GANAPATI INSTITUTE OF ENGINEERING & TECHNOLOGY

JAGATPUR, CUTTACK, ODISHA

LESSON PLAN

Academic Session: 2025-26 (SUMMER)

Semester: 2ND SEM

Branch: CIVIL, ELECTRICAL, ETC

Subject: Mathematics-II

Prepared by: RAMAKANTA BEHERA

Discipline: Civil, Electrical, Etc	Name Of The Teaching Faculty: **Ramakanta Behera** (Faculty in Mathematics)	
Subject: MATHEMATICS-II	**Semester From: Date:09/01/2026 to 08/05/2026**	
Week	**ClassDays**	**TheoryTopics**
1st week	1.	**Introduction&Syllabusdiscussion**
	2.	UNIT - I: Determinants and Matrices • Definitions and examples
	3.	Elementary properties of determinants up to 3rd order • Types of matrices • b) Algebra of matrices • c) Determinant • d) Properties of determinant Problem based on above
	4.	Consistency of equations • Problems based on above
2nd week	**5.**	Crammer's rule • Problems based on Cramer's rule
	6.	Inverse of a matrix • Problems based on above
	7.	Matrix inverse method to solve a system of linear equations in 3 variables • Problems based in above
	8.	UNIT - II: Integral Calculus: • Integration as inverse operation of differentiation • Definition and formula discussion • Problems based on it
3rd	9.	• Simple integration by substitution • Problems based on it
	10.	• Integration by parts • Problems based on it
	11.	• Integration by partial fractions (for linear factors only). • Problems based on it
	12.	• Use of formulas $\int_0^{\frac{\pi}{2}} sin^n(x)dx$, $\int_0^{\frac{\pi}{2}} cos^n(x)dx$ and $\int_0^{\frac{\pi}{2}} sin^n(x)cos^n(x)dx$ for solving problems Where m and n are

		positive integers • Problems based on above formulas
4th	13.	• Problems based on above formulas • Book exercise workout
	14.	Class Test-1
	15.	• Applications of integration: • Simple problem on evaluation of area bounded by curve and axes for axes. • Problems based on it.
	16.	• Application of integration: • Calculation of volume of a solid formed by revolution of an area.
5th	17.	• Problems based on application of integration
	18.	• Problems based on integration • Book exercise practice
	19.	UNIT - III: Co-Ordinate Geometry • Definition and introduction to coordinate geometry
	20.	• Equation of straight line in various standard forms (without proof) • Examples workout.
6th	21.	• Inter section of two straight lines • Problems based on it
	22.	• Problems based on previous class
	23.	• Angle between two lines • Problems based on angles
	24.	• Book exercise practice • Problems based on previous
7th	25.	• Parallel and perpendicular lines, perpendicular distance formula. • Examples workout.
	26.	• Problems based on previous class • Book exercise practice

	27.	• Problems practice from book exercise.
	28.	• General equation of a circle and its characteristics. • Definition and theory discussion.
8th	29.	• Problems based on previous class.
	30.	• Problems based on circle.
	31.	• The equation of a circle when center and radius is given. • Book examples workout.
	32.	• The equation of a circle when three points lying on it. • Problems based on it.
9th	33.	• Problems based on previous class.
	34.	• Book exercise practice
	35.	• The equation of a circle when coordinates of end points of a diameter is given. • Problems based on it
	36.	• Problems based on previous class.
10th	37.	• Book exercise practice.
	38.	• Book exercise workout.
	39.	• Definition of conics (Parabola, Ellipse, Hyperbola) their standard equations without proof. • Problems based on it.
	40.	• Problems based on previous class.
11th	41.	• Problems on conics when their foci, directories or vertices are given.
	42.	• Problem based on previous class.
	43.	UNIT -IV: Vector Algebra: • Definition notation and rectangular resolution of a vector.
	44.	• Simple problems based on vector algebra.
12th	45.	• Addition and subtraction of vectors. Scalar and vector products of 2 vectors. • Problems based on it.
	46.	• Book exercise practice

	47.	• Problems workout
	48.	• Simple problems related to work, moment and angular velocity. • Problems based on it.
13th	49.	• Problems based on it.
	50.	• Book exercise practice.
	51.	• Problems based vectors.
	52.	• Class test -2
	53.	UNIT-V: Differential Equations: • Definition and examples discussion.
14th	54.	• Solution of first order and first-degree differential equation by variable separation method (simple problems).
	55.	• Problems based on differential equation.
	56.	• Book examples workout
	57.	• Problems based on order and degree of differential equation
15th	58.	• Revision
	59.	• Problems practice.
	60.	• Problems practice
	61.	• Class test -3
16th	62.	• Determinant & Matrix Revision
	63.	• Integral calculus Revision
	64.	• Coordinate Geometry Revision
	65.	• Vector Algebra Revision
17th	66.	• Differential Equation Revision
	67.	Test -4
	68	Test -5
	69.	Test-6

12/11/26
Sign of Teaching Faculty

12/11/26
Sign. of Sr.Lecturer

Sr. Lecturer
Math & Science
G.I.E.T (Poly), Jagatpur, Ctc

Sign. of Principal

GIET (POLYTECHNIC)
Principal
GIET (Polytechnic)
Jagatpur, Cuttack

References:

- Mathematics-II by Dr. Garima Singh (Download from https://ekumbh.aicte india.org/dbook.php)
- B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, New Delhi, 40th Edition, 2007.
- G. B. Thomas, R. L. Finney, Calculus and Analytic Geometry, Addison Wesley, 9th Edition, 1995.
- S.S. Sabharwal, Sunita Jain, Eagle Parkashan, Applied Mathematics, Vol. I & II, Jalandhar.
- Comprehensive Mathematics, Vol. I & II by Laxmi Publications, Delhi. Reena Garg Chandrika Prasad, Advanced Engineering Mathematics, Khanna Publishing House, New Delhi