UTKAL GAURAV MADHUSUDAN INSTITUTE OF TECHNOLOGY, RAYAGADA

LESSON PLAN

1st Year – 2026-2027(From 17.08.2026 to 17.04.2027)

Name of the teaching faculty:SMT. PRATIVA PATRA (SR. LECTURER IN MATHEMATICS)

Discipline :Common(Civil,Electrical,ETC Branch)

DEPT. : Department of Mathematics & Science

SUBJECT :Mathamticcs

No of periods/week :4

Total period : 128

Total Marks : 70 marks

Week	Period	Topics to be covered	Unit/Chapter
1ST	1st	Concept of angles	Unit-1 Trigonometry
	2nd	Measurement of angles in degrees	
	3rd	grades and radians	
	4th	Their Conversions.	
2ND	1st	T-Ratios of Allied angles (without proof)	
	2nd	Sum, difference, Product formulae	
	3rd	Transformation of product to sum	
	4th	Difference and vice versa (without proof) and their applications.	
3RD	1st	T- Ratios of multiple angles (2A,3A)	
	2nd		
	3rd	sub-multiple angles (A/2)	
	4th		
4TH	1st	Introduction to Inverse Trigonometric functions	
	2nd		
	3rd	Their properties (without Proof).	
	4th		
5TH	1st	Introduction to Co-ordinate Geometry.	Unit-2 Co-Ordinate Geometry
	2nd	Distance formula, Section formula.	
	3rd	Slope of a line.	
	4th	Relationship between slope of perpendicular and parallel lines.	
6TH	1st	Equation of straight line in various standard forms (without proof).	
	2nd		
	3rd	Inter section of two straight lines	
	4th	angle between two lines.	
7TH	1st	Perpendicular distance from a given point to a line.	
	2nd		
	3rd	Centre and radius of a Circle	
	4th	General equation of a circle .	
8TH	1st	Equation of a circle Passing through three given points.	
	2nd	Equation of circle when two end points of a diameter are given.	
	3rd	Definition of complex number	UNIT-3 3.1 Complex Numbers
	4th	Real and imaginary parts of a Complex number	
9TH	1st	Polar and Cartesian representation of a complex number	
	2nd	Its conversion from one form to other.	
	3rd	Conjugate of a complex number	
	4th	Modulus and Amplitude of a complex number.	
10TH	1st	Square root of a complex number	
	2nd		
	3rd	Cube roots of unity.	
	4th		
11TH	1st	De-moivre's theorem (statement only)	

	2nd	Its simple applications.	
	3rd	Definition of Polynomial, Proper & Improper fractions, Definition of partial fractions.	**3.2 Partial fractions**
	4th	Resolve proper fraction into partial fractions with denominator containing non-repeated linear factors.	
12TH	1st	Resolve proper fraction into partial fractions with denominator containing repeated linear factors.	
	2nd	Resolve proper fraction into partial fractions with denominator containing non-repeated irreducible quadratic factors.	
	3rd	Factorial of a non-negative integer.	**3.3 Permutations and Combinations and Binomial theorem**
	4th	Determine $P(n, r)$	
13TH	1st	and $C(n, r)$	
	2nd	Binomial theorem (without proof) for positive integral index.	
	3rd	Determination of general term	
	4th	Middle term in binomial expansion	
14TH	1st	Introduction to matrices	**3.4 Determinants and Matrices**
	2nd	Order of a matrix	
	3rd	Types of matrices.	
	4th	Addition, Substraction, Scalar multiplication	
15TH	1st	Multiplication of matrices.	
	2nd	Introduction to determinant	
	3rd	Expansion of determinant up to 3rd order	
	4th		
16TH	1st	Properties of determinants.	
	2nd	Minors and Co-factors.	
	3rd	Inverse of a matrix	
	4th	Solution of system of linear equations by Crammer's rule up to 3 variables.	
17TH	1st		
	2nd		
	3rd	Solution of system of linear equations by matrix method up to 3 variables.	
	4th		
18TH	1st	Vector and Scalar Quantities.	**Unit-4 Vector Algebra**
	2nd	Notation and rectangular resolution of a vector.	
	3rd	Types of vectors.	
	4th	Addition of vectors.	
19TH	1st	Substraction of vectors.	
	2nd	Sclar Multiplication of vectors.	
	3rd	Scalar and vector products of two vectors.	
	4th	Angle between two vectors	
20TH	1st	Scalar projection of a vector on another vector	
	2nd	Vector projection of a vector on another vector	
	3rd	Area of a triangle and Area of a parallelogram.	
	4th	Simple problems related to work and moment of a force.	
21TH	1st	Define function.	**Unit-5 5.1 Limits and Continuity**
	2nd	Types of functions ➢ Constant function ➢ Identity function ➢ Absolute value function ➢ The Greatest integer functions ➢ Trigonometric function ➢ Exponential function ➢ Logarithmic function	
	3rd	Define limit of a function and Existence of limit of a function	
	4th	Algebra of limits.	
22TH	1st	Limit of some standard functions (without proof)	
	2nd	Limit of $\|x\|$ and $[x]$.	
	3rd	Evaluation of limits using standard formulas	
	4th	Test of Continuity of a function at a point	
23TH	1st	Differentiation of algebraic functions,	**5.2 Differentiation**

	2nd	Exponential function	
	3rd	Logarithmic function	
	4th	trigonometric and inverse trigonometric functions (without proof)	
24TH	1st	Differentiation of sum	
	2nd	Product and quotient of functions.	
	3rd	Differentiation of function of a function	
	4th	Differentiation using logarithm.	
25TH	1st	Differentiation of a function w.r.t another function	
	2nd		
	3rd		
	4th		**Unit-6** **6.1 Integral Calculus**
26TH	1st	Integration as inverse process of differentiation.	
	2nd		
	3rd	Simple integration by substitution	
	4th		
27TH	1st	Integration by parts.	
	2nd		
	3rd		
	4th	Integration using partial fractions (for linear factors only)	
28TH	1st		
	2nd	Definite integrals of some simple functions	
	3rd		
	4th		
29TH	1st	Properties of definite integrals (without proof)	
	2nd		
	3rd	Simple problem on evaluation of area bounded by a curve and axes.	
	4th		
30TH	1st	Introduction to Differential Equation	**6.2 Differential Equation**
	2nd	Order and degree of a differential equation	
	3rd		
	4th	Formation of differential equation	
31TH	1st		
	2nd	Solution of first order and first-degree differential equation by variable separable method.	
	3rd		
	4th		
32TH	1st		
	2nd	Solution of linear differential equations.	
	3rd		
	4th		

17/8/2026

Concerned faculty
Smt. Prativa Patra

17/8/2026

HOD
Dept. of Math & Sc.