

Subject Code: 1SC2040407

Subject Title: Functions of Several Real Variables and Fourier Series

Course Objective:

- This is an introductory course in Functions of Several Real Variables and Fourier series which provide a working knowledge of Norm structure and Inner product on R , Derivative of real valued functions and Fourier series described in detail in the syllabus.

Teaching scheme (hours) per week		credit		Theory Marks		Practical Marks		Total
Theory	Tutorial	Theory	Tutorial	University Assessment	Cont. Assessment	University Assessment	Cont. Assessment	
4	1	4	1	60	40	-	-	100

Subject Contents

Unit. No	Topic	Total Hours	Weight (%)
1	Euclidean Space R_n and its basic properties, Functions From: $R_n \rightarrow R_m$, limits, Continuity, and Oscillation, Relation between Linear Transformation $T : R_n \rightarrow R_m$ and $m * n$ Matrice.	16	25
2	Differentiations, Basic Prosperities Of Differentiation, Chain Rule, And Jacobian Matrix.	20	25
3	Partial Derivatives, its Relation with Jacobian Matrix, Partial Derivatives of Higher Order, Young's Theorem, and Schwarz's Theorem, Directional Derivative, its Basic Properties its Relation with Derivative, Partial Derivative and Continuity.	18	25
4	Fourier series and applications to boundary value problems and summation of infinite series.	18	25

Course Outcome:

On successful completion of the course, students should be able to

- Students will be able to Understand the concept of differentiate function of several variable using Jacobian matrix, Fourier series and its applications.

List of References:

- Spivak, M. Calculus on Manifolds, W.E. Benjamin Inc., 1965.
- Rudin, W., Principles of Mathematical Analysis, (Third Edition), Tata McGraw-Hill Publ. Co., New Delhi, 1983.
- S. R. Ghorpade and B. V. Limaye, A Course in Multivariable Calculus and Analysis, Springer, 2010
- Courant and Hilbert; Mathematical Methods.
- B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, New Delhi, 2004.
- M. D. Raishnghania, Advanced Differential Equations.