

MTH312 Real Analysis I

Level: 3

Credit Units: 5 Credit Units

Language: ENGLISH

Presentation Pattern: EVERY JAN

Synopsis:

MTH312 Real Analysis I will introduce students to the notions of convergence and techniques of mathematical analysis. The course develops concepts of limits and continuity rigorously. Mathematical rigor will be emphasized for this course. Students will be exposed to and be expected to acquire the skills to read and write mathematical proofs

Topics:

- Completeness Axiom
- Convergent Sequences
- Monotone Convergence Theorem
- Subsequences
- Bolzano-Weierstrass Theorem
- Cauchy Sequences
- Upper and Lower Limits
- Limits of Functions
- Continuous Functions
- Intermediate Value Theorem
- Extreme Value Theorem
- Inverse Functions

Textbooks:

Robert G. Bartle, Donald R. Sherbert: Introduction to Real Analysis (e-text) 4th John Wiley & Sons
ISBN-13: 9781119496786

Learning Outcome:

- Show the validity of given mathematical statements in real analysis.
- Give examples of mathematical statements in real analysis.
- Apply epsilon-delta arguments to prove mathematical statements in real analysis.
- Use the Monotone Convergence Theorem and/or Bolzano-Weierstrass Theorem to prove mathematical statements in real analysis.
- Compute the limit supremum, limit infimum or limit of a sequence.
- Determine whether given function(s) are continuous and/or uniformly continuous.

Assessment Strategies (Evening Class):

Components	Description	Weightage Allocation (%)
Overall Continuous Assessment	COMPUTER MARKED ASSIGNMENT 1	10
	TUTOR-MARKED ASSIGNMENT 1	20
Overall Examinable Components	Written Exam	70
Total		100