

MTH205e Analysis I: Limits, Sequences and Series

Level: 2

Credit Units: 5 Credit Units

Language: ENGLISH

Presentation Pattern: EVERY JAN

E-Learning: BLENDED - Learning is done MAINLY online using interactive study materials in Canvas. Students receive guidance and support from online instructors via discussion forums and emails. This is supplemented with SOME face-to-face sessions. If the course has an exam component, this will be administered on-campus.

Synopsis:

MTH205 introduces the analysis of pure mathematics. Topics include sequences, series, limits and continuity of functions. Students should have a sound knowledge of mathematics, as developed in Discrete Mathematics, Calculus and Statistics, Further Discrete Mathematics and Further Calculus and Algebra

Topics:

- Numbers and bounds
- Inequalities
- Null sequences
- Convergent sequences, properties of convergent sequences
- Divergent sequences, monotone convergence theorem
- Series
- Convergent series test
- Continuity in terms of sequences
- Inverse of continuous functions
- Exponential functions

Textbooks:

Walter Rudin.: Principles of Mathematical Analysis McGraw, International Edition
ISBN-13: 9780070856134

Walter Rudin.: Principles of Mathematical Analysis McGraw, International Edition
ISBN-13: 9780070856134-AA

Learning Outcome:

- Employ various number types and relate these to equations and functions.
- Identify convergence properties of infinite sequences.
- Infer properties of divergent sequences.
- Outline convergence properties of infinite series.
- Use the continuity of functions.
- Contrast properties and consequences of continuity.
- Apply a range of mathematical techniques to solve a variety of quantitative problems.
- Analyze and solve problems individually and/or as part of a group.
- Solve a number of problem sets within strict deadlines.
- Solve abstract mathematical problems using logical and systematic thinking.

Assessment Strategies:

Continuous Assessment Component	Weightage (%)
COMPUTER MARKED ASSIGNMENT	8
TUTOR-MARKED ASSIGNMENT	16
PRE-CLASS QUIZ	2
PRE-CLASS QUIZ	2
PRE-CLASS QUIZ	2
Sub-Total	30

Examinable Component	Weightage (%)
Written Exam	70
Sub-Total	70

Weightage Total **100**