LESSON PLAN

Program Name	DIPLOMA (CIVIL ENGG.)
Course/Subject Name	Applied Mathematics-I
Course/Subject Code	BS- 101
Course/Subject Coordinator Name	Kharatti Lal

Evaluation scheme

S.No.	Subject Name	Study scheme (Hrs/Week)	Marks in evaluation scheme			
			Internal Assessment		External Assessment	
			Theory	Practical	Theory	Practical
1.	Applied Mathematics-I	5	40	00	60	-
Reference books			(i) Elementary Engineering Mathematics by Bs Grewal			
			(ii) Applied mathematics by Dr. RD Sharma			
			(iii) Engineering Mathematics by Dass Gupta			
			(iv) Applied Mathematics, vol I &II by SS Sabharwal & Sunita Jain			

Course Outcomes: After the completion of the course the student will be able to

CO1	Understand the concept of Angles, its measurement and Allied angles
CO2	Understand the concept of compound angles, sub-multiple angles.
CO3	Understand the concept of Differentiation.
CO4	Able to solve the questions of differentiation and its application.
CO5	Understand the Complex Number and their fundamental operations.
CO6	Understand the concept of Partial fractions and Permutation & combination.
CO7	Understand the concept of Binomial theorem.

Teaching Plan:

Lecture No.	Name of topic	Proposed date	Actual date	Remarks
1-5	Angles and its Measurement	08/08/2025 09,11		
6 - 9	Trigonometrical Ratio of some Allied angles	12/08/2025 14,15		
10 -11	Addition and Subtraction formulae	16/08/2025 18,19,21,		
12 - 21	Transformation of a product into a sum or a difference and vice-versa	22/08/2025 23,25,		
22 - 27	Trigonometrical ratios of Multiple angles	26/08/2025, 28,		
28-31	Trigonometrical ratios of Sub – Multiple angles	29/08/2025 30,		
32-34	Graphs of Trigonometrical functions	01/09/2025 02,04,06,		
35-37	Functions and their Limits	08/09/2025 09,12,15,		
37-39	Differentiation	11/09/2025 16,18,19,		
39-43	Applications of Differential Calculus	20/09/2025, 22,23,25,26		
43-46	Complex Number: Definition , real and imaginary parts of complex Numbers. Polar &Cartesian form and representation of	27/09/2025 03/10/2025, 04 06/10/2025, 09,11,13,14 ,16,17,		

	Complex Number.			
46-51	Conjugate, Modulus & Amplitude of Complex Number .	19/10/2025 21,23,24,.		
51-57	Fundamental operations (Addition, Subtraction Multiplication &Division) of Complex Numbers.	25/10/2025 27,28,30,31 ,		
57-60	De-movier's theorem, its application.	04/11/2025 06,		
60-62	Partial fractions (linear factors, repeated linear factors)	07/11/2025 10,11		
62-65	Permutations	13/11/2025 14,15,		
65-69	Combinations	18/11/2025 20,21		
70-73	Binomial theorem for positive index (expansion and general form).	23/11/2025 24		
73- 75	Binomial theorem for any index and applications	25/12/2025		

Assignments:

Assignment serial	Contents of syllabus covered	Proposed date	Actual date	Remarks
A-I	Trigonometry	01/09/25		

A-II	Differentiation	05/10/25		
A-III	Complex Number	10/11/25		

House Test/Class Test:

House/Class Test	Contents of syllabus covered	Proposed date	Actual date	Remarks
CT-I	30% of the syllabus	2nd week of September		
CT-II	Next 30% of the syllabus	3rd week of october		
House Test	80% of the syllabus	2nd week of November		

Teacher's signature

HOD signature

LESSON PLAN

ProgramName	DIPLOMA (Civil Engg.)
Course/SubjectName	Applied Physics-I
Course/SubjectCode	BS103(Th) & BS107(Applied Physics -1 Lab)
Course/SubjectCoordinatorName	Bharti Choudhary

Evaluation scheme

S.No.	SubjectName	Studyscheme (Hrs/Week)	Marks in evaluation scheme			
			Internal Assessment		External Assessment	
			Theory	Practical	Theory	Practical
1.	Applied physic-I& Applied Physics -1 Lab	3(Th)+1(DCS) +2(Pr.)	40	40	60	60

Reference books	(i)	Text Book of Physics for class XI & XII : N.C.E.R.T. Delhi
	(ii)	Concept of Physics by HC Verma ,Vol I & II ,Bharti Bhawan Ltd. New Delhi
	(iii)	AppliedPhysics,Vol.I andVol.II,TTTI Publications,TataMcGrawHill,Delhi
	(iv)	EngineeringPhysicsbyDKBhattacharya &PoonamTandan:OxfordUniversityPress,NewDelhi

Course Outcomes: After the completion of the course the student will be able to

CO1	Understand the importance of applied physics in describing physical phenomena.
CO2	Employ the knowledge of units and dimensions for various types of measurements.
CO3	Understand the importance of various types of errors while doing measurements.
CO4	Understand the basic forces present in the nature and their effects in daily life.
CO5	Understand energy, work, power and their importance.
CO6	Understand the basic phenomena like elasticity, surface tension, pressure etc.
CO7	Differentiate between heat and temperature and their measurements.

