Seminar/Viva	20 Marks
Total	50 Marks

Semester II

KU2DSCMAT101: INTRODUCTION TO MATRIX THEORY, PARAMETRIC EQUATIONS AND POLAR CO -ORDINATES

Semester	Course Type	Course Level	Course Code	Credits	Total Hours
2	CORE	100	KU2DSCMAT 101	4	60

Learning Approach (Hours/ Week)		Marks Distribution			Duration of ESE (Hours)
Lecture	Tutorial	CE	ESE	Total	
4	1	50	50	100	3Hr

Course Objectives: The objective is to provide students with a solid understanding of the fundamental concepts of matrix theory, which are essential in various areas of mathematics, engineering, and applied sciences.

Course Outcomes: At the end of the Course, the Student will be able to:

SL No	Course Outcomes
CO1	Students will demonstrate proficiency in fundamental concepts of matrices and matrix algebra, including operations such as addition, multiplication, and transposition. They will be able to solve systems of linear equations using matrix methods and apply matrix algebra to represent and solve practical problems.
CO2	Students will acquire the ability to compute determinants of square matrices and understand their geometric and algebraic interpretations. They will develop skills in finding the inverse of square matrices and apply these concepts to analyze the properties and behavior of linear transformations.
CO3	Students will gain knowledge of special types of matrices, such as symmetric, skew-symmetric, orthogonal, and diagonal matrices. They will explore applications of matrices in diverse fields, including computer science and statistics
CO4	Students will demonstrate proficiency in parametrizing plane curves, including the ability to represent curves using parametric equations and analyze their geometric properties. They will apply calculus techniques to parametric curves, such as finding derivatives and integrals, and interpret these results in the context of motion and geometry

Mapping of COs to PSOs

	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	✓	✓	✓	✓	
CO2	✓	✓	✓		
CO3	✓	✓	✓	✓	
CO4	✓	✓	✓		

COURSE CONTENTS

Module 1: Matrices and Matrix algebra, Systems of linear equations, The inverse of a square matrix and Determinants (Sections 1.1, 1.2, 1.3 and 1.4 of the Text Book 1).

Module 2: Some special types of matrices, more on system of linear equations, some places where matrices are found and Appendix (Sections 1.5,1.6.1.7 and 1.8, of the Text Book 1).

Module 3 Parametrizations of Plane Curves, Calculus with Parametric Curves, Polar Coordinates and Graphing Polar Coordinate Equations (Sections 11.1, 11.2, 11.3 and 11.4of the Text Book 2).

Module 4: Areas and Lengths in Polar Coordinates, Conic Sections and Conics in Polar Coordinates (Sections 11.5, 11.6 and 11.7 of the Text Book 2).

Module X: Get acquainted with the concepts by studying the examples and exercises provided in Reference 1.

Text Books:

1. David W Lewis, Matrix Theory, world scientific.
2. Thomas Calculus 13Th Edition, George B. Thomas, Maurice D. Weir, Joel Hass, publisher: Pearson Education.

Reference Books:

1. Calculus early transcendentals sixth edition James Stewart McMaster University.
2. Calculus: Soo T Tan Brooks/Cole, Cengage Learning (2010) ISBN: 978-0-534-46579-

TEACHING LEARNING STRATEGIES

- Lecturing, Demonstration, Digital Learning, Team Work

MODE OF TRANSACTION

- Lecture, Seminar, Discussion

ASSESSMENT RUBRICS

End Semester Evaluation	50 marks
Continuous Evaluation	
Tests	20 Marks
Assignment	10 Marks
Seminar/Viva	20 Marks
Total	50 Marks

KU2DSCMAT102 CALCULUS I

Semester	Course Type	Course Level	Course Code	Credits	Total Hours
2	CORE	100	KU2DSCMAT 102	4	60

Learning Approach (Hours/ Week)		Marks Distribution			Duration of ESE (Hours)
Lecture	Tutorial	CE	ESE	Total	
4	1	50	50	100	3Hr

Course Objectives: The mathematics required for viewing and analyzing the physical world around us is contained in calculus. The objective of the course is to introduce students to the fundamental ideas of limit, continuity and differentiability and also to some basic theorems of differential calculus. It is also shown how these ideas can be applied in the problem of sketching of curves and in the solution of some optimization problems of interest in real life.

Course Outcomes: At the end of the Course, the Student will be able to: