Semester – I
Course No. MAT 402 / AMAT402 Real Analysis- I **Credits 6**

Objective: The objective of this paper is to learn basics of mathematical analysis

Unit – I
Definition and existence of Riemann-Stieltjes integral, Properties of the integral, Integration and Differentiation, The fundamental theorem of calculus, Examples.

Unit – II
Integration of vector valued functions. Rectifiable curve. Examples. Sequences and series of functions. Point wise and uniform convergence. Cauehy criterion for uniform convergence. Weierstrass M-test, uniform convergence and continuity, uniform convergence and Riemann-Stielljes integration. Examples.

Unit – III
Uniform convergence and Differential, The Stone – Weierstrass theorem, Examples. Power series, Abel's and Taylor's theorems, Uniqueness theorem for power series. Examples.

Unit – IV
Functions of several variables, Linear transformations, Derivatives in an open subset of R^n, Chain rule, Examples

Unit – V
Partial derivations. Interchange of the order of differentiation, The inverse function theorem, The implicit function theorem Jacobins, Derivatives of higher order, Differentiation of integrals. Examples,

Outcome: The student will be able to apply the knowledge in areas which use continuity of a function, uniform convergence, partial derivatives etc.

Text Book:
Walter Rudin, Principles of Mathematical Analysis, (3rd Edition) McGraw Hill, Kogakusha 1976.

Articles:
6.1 to 6.27, 7.1 to 7.18, 7.26, 7.27, 8.1 to 8.5, 9.1 to 9.21, 9.24 to 9.29, 9.38 to 9.42

Reference Books:

1. T. M. Apostol, mathematical Analysis, Narosa, New Delhi, 1985.
2. J. C. Burkill and H. Burkill, A second course in Mathematical Analysis, Cambridge University Press, 1970.
3. S. L. Lang, Analysis- I and II, Addison Wesley, 1969.