Teaching Plan:

Lecture No.	Name of topic	Actual date	Remarks
1	**Unit-1 Units & Dimensions** Physical quantities &Units-fundamental and derived units,		
2	Systems of units(FPS,CGSandSI units)		
3	Dimensions and dimensional formulae of physical quantities(area,volume,velocity,		

	acceleration,momentum,force,impulse,work,power,energy, surfacetension,coefficient of viscosity,stress,strain,moment of inertia,gravitational constant.)		
4	Principle of homogeneity of dimensions, Dimensiona lequations and their applications,		
5	Conversion from one system of units to other,		
6	Checking of dimensional equations and derivation of simple equations)		
7	Limitations of dimension alanalysis		
8	Error in measurement, absolute error,relative error,Error estimation & significant figures.		
9	**Unit-2 Force &motion** Scalar and vector quantities-examples,representation of vector ,types of vectors		
10	Addition and Subtraction of Vectors,Triangle and Parallelogram law (Statement only),		
11	Scalar and Vector Product.		
12	Resolution of Vectors and its application to inclined plane(Rectangular components) &lawn roller		
13	Force,Momentum,Statement and Derivation of Conservation of linear momentum,its applications such as recoil of gun & rockets.		
14	Impulse and its Applications		
15	Circular motion,definition ofangular displacement, angular velocity,angular acceleration, frequency,timeperiod.		
16	Relation between linear and angular velocity ,linear acceleration and angular acceleration (relatednumerical)		
17	Expression and Applications of Centripetal and centrifugal forces with examples such as banking of roads and bending of cyclist.		
18	**Unit-3 Work, Power & Energy** Work:and its units ,examples of zero work,positive work and negative work		
19	Friction:modern concept,types,laws of limiting friction,		
20	Coefficient of friction, methods of reducing friction and its Engineering Applications		
21	Work done in moving an object on horizontal and inclined plane for rough and plane surfaces with its related applications.		
22	Energy and its units:Kinetic energy and gravitational potential energy with examples and their derivation		
23	Mechanical Energy ,Principle of conservation of mechanical energy for freely falling bodies, examples of transformation of energy (examples)		
24	Power and its units, Power and its work relationship		

	calculation of power (numerical problems)		
25	**Unit-4 Rotational motion** Concept of translator and rotatory motions with examples		
26	Definition of torque and angular momentum and their examples.		
27	Conservation of angular momentum (quantitative)and its examples		
28	Moment of inertia and its physical significance,radius of gyration for rigid body,		
29	Theorems of parallel and perpendicularaxes(statements only), Moment of inertia of rod,discandring, Sphere(hollow and solid)(Formulae only)		
30	**Unit-5 Properties of matter** Elasticity: definition of stress and strain, different types of moduli of elasticity,		
31	Hooke's law,significance ofstress strain curve		
32	Pressure:definition,itsunits,atmospheric pressure,		
33	Gauge pressure,absolute pressure, Fortin's barometer and its applications.		
34	Surface tension: concept and its units, cohesive and adhesive forces,angle ofcontact,		
35	Ascent Formula (No derivation), applications of surface tension,		
36	Effect of temperature and impurity on surface tension		
37	**Unit-6 Thermometry** Concept of heat and temperature		
38	Modes of transfer of heat (Conduction,convection and radiation with examples)		
39	Different scales of temperature and their relationship		
40	Types of Thermometer (Mercury Thermometer,Bimetallic Thermometer)		
41	Platinum resistance thermometer and pyrometer and their uses.		
42	Expansion of solids,liquids and gases,coefficient of linear,surface and cubical expansions and relation amongst them, Concept of Co-efficient of thermal conductivity		

Assignments:

Assignment serial	Contents of syllabus covered	Actual date	Remarks
A-1	Units, dimensions ,force and motion		
A-2	Work, power, Energy and rotational motion		
A-3	Properties of matter and thermometry		

House Test/Class Test:

House/Class Test	Contents of syllabus covered	Proposed Date	Actual date	Remarks
CT-I	30% of the syllabus	2nd Week of Sept .2025		
CT-II	Next 30% of the syllabus	3rd Week of Oct. 2025		
House Test	80% of the syllabus	2nd week of Nov. 2025		

Lab Plan(BS107):

Exp. No.	Name of experiment	Actual Date		Remarks
		G-I	G-II	
1	To measure length, radius of a given cylinder and a beaker using a vernier caliper and find the volume of each object.			
2	To determine the diameter of a wire,a solid ball amd thickness of cardboard using a screw gauge.			
3	To determine the radius of curvature of a convex and concave mirror using a spherometer.			
4	To verify the triangle and parallelogram law of forces.			
5	To determine force constant of spring using Hooke's law			
6	To verify the law of conservation of energy Mechanical Energy (PE & KE).			
7	To measure room temperature and temperature of a hot bath using mercury thermometer and convert it into different scales.			
8	To find the moment of inertia of fly wheel.			

Signature of Teacher

Signature of HOD