis using $CuSO_4$ solution & Cu-Electrolyte	Cu-Voltmeter Four cu Plate Baltery, Key Rheostate	Dr. G.H. Hagar App. Chem. Lab Practice					
4.)	Jodometric Estimation of Cu in the given Copper ore using std. hypo Solution	Burrete, ppt Burrete stand Titration Flask	App Chem. By A.D. Sharma					
5.)	To estimate total Alkanity of given water sample by titrating against Std. H_2SO_4 Solution.	Burrete, ppt Burrete stand Titration Flask Beaker	Jain & Jain Egg. Chemistry					
6.)	To estimate the moisture in given coal sample gravimetrically	Oven, Balence Tong, Crucible	App. Chem. By A.D					
7.)	To estimate the ase in given Coal Sample gravimetrically	Muffle Furnace Tong, crucible Desicator	App. Chem By A.D.					
8.)	To determine Viscosity of given lubricating oil by Red wood Viscometer	Redwood Viscometer	Dr. G.H. Hugar & A.N Paltak App. Chem. Laboratory Practices.					

Approved/ Not approved
HOD Sign with date

Principal Signature with date

GOVERNMENT POLYTECHNIC KANGRA

DEPARTMENT OF APPLIED SCIENCES

LESSON PLAN

Academic Year	2025-26
Semester	Ist
Subject Code	BS101
Subject Title	Mathematics-I
Name of Faculty	Reema Choudhary
Semester Start & End Dates	01.08.2025 - 26.11.2025

STUDY AND EVALUATION SCHEME

Sr. No.	Name of the Subject	Th	DCS	Pr	Credits	Internal Assessment			External Assessment					Total Marks
						Th	Pr	Total	Th	Hrs	Pr	Hrs	Total	
1	Mathematics-I	3	2	0	3	40	-	40	60	3	-	-	60	100

Subject Details:

Day	Unit & Topic of Discussion	Topic Details	Delivery Method
	Unit-1 : Trigonometry		
Day 1	Measurement of Angles	Concept of angles, measurement of angles in degrees, grades and radians and their conversion	Chalk & Talk
Day 2	Measurement of Angles	Concept of angles, measurement of angles in degrees, grades and radians and their conversion	Chalk & Talk
Day 3	Trigonometric Ratios	T-Ratios of Allied angles (without proof)	Chalk & Talk
Day 4		**DCS**	Chalk & Talk
Day 5		**DCS**	Chalk & Talk
Day 6	Trigonometric Ratios	T-Ratios of Allied angles (without proof)	Chalk & Talk
Day 7	Addition and Subtraction	Sum, difference formulae and their applications (without proof).	Chalk & Talk
Day 8	Addition and Subtraction	Sum, difference formulae and their applications (without proof).	Chalk & Talk
Day 9		**DCS**	Chalk & Talk
Day 10		**DCS**	Chalk & Talk
Day 11	Multiplication	Product formulae (Transformation of product to sum, difference and vice versa	Chalk & Talk

Day 12	Multiplication	Product formulae (Transformation of product to sum, difference and vice versa	Chalk & Talk
Day 13	Multiple and Sub-multiple angles	T-Ratios of multiple angles, sub-multiple angles (2A, 3A, A/2)	Chalk & Talk
Day 14		**DCS**	Chalk & Talk
Day 15		**DCS**	Chalk & Talk
Day 16	Graphs	Sinx, Cosx	Chalk & Talk
Day 17	Graphs	Sinx, Cosx	Chalk & Talk
Day 18		**1st Class Test (30% syllabus)**	Chalk & Talk
Day 19		**DCS**	Chalk & Talk
Day 20		**DCS**	Chalk & Talk

Unit-II : Differential Calculus

Day 21	Function	Definition of function	Chalk & Talk
Day 22	Limit	Concept of limits	Chalk & Talk
Day 23	Limit	Four standard limits $\lim_{x\to a}\frac{x^n-a^n}{x-a}$ $\lim_{x\to 0}\frac{sinx}{x}$	Chalk & Talk
Day 24		**DCS**	Chalk & Talk
Day 25		**DCS**	Chalk & Talk
Day 26	Limit	$\lim_{x\to 0}\left(\frac{a^x-1}{x}\right)$, $\lim_{x\to 0}(1+x)^{\frac{1}{x}}$	Chalk & Talk
Day 27	Differentiation by definition	$\sin x$, $\cos x$	Chalk & Talk
Day 28	Differentiation by definition	$\tan x$, e^x and x^x	Chalk & Talk
Day 29		**DCS**	Chalk & Talk
Day 30		**DCS**	Chalk & Talk
Day 31	Differentiation	Differentiation of sum, product	Chalk & Talk
Day 32	Differentiation	and quotient of functions .	Chalk & Talk
Day 33	Differentiation	Differentiation of a function of function	Chalk & Talk
Day 34		**DCS**	Chalk & Talk
Day 35		**DCS**	Chalk & Talk
Day 36	Differentiation	Differentiation of a function of function	Chalk & Talk
Day 37	Differentiation	Differentiation of trigonometric function	Chalk & Talk
Day 38	Applications	Differentiation of trigonometric function	Chalk & Talk
Day 39		**DCS**	Chalk & Talk
Day 40		**DCS**	
Day 41	Applications	Logarithmic differentiation, Exponential functions	Chalk & Talk

