

MATH-I CALCULUS AND ANALYTICAL GEOMETRY(GS-101)

Pre-requisite: None

Credit Hours: 03

Contact Hours: 48

RECOMMENDED BOOK(S)

Calculus and analytical Geometry, 11th Edition by Thomas Finney John Wiley & Sons

REFERENCE BOOK(S)

Advanced Engineering Mathematics, 5th Edition by C. R Wylie McGraw-Hill Education

Advanced Engineering Mathematics, 8th Edition by H T Erwin Kreyszig TH John Wiley & Sons

COURSE OBJECTIVES

The main aim of this course is to give students some basic ideas of calculus, which is the mathematics of motion. The purpose is not just making the students learn these ideas but to enable them to apply these ideas to solve problems of practical nature. The course will provide the students with the necessary tools to understand and formulate advanced mathematical concepts and an awareness of their relationship to a variety of problems arising in engineering and sciences. Students wishing to major in the sciences, engineering, or medicine are required to have a working knowledge of the calculus and its applications.

S. No.	CLO/PLOS MAPPING	DOMAIN	PLO
1	Explain the ideas of rate of change and derivatives using the concept of limits and continuity.	C2	01
2	Apply the derivatives for solving different problems arising in engineering sciences.	C3	02
3	Use the techniques of integration for solving problems in integral calculus and the vector calculus and analytical geometry in multiple dimensions	C3	04

COURSE CONTENTS

Introduction to single valued functions
Introduction to limit and continuity
Derivatives and their applications
Integral calculations with applications
Introduction to analytical geometry

Straight lines in \mathbb{R}^2 and \mathbb{R}^3 .

Planes

Cylindrical and spherical coordinates

Surfaces. Cylinders and cones, spheres

Spherical Trigonometry

Function of several variables.

Limit and continuity

Partial derivatives

Equation of tangent planes

Double integral in Cartesian and polar coordination.

Techniques of integration with application,