Objectives:

1. To give fundamental knowledge of sets, functions and bounds.
2. To make them understand convergence and divergence of sequence and series.
3. To make student's familiar with concept of Integrability.

BSM 403T Real Analysis										
Teaching Scheme					Examination Scheme					
L	T	P	C	Hrs./Week	Theory			Practical		Total Marks
					MS	ES	IA	LW	LE/Viva	
4	0	---	4	4	25	50	25	---	---	100

UNIT I — **10**

Sets and Elements, operations on sets, functions, real valued functions, equivalence, countability, real numbers, least upper bounds.

UNIT II — **10**

Definition of sequence and subsequence, limit of a sequence, convergent sequences, divergent sequences, bounded sequences, monotone sequences, operation on convergent sequence, limit superior, limit inferior, Cauchy sequences.

UNIT III — **10**

Convergence and divergence, Series with non – negative terms, Alternating series, conditional and absolute convergence, conditions for absolute convergence.

UNIT IV — **09**

Riemann integrability & integrals of bounded functions over bounded intervals, Darboux's Theorem, Equivalent definition of integrability and integrals, Conditions for integrability, Particular classes of bounded integrable functions, Properties of integrable functions, Function defined by a definite integral, Theorems of Integral Calculus (statement only)

APPROXIMATE TOTAL — **39 Hours**

Text Book:

1. Walter Rudin, Principles of Mathematical Analysis(3rd edition), McGraw-Hill international editions, 1976.
2. T.M. Apostol, Mathematical Analysis(2nd edition), Narosa Publishing House, New Delhi, 1989.

Reference Books:

1. Walter Rudin, Real & Complex Analysis, Tata McGraw-Hill Publishing Co. Ltd., New Delhi, 1966.
2. H.L. Royden, Real Analysis(4th edition), Macmillan Publishing Company, 1993.
3. K. Ross, Elementary Analysis: The Theory of Calculus, Springer Int. Edition, 2004.
4. Jain, R. K. &Iyenger, S. R. K., Advanced Engineering Mathematics, 3rd Ed., Narosa Publishing House, New Delhi, 2007.

Outcome:

1. Students will be able to distinguish between countable, uncountable, finite and infinite sets.
2. Students will be able to understand convergence of sequence and convergence of series.
3. Student's will be able to understand fundamental theorem of calculus and Riemann integrable functions and their importance.