

GOVERNMENT POLYTECHNIC, DEBAGADA
 AT/PO- PURUNAGARH, DIST-DEOGARH, ODISHA, 768119
 WEBSITE: www.gpdeogarh.org.in | EMAIL: principaldeogarh@gmail.com
DEPARTMENT OF MATH AND SCIENCE
LESSON PLAN (2026-27)

Discipline: CIVIL		Year: 1st	Name of the Teaching faculty: Samit Kumar Pradhan
Subject: Mathematics		No of Days/ Week class allotted: 4	Semester from Date: 17/08/26 To Date: 05/04/27 No of weeks: 32
Week	Days	Topics	
1ST	1ST	General introduction, Concept of angles, Measurement of angle in degree, grades, radian	
	2ND	Conversion of degree, grade, radian	
	3RD	Continue , illustrative examples	
	4TH	Introduction to trigonometry and trigonometrical ratios	
2ND	1ST	ASTC rule and its application	
	2ND	even function, odd function, periodic function	
	3RD	Problem discussion	
	4TH	Addition, differences formula of trigonometry and their transformations to products	
3RD	1ST	Problem discussion	
	2ND	Trigonometrical ratios of angle $2A$, $3A$	
	3RD	Trigonometrical ratios of sub-multiple angle i.e. $A/2$	
	4TH	Illustrative examples	
4TH	1ST	Introduction to inverse trigonometric ratios	
	2ND	Properties of inverse trigonometric functions	
	3RD	Continue	
	4TH	Problem discussion	
5TH	1ST	Introduction to geometry in two dimensions.	
	2ND	Distance formula, division formula and their application	
	3RD	Area of triangle, area of polygon, problem discussion	
	4TH	Slope of a line, angle between two lines, condition for perpendicularity and	
6TH	1ST	Straight lines, different form of straight lines, slope-intercept form, one-point form, two-point	
	2ND	Intercept form normal form with illustrative examples	
	3RD	Equation of a line passing through a point and i) parallel to a line	
	4TH	Equation of a line passing through the intersection to two lines, illustrative	
7TH	1ST	Distance of a point from a line, perpendicular distance between two parallel lines with examples	
	2ND	Problem discussion with doubt clearing	
	3RD	Centre and radius of a Circle. General equation of a circle	

	4 TH	Equation of a circle Passing through three given points
8 TH	1 ST	Equation of circle when two end points of a diameter are given.
	2 ND	Problem discussion
	3 RD	Definition of complex number. Real and imaginary parts of a Complex number.
	4 TH	Polar and Cartesian representation of a complex number and its conversion from one form to
9 TH	1 ST	Solving Related problems
	2 ND	Conjugate of a complex number, Modulus and Amplitude of a complex number
	3 RD	Addition, Subtraction, Multiplication and Division of a complex number
	4 TH	Solving Related problems
10 TH	1 ST	Square root of a complex number
	2 ND	Cube roots of unity.
	3 RD	Problems Practices
	4 TH	De-moivre's theorem (statement only) and its simple applications.
11 TH	1 ST	Problem discussion with doubt clearing
	2 ND	Problem discussion
	3 RD	Definition of Polynomial, Proper & Improper fractions, Definition of partial fractions
	4 TH	Resolve proper fraction into partial fractions with denominator containing non-
12 TH	1 ST	Resolve proper fraction into partial fractions with denominator containing
	2 ND	Resolve proper fraction into partial fractions with denominator containing non-
	3 RD	Factorial of a non-negative integer.
	4 TH	
13 TH	1 ST	Binomial theorem (without proof) for positive integral index
	2 ND	Determination of general term and Middle term in binomial expansion.
	3 RD	Problem discussion with doubt clearing
	4 TH	Problem discussion
14 TH	1 ST	Introduction to matrices. Order of a matrix
	2 ND	Types of matrices
	3 RD	Addition, Subtraction, Scalar multiplication
	4 TH	multiplication of matrices.
15 TH	1 ST	Problem discussion
	2 ND	Introduction to determinant. Expansion of determinant up to 3rd order
	3 RD	Properties of determinants
	4 TH	Problem discussion
16 TH	1 ST	Minors and Co-factors
	2 ND	Inverse of a matrix

