Mathematics-I

Course Code: DI01000021

Course Information

Field	Details
Program	Engineering
Branch	All
Level	Diploma
Semester	1
Academic Year	2024
Category	BSC
Prerequisites	Linear equation in two variables, Factorization, Polynomial, Quadratic Equation, Coordinate Geometry, LCM, GCD, Concept of Set.

Rationale

This course of Mathematics is being introduced for providing a solid foundation in basic mathematics concepts and operations that are crucial for further education and everyday problem-solving. This course is an attempt to include topics which are directly applicable to various fields of engineering, technology, business and sciences and develop logical reasoning and critical thinking abilities. The course is designed focusing on multidisciplinary and competency development to ensure students can effectively use mathematical methods and principles in their vocational and technical fields. The components of course ensure that it is comprehensive, practical and aligned with both academic and professional requirements.

Course Outcomes

After completion of the course, students will be able to:

No.	Course Outcomes	RBT Level
CO1	Interpret the function graphically, numerically and analytically.	Application
CO2	Demonstrate the ability to algebraically analyse basic functions used in Trigonometry.	Application
CO3	Demonstrate the ability to crack engineering related problems based on concepts of Vectors.	Application
CO4	Solve basic engineering problems under given conditions of straight lines and circle.	Application
CO5	Demonstrate the ability to analyse and illustrate the Functions using the concept of Limit.	Application

Teaching and Examination Scheme

Teaching Scheme (Hours)				Assessment Pattern (Marks)				
L	T	PR	C	Theory ESE	Theory CA	Practical CA	Practical ESE	Total
3	1	0	4	70	30	0	0	100

Course Content

Unit No.	Content	Hours	Weightage (%)
1. Determinant and Function 1.2 Function and simple examples 1.3 Logarithm as a function 1.4 Laws of Logarithm and related Simple examples	1.1 Determinant and its value up to 3rd order (Without properties) 9	23	
2. Trigonometry 2.2 Trigonometric Functions 2.3 Allied \ 2.4 Graph of Sine and Cosine 2.5 Periodic Trigonometric function 2.6 Sum and factor formulae 2.7 Inverse Trigonometric function	2.1 Units of Angles (degree and radian) Compound Angles, Multiple-Submultiples angles 12	20	
3. Vectors 3.2 Vector Operations 3.3 Angle between two Vectors 3.4 Applications of Scalar and Vector Product (Work Done and Moment of Force)	3.1 Introduction to Vectors 9	20	
4. Coordinate Geometry 4.2 Slope point form, Intercept form, General form of line 4.3 Condition of parallel and perpendicular lines	4.1 Straight line (Two-point form) and slope of straight line		

Unit No.	Content	Hours	Weightage (%)
4.4 Equations of Parallel lines and Perpendicular lines to the given lines 4.5 Angle between two lines 4.6 Equation of circle with center and Radius 4.7 General equation of circle 4.8 Tangent and normal to a circle	8	20	
5. Limit 5.2 Standard formulae of Limit and related simple examples	5.1 Limit of a Function 7	17	