Faculty of Science and Humanities
B.Sc. (Mathematics) (Semester - 6)
In Effect from Academic Year 2023-24

Branch Name:	B.Sc. Mathematics
Program Code:	SC104
Course Name:	Mathematical Analysis-II
Course Code:	2SC1040602
Pre-requisite Course:	

Course Objectives:

1. To understand the concept of Continuity and connectedness.
2. To understand the concept of L'Hospital rule.
3. To know about the Riemann integral and Stieltje's integral.
4. To understand the concept Riemann Integrability.

Teaching and Examination Scheme:

Teaching Scheme (Hours per week)				Evaluation Scheme (Marks)				
				Theory (Marks)		Practical (Marks)		
Lecture (L)	Tutorial (T)	Practical (P)	Credit	University Assessment	Continuous Assessment	University Assessment	Continuous Assessment	Total (Marks)
3	--	--	3	70	30	--	--	100

Subject Contents:

Sr. No	Topic	Total Hours	Weightage (%)
1	**Limits and Continuity:** Limits and Continuity for a functions from a metric space into another metric space, continuity of a composite function, Structural properties of continuous functions from a metric space in to Rk, Continuity and Compactness, Continuity and connectedness, Discontinuities, Monotonic function, Discontinuities of a monotonic function, Infinite limits and limits at Infinity. **Differentiation:** Derivatives of a real function, Continuity and differentiability, Structural properties of the class of differentiable functions, Mean value theorems, Continuity of derivatives, L'Hospital rule, Derivatives of higher order, Taylor's theorem.	18	34
2	**The Riemann – Stieltje's Integral:** Riemann integral and Stieltje's integral, properties of Riemann integral and Stieltje's integral, Integration and Differentiation, Integration of Vector Valued Functions, Rectifiable curves.	15	33
3	**Riemann Integral:** Partition, Riemann Integrability, Refinement of a partition, Norm of a partition, Condition for Integrability, Darboux, Another condition for Integrability, Some Riemann Integrable functions, Properties of Riemann Integrable functions.	15	33

Reference Books:

1. Principles of Mathematical Analysis, Walter Rudin, McGraw Hill (International Student Edition), 3rd Edition.
2. A First Course in Mathematical Analysis, D. Somasundaram & B. Choudhary, Narosa Publishing House.
3. Fundamentals of Mathematical Analysis, G. Das & S. Pattnayak Tata Mcgraw Hill Pub.Co

4. Fundamental of Real Analysis, S. L. Gupta & Nisha Rani – Vikas Pub. House Pvt. Ltd. New Delhi-1974.
5. Principle of Real Analysis, S.C.Malik, Wiley Eastern Limited New Delhi, 1982.
6. Introduction to Real Analysis, S.K.Mapa, Sarat Book Distributor, Calcutta, 1996.

List of Open Source Software/learning website:

1. https://www.youtube.com/watch?v=mhi5TdWLUj
2. https://www.youtube.com/watch?v=A1x3Nc3CcsM
3. https://www.youtube.com/watch?v=GeivlV-TvD4

Course Learning Outcomes (CLO): On completion of this course, the students will be able to:

CLO	Description	Bloom'sTaxonomyLevel
CLO1	**Describe** continuity of a composite function.	1 Remembering
CLO2	**Discuss** the knowledge on Derivatives of a real function.	2 Understanding
CLO3	**Use** Riemann Integrability and using it **solve** the example of its.	3 Applying
CLO4	**Explain** Norm of a partition.	4 Analysing,
CLO5	Know the concept of Darboux to **Justify** the application of its.	5 Evaluating
CLO6	**Create** an example of Derivatives of higher order.	6 creating

Mapping of CLOs with POs & PSOs

Course Learning Outcomes	Program Outcomes (POs)												Program Specific Outcomes (PSOs)			
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4
CLO1		L							L				L	M		
CLO2	L	M	L						L			M	M	L		
CLO3		M		L					L				L	L		
CLO4	M	L	L													L
CLO5		M							L	L			L			
CLO6	L	M	H	L					M					M		L

H: High, M: Medium, L: Low