

CALCULUS

Course No: **MM24001OE**

Semester: **M.A/M.Sc 1st Semester**

Continuous Assessment: **Marks 10, Theory Marks: 40**

Total Credits: **02**

Total Marks: **50**

Time Duration: **1½ Hrs Course**

Course objectives: To make the student understand the basic concepts of differentiation/integration and apply them to solve day-to-day real life problems.

Course Outcomes: Students shall be able to solve a variety of calculus problems, including finding derivatives and integrals of various functions, using techniques like the chain rule, product rule, and integration by parts.

UNIT -I

Functions, the idea of limits, techniques for computing limits, infinite limits, continuity, derivative, rules for differentiation, derivatives as rate of change, applications of the derivative, maxima and minima, increasing and decreasing functions, mean value theorem and its applications, indeterminate forms, partial differentiation, Euler's theorem.

UNIT -II

Indefinite integral, techniques of integration, definite integral, area of a bounded region, first Order ordinary differential equations and their solutions, variables separable method, homogeneous form, equations reducible to homogeneous form, linear differential equations of the form $dy/dx + Py = Q$ and equations reducible to this form.

Recommended Books:

1. A. Auzeem, S.D.Chopra and M. L. Kochar, Differential Calculus, Kapoor Publications, 2015.
2. William L. Briggs and Lyle Cochran, Calculus, Pearson, 2nd Edition 2014.
3. R. K. Jain and S. R. K. Iyengar, Advanced Engineering Mathematics, Narosa, 1st Edition 2002.