Day 41	Applications	Logarithmic differentiation, Exponential functions	Chalk & Talk
Day 42		**2nd Class Test (next 30 % syllabus)**	Chalk & Talk
	Unit-III : Algebra		
Day 43	Complex Number	Real and imaginary parts of a complex number	Chalk & Talk
Day 44		**DCS**	Chalk & Talk
Day 45		**DCS**	Chalk & Talk
Day 46	Complex Number	Polar and Cartesian representation of a complex number	Chalk & Talk
Day 47	Complex Number	and its conversion from one form to other, conjugate of a complex number	Chalk & Talk
Day 48	Complex Number	modulus and amplitude of a complex number.	Chalk & Talk
Day 49		**DCS**	Chalk & Talk
Day 50		**DCS**	Chalk & Talk
Day 51	Complex Number	Addition , Subtraction, Multiplication	Chalk & Talk
Day 52	Complex Number	Addition , Subtraction, Multiplication	Chalk & Talk
Day 53	Complex Number	and Division of a complex numbers	Chalk & Talk
Day 54		**DCS**	Chalk & Talk
Day 55		**DCS**	Chalk & Talk
Day 56	Complex Number	, De-moivre's theorem, its application.	Chalk & Talk
Day 57	Partial fractions	Repeated linear factors; non-repeated linear	Chalk & Talk
Day 58	Partial fractions	Repeated linear factors; non-repeated linear	Chalk & Talk
Day 59		**DCS**	Chalk & Talk
Day 60		**DCS**	Chalk & Talk
Day 61		**House Test (80% syllabus covered)**	Chalk & Talk
Day 62	Permutations and Combinations	Value of P(n, r), C(n, r).	Chalk & Talk
Day 63	Permutations and Combinations	Value of P(n, r), C(n, r	Chalk & Talk
		DCS	
		DCS	
Day 64	Binomial theorm	Binomial theorm (without proof) for positive integral index (expansion without proof	Chalk & Talk
Day 65	Binomial theorm	Binomial theorm (without proof) for positive integral index (expansion without proof	Chalk & Talk
Day 66	Binomial theorm	Binomial theorm (without proof) for positive integral index (expansion without proof)	Chalk & Talk
Day 67		**DCS**	Chalk & Talk
Day 68		**DCS**	Chalk & Talk

Day 69	Binomial theorm	First and second binomial approximationwith applications to engineering problems.	Chalk & Talk
Day 70	Binomial theorm	First and second binomial approximationwith applications to engineering problems.	Chalk & Talk

	Name of Book	Author Name	Publication
Prescribed Books	Elementary Engineering Mathematics	B. S. Grewal	Khanna Publisher
	Engineering Mathematics	C Dass Chawla	Asian Publisher
Reference Books	Engineering Mathematics	S. N. Iyegar	Vikas Publisher
	Engineering Mathematics	Reena Garg	Khanna Publisher

Faculty
(Reema Choudhary)

HOD
(Applied Sciences and Humanities)

GPK-F-17

PLANNED SYLLABUS COVERAGE(Theory)

G P Kangra

Department: Mech. Engg. Subject Intro. to IT Systems

Course Diploma Duration 03 Year

SYLLABUS COVERAGE

Total Periods 32 Theory 32

Sr. No.	Period Nos.	Topic	Details	Instruction Reference	Additional Study Recommended	Remarks
1.	1–7	Basics of Computer System.	Block diagram of computer, Hardware components, Memory, Display devices (CRT & LCD) keyboard mouse, HDD.			
2.	8–12	Software Concepts	Software and its types, Operating system, types and functions, Booting and types			
3.	13–19	Internet Skills	Internet, Web browser, Search engine, WWW, Types of Networks, Awareness about Govt. Portals both national as well as state govt.			
4.	20–24	Working with MS Word	File Management (creating new document, saving a document, printing a document), Editing a document, Design Layout ribbons.			
5.	25–29	Working with MS-Excel	Working with spreadsheets, entering data into cells,			

To be approved from concerned HOD within seven days from beginning of semester & will be kept with the concerned teacher in his file.

Sr. No.	Period Nos.	Topic	Details	Instruction Reference	Additional Study Recommended	Rema
			Merging cells, formula bar, usage of simple functions such as sum, average, min max, %age, round, Floor, ceiling Conditional formatting of cells.			

Extra Topics to be covered beyond the scope of the syllabus (as required by industry/ as recommended by Teacher which he/ she finds necessary)

Sr. No.	Period No.	Topic Covered	Instruction Reference	Additional Study recommended	Remarks

Approved / Not approved	
Date 05/12/25	HOD Sign
Date	Principal Sign

Use additional sheets (if required).