

Calculus

Course Code: BEB207

Credit: 04 (L-3, T-1, P-0)

Contact Hours: 60

MM: 100

Course Objectives:

- 1- To provide knowledge to student about Limit and Continuity.
- 2- To provide the concept of Double and triple integrals.
- 3- To make able to distinguish between Divergence and Gradient.
- 4- To make them able to understand about Green's and Stoke's theorem.

Course Outline:

Differential Calculus - Limit (ϵ - δ definition), Continuity, Discontinuity, properties of continuous functions. Differentiability, Successive differentiation and Leibnitz's theorem. Expansion of functions (in Taylor's and Maclaurin's series), Indeterminate forms, Partial differentiation and Euler's theorem. Maxima and Minima (for functions of two variables), Tangents and normal.

Integral Calculus - Reduction formulae, Beta and Gamma functions. Quadrature, Rectification, Volumes and surfaces of solids of revolution Double and triple integrals, Change of order of integration.

Vector differentiation: Velocity, Acceleration of a particle moving on a space curve. Scalar point function, vector point function. Gradient, velocity potential, divergence and curl of a vector and their physical interpretations.

Vector Integration: Line, surface and volume integrals, Statement and problems of Green's, Stoke's and Gauss divergence theorems (without proof).

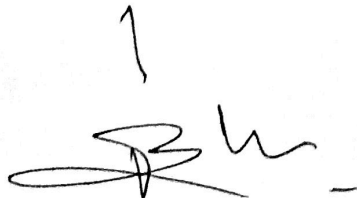
Course Outcomes:

After completing the course, students will be able to:

1. Understand differentiability and partial differentiation.
2. Analyze the system of volume and surfaces of solids of revolution.
3. Identify the velocity and acceleration of a particle.
4. Understand the curl of a vector and their physical interpretations.
5. Evaluate the problem of Gauss divergence.
6. Solve the line, surface and volume integral problems.

Recommended Books:

1. Gorakh Prasad, Differential Calculus, Pothishala Pvt. Ltd. Allahabad, 2000.
2. Gorakh Prasad, Integral Calculus, Pothishala Pvt. Ltd. Allahabad, 2000.
3. Shanti Narayan, A Text Book of Vector Calculus, S. Chand & Company, New Delhi.
4. Erwin Kreyszig, Advanced Engineering Mathematics, John Wiley & Sons, 1999.



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