	3 RD	Problem discussion
	4 TH	Solution of system of linear equations by Crammer's rule up to 3 variables.
17 TH	1 ST	Problem discussion
	2 ND	Solution of system of linear equations by matrix method up to 3 variables
	3 RD	Problem discussion
	4 TH	Problem discussion with doubt clearing
18 TH	1 ST	Vector and Scalar Quantities.
	2 ND	Notation and rectangular resolution of a vector.
	3 RD	Types of vectors.
	4 TH	Addition, subtraction and scalar multiplication of vectors.
19 TH	1 ST	Scalar and vector products of two vectors.
	2 ND	Problem discussion
	3 RD	Angle between two vectors
	4 TH	Scalar and Vector projection of a vector on another vector.
20 TH	1 ST	Area of a triangle and Area of a parallelogram
	2 ND	Simple problems related to work and moment of a force
	3 RD	Problem discussion with doubt clearing
	4 TH	Problem discussion
21 TH	1 ST	Definition of function, different types of functions , illustrative examples
	2 ND	continue
	3 RD	Introduction to Limit. Limit of a function
	4 TH	Evaluation of L.H.L.&R.H.L. , Existence of Limit
22 TH	1 ST	Methods of Evaluation of Limit (direct substitution, factorization, rationalization,)
	2 ND	dividing highest power of x by both Nr. &Dr. Evaluation using standard identities
	3 RD	Test of Continuity of a function at a point.
	4 TH	Problem discussion
23 TH	1 ST	Differentiation of algebraic functions
	2 ND	Differentiation exponential function, logarithmic function,
	3 RD	Differentiation trigonometric and inverse trigonometric functions
	4 TH	Problem discussion
24 TH	1 ST	Differentiation of sum, product and quotient of functions.
	2 ND	Differentiation of function of a function (Chain Rule).
	3 RD	Differentiation using logarithm.
	4 TH	Differentiation of a function w.r.t another function.
25 TH	1 ST	Problem discussion with doubt clearing

	2 ND	Problem discussion
	3 RD	Integration as inverse process of differentiation.
	4 TH	Formulae , Illustrative Example
26 TH	1 ST	Simple integration by substitution, Illustrative Example
	2 ND	Problem discussion
	3 RD	Integration by parts, Illustrative Example
	4 TH	Problem discussion
27 TH	1 ST	Integration using partial fractions (for linear factors only)
	2 ND	Problem discussion, Illustrative Example
	3 RD	Problem discussion with doubt clearing
	4 TH	Problem discussion
28 TH	1 ST	Definite integrals of some simple functions
	2 ND	Properties of definite integrals (without proof).
	3 RD	Problem discussion, Illustrative Example
	4 TH	Problem discussion
29 TH	1 ST	Simple problem on evaluation of area bounded by a curve and axes.
	2 ND	Continue
	3 RD	Problem discussion with doubt clearing
	4 TH	Problem discussion
30 TH	1 ST	Introduction to Differential Equation.
	2 ND	Order and degree of a differential equation.
	3 RD	Formation of differential equation.
	4 TH	Problem discussion with doubt clearing
31 TH	1 ST	Solution of first order and first-degree differential equation by variable separable method
	2 ND	Problem discussion
	3 RD	Solution of linear differential equations.
	4 TH	Problem discussion with doubt clearing
32 TH	1 ST	Problem discussion
	2 ND	Previous year problem discussion
	3 RD	Continue
	4 TH	Continue

Course Outcomes	Unit	Topic
CO ₁	1 and 2	Trigonometry and Co-ordinate Geometry
CO ₂	3 (3.1, 3.2 and 3.3)	Complex number, Partial fraction, Permutation,

		Combination and Binomial theorem.
<i>CO₃</i>	3(3.4)	Determinant and matrices
<i>CO₄</i>	4	Vector Algebra
<i>CO₅</i>	5	Limit, Continuity and Derivative.
<i>CO₆</i>	6	Integral Calculus and Differential Equation.

