

GOVERNMENT POLYTECHNIC, ANGUL

LESSON PLAN

Discipline: Civil & Mechanical Engg.	Semester: 1st	Name of the Teaching Faculty: Sunil Kumar Sahu (Lect. In Mathematics)(PTGF)
Subject: Engg. Math-I	No of Days/per week class allotted: 6 Periods (5 Lectures +1 Tutorial)	Semester From Date: 16.08.2023 to Date: 11.12.2023 No. of Weeks: 15
Week	Date	Theory Topics
1ST	16-08-23	UNIT-I: MATRICES & DETERMINANT Define: Matrix and its order. Types of matrices with examples.
	17-08-23	Equality of matrices. Algebra of matrices(Addition & Subtractions).
	18-08-2023	Problem solving based on algebra of matrices.
	19-08-23	Multiplication of matrices with examples.
	21-08-23	Problem solving on matrix multiplication.
	22-08-23	Tutorial
2ND	23-08-23	Determinant and its Expansion.
	24-08-23	Minors & Cofactors. Properties of Determinant.
	25-08-23	Application/ Examples on Properties of Determinant.
	26-08-23	Application/ Examples on Properties of Determinant.
	28-08-23	Inverse of a matrix (2x2 matrix).
	29-08-23	Tutorial
3RD	31-08-2023	Inverse of a matrix (3x3 matrix).
	01-09-23	Problem based on previous class.
	02-09-23	Solution of simultaneous equations by Cramer's Rule.
	04-09-23	Problem based on previous class.
	05-09-23	Problem based on previous class.
	07-09-23	Tutorial

4th	08-09-23	Solution of simultaneous equations by matrix inverse method.
	09-09-23	Problem based on previous class.
	11-09-23	UNIT-II: TRIGONOMETRY System of Measurements of angles. Trigonometric ratios of angles of any magnitude.
	12-09-23	Sign convention (ASTC Rule). Domain & range of Trigonometric functions.
	13-09-23	Compound angles, multiple and sub-multiple angles.
	14-09-23	Tutorial
5th	15-09-23	Problem based on previous class.
	16-09-23	Problem based on previous class.
	18-09-23	Conditional Trigonometric Identities.
	21-09-23	Problem based on previous class.
	22-09-23	Problem based on previous class.
	23-09-23	Tutorial
6th	25-09-23	Properties Of Triangles: Notations. Sine Law, Cosine Law, Projection Law, Half-Angle formula.
	26-09-23	Napier's /Tangent formula. Area of Triangle- Heron's formula.
	27-09-23	Problem based on previous class.
	28-09-23	Problem based on previous class.
	30-09-23	Inverse Trigonometric Functions: Define inverse function. Domain, Range and Graph. Properties of Principal Inverse Functions.
	03-10-23	Tutorial
7th	04-10-23	Properties. Problem Solving on inverse trigonometric functions.
	05-10-23	Problem Solving on inverse trigonometric functions.
	06-10-23	CLASS TEST
	07-10-23	UNIT-III: CO-ORDINATE GEOMETRY IN TWO DIMENSION Introduction of geometry in two dimension. Distance formulae, division formulae, area of a triangle.
	09-10-23	Problem based on previous class.
	10-10-23	Tutorial

8th	11-10-23	INTERNAL EXAMINATION
	12-10-23	INTERNAL EXAMINATION
	13-10-23	Define slope of a line, angle between two lines, condition of perpendicularity and parallelism.
	14-10-23	Problem based on previous class.
	16-10-23	Different forms of straight lines i) One point form (ii) two point form (iii) slope form (iv) intercept form (v) Perpendicular form.
	17-10-23	Tutorial
9th	18-10-23	Problem based on previous class.
	19-10-23	Equation of a line passing through a point and (i) parallel to a line (ii) Perpendicular to a line.
	20-10-23	Problem based on previous class.
	30-10-23	Equation of a line passing through the intersection of two lines.
	31-10-23	Distance of a point from a line.
	01-11-23	Tutorial
10th	02-11-23	Problem based on previous class.
	03-11-23	<u>UNIT-IV: CIRCLE</u> Define: Circle. Equation of a circle in Center-Radius form.
	04-11-13	Problem based on previous class.
	06-11-23	General equation of a circle. Equation of circle in Two End-points of a Diameter form.
	07-11-23	Problem based on previous class.
	08-11-23	Tutorial
11th	09-11-23	Equation of Circle passing through 3-points.
	10-11-23	Problem based on previous class.
	11-11-23	<u>UNIT-V: CO-ORDINATE GEOMETRY IN THREE DIMENSIONS</u> Distance formulae, section formulae in 3D and its application.
	13-11-23	Problem based on previous class.
	14-11-23	Direction ratio, direction cosine, angle between two lines and its application.
	15-11-23	Tutorial

12th	16-11-23	Problem based on previous class.
	17-11-23	Condition of parallelism and perpendicularity.
	18-11-23	Problem based on previous class.
	20-11-23	Concept of Parallelepiped/ Cuboid.
	21-11-23	Equation of plane- Different forms of equation plane: Points-Normal form 3-points form Intercepts form Normal form.
	22-11-23	Tutorial
13th	23-11-23	Problem based on previous class.
	24-11-23	Condition for co-planarity And problem based on it.
	25-11-23	Angle between two planes. Perpendicular Distance of a point from a plane.
	28-11-23	Problem based on previous class.
	29-11-23	Equation of a plane passing through a point and (i) parallel to a plane (ii) perpendicular to a plane.
	30-11-23	Tutorial
14th	01-12-23	Problem based on previous class.
	02-12-23	CLASS TEST
		UNIT-VI: SPHERE
	03-12-23	Define: Sphere. Equation of a sphere in Center-Radius form.
	04-12-23	Problem based on previous class.
	05-12-23	General Equation of sphere. Equation of Sphere in Two End-points of a Diameter form.
15th	06-12-23	Tutorial
	07-12-23	Problem based on previous class.
	08-12-23	Equation of sphere passing through 4-points.
	09-12-23	Problem based on previous class.
	10-12-23	Previous year question paper discussion.
	11-12-23	Previous year question paper discussion.