SEMESTER-III

1.3 Real Analysis

(w.e.f. academic year 2020-21)

DSC-1C

BS:301

Theory: 5 credits and Tutorials: 0 credits Theory: 5 hours /week and Tutorials:1hours/week

Objective: The course is aimed at exposing the students to the foundations of analysis which will be useful in understanding various physical phenomena.

Outcome: After the completion of the course students will be in a position to appreciate beauty and applicability of the course.

Unit- I

Sequences: Limits of Sequences- A Discussion about Proofs-Limit Theorems for Sequences-Monotone Sequences and Cauchy Sequences -Subsequences-Lim sup's and Lim inf's-Series-Alternating Series and Integral Tests.

Unit- II

Continuity: Continuous Functions -Properties of Continuous Functions -Uniform Continuity -Limits of Functions

Unit- III

Differentiation: Basic Properties of the Derivative - The Mean Value Theorem - L' Hospital Rule – Taylor' s Theorem.

Unit- IV

Integration : The Riemann Integral - Properties of Riemann Integral-Fundamental Theorem of Calculus.

Text:

• Kenneth A Ross, Elementary Analysis-The Theory of Calculus

References:

- S.C. Malik and Savita Arora, *Mathematical Analysis, Second Edition, Wiley Eastern Limited, New Age International (P) Limited, New Delhi, 1994.*
- William F. Trench, Introduction to Real Analysis
- Lee Larson, Introduction to Real Analysis I
- Shanti Narayan and Mittal, Mathematical Analysis
- Brian S. Thomson, Judith B. Bruckner, Andrew M. Bruckner; Elementary Real analysis
- Sudhir R., Ghorpade, Balmohan V., Limaye; A Course in Calculus and Real Analysis