Course Title:	**Vector Calculus**
Course Code:	
Course Coordinator	**Dr. Abhishek Singh**
Credits	**4-1-0=5**

Evaluation Scheme Total 100 Marks

Quiz (Total 20 Marks)				Assignment/Project (Total 20 marks) (Minimum Two Assignments or one Project)		Mid-Term	Major Examination	Total
Quiz I (5 marks	Quiz II (5 marks)	Quiz III (5 marks)	Quiz IV (5 marks)	Assignment I (10 marks)	Assignment II (10 marks)	20 marks) (1 ½ Hour Duration)	(40 marks) (3 Hour Duration	100 Marks

WEEKS	TOPICS TO BE COVERED
Week 1	Scalar and vector, Scalar and Vector product of three vectors
Week 2	Product of four vectors, Reciprocal vectors
Week 3	Vector differentiation, Scalar valued point functions
Week 4	Derivative along a curve, Directional derivatives
Week 5	Gradient of a scalar point function, Geometrical interpretation of grad
Week 6	Divergence and curl of a vector point function, Characters of Divergence and curl of a vector point function
Week 7	Gradient, Divergence and curl related vector identities, Orthogonal curvilinear coordinates
Week 8	Condition for orthogonality fundamental triad of mutually orthogonal unit vectors, Gradient Divergence
Week 9	Curl and Laplacian operators in terms of orthogonal curvilinear coordinates
Week 10	Cylindrical co-ordinate and spherical co-ordinate
Week 11 (17^{th} -21^{st} March, 2025)	**Mid-Term**
2^{nd} May, 2025	**Showing of Mid-Term Answer Sheets**
Week 13	Vector integration, Line integral
Week 14	Surface integral, Volume integral

Week 15	Theorems of Gauss, Green theorem and related problems
Week 16	Stokes theorem and related problems
Week 17 (5^{th} -9^{th} May, 2025)	**Revision Week**
Week 18 (13^{th} – 22^{nd} May, 2025)	**Major Examinations**
29^{th} May, 2025	**Showing of Major Exams Answer Sheets**

Course Outcomes: After successful completion of this course, Student shall be able to

CO1: learn about the basic concept of vector calculus.

CO2: Use the knowledge of vector calculus in fluid dynamics.

CO3: Understand the concept of vector integration and apply different integral to solve numerical based problems.

Recommended Books:

1. Murrary R. Spiegal: Vector Analysis, Schaum Publishing Company, New York

2. N. Saran and S. N. Nigam: Introduction to Vector Analysis, Pothishala Pvt. Ltd., Allahabad.

3. Shanti Narayna: A text book of vector calculus. S. Chand & Co., New Delhi.

Calendar of Quizzes/Assignment etc. to be provided as per below details and exact dates to be fixed in consultation with other course coordinators to avoid overlap of Quizzes of different courses.

Component	**Date**
Quiz-I	**27^{th} -31^{st}, January 2025**
Quiz-II	**24^{th} -28^{th} February, 2025**
Assignment-I	**10^{th} -12^{th} February, 2025**
Mid-Term	**17-21^{st} March, 2025**
Assignment-II/Project Submission	**21^{st} – 24^{th} April, 2025**
Quiz-III	**7^{th} – 11^{th} April, 2025**
Quiz-IV	**28^{th} April-2nd, May, 2025**
Major Exam	**13^{th} – 22^{nd} May, 2025**

Note:

1. **One surprise Quiz may be fixed out of Quiz-II, Quiz-III or Quiz-IV.**
2. **In case of any deviation in evaluation methodology for courses such as AEC/VAC/SEC shall be mentioned accordingly. Thus, same shall be approved by the next BOS of school if not done earlier.**

Signature of Course Coordinator : Abhishek Singh