Signature of the Faculty

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	3RD	Continue , illustrative examples	
	4TH	Introduction to trigonometry and trigonometrical ratios	
2ND	1ST	ASTC rule and its application	
	2ND	evenfunction, oddfunction, periodic function	
	3RD	Problem discussion	
	4TH	Addition, differences formula of trigonometry and their transformations to products	
3RD	1ST	Problem discussion	
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	4TH	Illustrative examples	
4TH	1ST	Introduction to inverse trigonometric ratios	
	2ND	Properties of inverse trigonometric functions	
	3RD	Continue	
	4TH	Problem discussion	
5TH	1ST	Introduction to geometry in two dimensions.	
	2ND	Distance formula, division formula and their application	
	3RD	Area of triangle, area of polygon, problem discussion	
	4TH	Slope of a line, angle between two lines, condition for perpendicularity and	
6TH	1ST	Straight lines, different form of straight lines, slope-intercept form, one-point form, two-point	
	2ND	Intercept form normal form with illustrative examples	
	3RD	Equation of a line passing through a point and i) parallel to a line	
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	3RD	Definition of complex number. Real and imaginary parts of a Complex number.
	4TH	Polar and Cartesian representation of a complex number and its conversion from one form to other.
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	2ND	Types of matrices
	3RD	Addition, Subtraction, Scalar multiplication
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	2ND	Introduction to determinant. Expansion of determinant up to 3rd order
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	2 ND	Properties of definite integrals (without proof).
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	2 ND	Previous year problem discussion
	3 RD	Continue
	4 TH	Continue

Course Outcomes	Unit	Topic
CO ₁	1 and 2	Trigonometry and Co-ordinate Geometry
CO ₂	3 (3.1, 3.2 and 3.3)	Complex number, Partial fraction, Permutation, Combination and Binomial theorem.
CO ₃	3(3.4)	Determinant and matrices
CO ₄	4	Vector Algebra
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DEPARTMENT OF MATH AND SCIENCE
LESSON PLAN (2026-27)

Discipline: ELECTRICAL		Year: 1st	Name of the Teaching faculty: Samit Kumar Pradhan
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	3RD	Differentiation using logarithm.
	4TH	Differentiation of a function w.r.t another function.
25TH	1ST	Problem discussion with doubt clearing
	2ND	Problem discussion
	3RD	Integration as inverse process of differentiation.
	4TH	Formulae , Illustrative Example
26TH	1ST	Simple integration by substitution, Illustrative Example
	2ND	Problem discussion
	3RD	Integration by parts, Illustrative Example
	4TH	Problem discussion

27TH	1ST	Integration using partial fractions (for linear factors only)
	2ND	Problem discussion, Illustrative Example
	3RD	Problem discussion with doubt clearing
	4TH	Problem discussion
28TH	1ST	Definite integrals of some simple functions
	2ND	Properties of definite integrals (without proof).
	3RD	Problem discussion, Illustrative Example
	4TH	Problem discussion
29TH	1ST	Simple problem on evaluation of area bounded by a curve and axes.
	2ND	Continue
	3RD	Problem discussion with doubt clearing
	4TH	Problem discussion
30TH	1ST	Introduction to Differential Equation.
	2ND	Order and degree of a differential equation.
	3RD	Formation of differential equation.
	4TH	Problem discussion with doubt clearing
31TH	1ST	Solution of first order and first-degree differential equation by variable separable method
	2ND	Problem discussion
	3RD	Solution of linear differential equations.
	4TH	Problem discussion with doubt clearing
32TH	1ST	Problem discussion
	2ND	Previous year problem discussion
	3RD	Continue
	4TH	Continue

Course Outcomes	Unit	Topic
CO ₁	1 and 2	Trigonometry and Co-ordinate Geometry
CO ₂	3 (3.1, 3.2 and 3.3)	Complex number, Partial fraction, Permutation, Combination and Binomial theorem.
CO ₃	3(3.4)	Determinant and matrices
CO ₄	4	Vector Algebra
CO ₅	5	Limit, Continuity and Derivative.
CO ₆	6	Integral Calculus and Differential Equation.

Signature of the Faculty

