

MA3524: ANALYSIS

Effective Term

Semester A 2025/26

Part I Course Overview

Course Title

Analysis

Subject Code

MA - Mathematics

Course Number

3524

Academic Unit

Mathematics (MA)

College/School

College of Science (SI)

Course Duration

One Semester

Credit Units

4

Level

B1, B2, B3, B4 - Bachelor's Degree

Medium of Instruction

English

Medium of Assessment

English

Prerequisites

MA2508 Multi-variable Calculus

Precursors

Nil

Equivalent Courses

Nil

Exclusive Courses

MA3526 Analysis

Part II Course Details

Abstract

This course gives rigorous analysis on the real line and higher dimensional Euclidean spaces. It trains students to prove mathematical theorems rigorously.

Course Intended Learning Outcomes (CILOs)

CILOs		Weighting (if app.)	DEC-A1	DEC-A2	DEC-A3
1	explain rigorously concepts of limit and continuity.	40	x	x	x
2	recognize basic properties of metric space.	20	x	x	
3	understand the concepts of uniform continuity and uniform convergence.	30	x	x	x
4	the combination of CILOs 1-3.	10	x	x	x

A1: Attitude

Develop an attitude of discovery/innovation/creativity, as demonstrated by students possessing a strong sense of curiosity, asking questions actively, challenging assumptions or engaging in inquiry together with teachers.

A2: Ability

Develop the ability/skill needed to discover/innovate/create, as demonstrated by students possessing critical thinking skills to assess ideas, acquiring research skills, synthesizing knowledge across disciplines or applying academic knowledge to real-life problems.

A3: Accomplishments

Demonstrate accomplishment of discovery/innovation/creativity through producing /constructing creative works/new artefacts, effective solutions to real-life problems or new processes.

Learning and Teaching Activities (LTAs)

LTAs	Brief Description	CILO No.	Hours/week (if applicable)	
1	Lecture	Learning through teaching is primarily based on lectures.	1, 2, 3, 4	39 hours in total
2	Take-home assignments	Learning through take-home assignments helps students understand basic concepts and techniques of analysis.	1, 2, 3, 4	after-class
3	Math Help Centre	Learning activities in Math Help Centre provides students extra help.	1, 2, 3, 4	after-class

Assessment Tasks / Activities (ATs)

ATs	CILO No.	Weighting (%)	Remarks ("-" for nil entry)	Allow Use of GenAI?	
1	Mid Term Test	1, 2	15	Questions are designed for the first part of the course to see how well students have learned concepts about limit, continuity and sets.	No
2	Hand-in assignments	1, 2, 3, 4	10	These are skills based assessment to help students understand basic concepts and techniques of analysis.	Yes
3	Quiz	1, 2, 3, 4	5	The assignments provide students chances to demonstrate their achievements on analysis learned in this course.	No

Continuous Assessment (%)

30

Examination (%)

70

Examination Duration (Hours)

2

Minimum Examination Passing Requirement (%)

30

Additional Information for ATs

30% Coursework 70% Examination (Duration: 2 hours, at the end of the semester) For a student to pass the course, at least 30% of the maximum mark for the examination must be obtained.

Assessment Rubrics (AR)**Assessment Task**

1. Test

Criterion

ABILITY to APPLY and EXPLAIN the basic concepts and methodology of analysis

Excellent (A+, A, A-)

High

Good (B+, B, B-)

Significant

Fair (C+, C, C-)

Moderate

Marginal (D)

Basic

Failure (F)

Not even reaching marginal levels

Assessment Task

2. Hand-in assignments

Criterion

CAPACITY for LEARNING to understand the principles of analysis

Excellent (A+, A, A-)

High

Good (B+, B, B-)

Significant

Fair (C+, C, C-)

Moderate

Marginal (D)

Basic

Failure (F)

Not even reaching marginal levels

Assessment Task

3. Examination

Criterion

ABILITY to DERIVE mathematical proofs in analysis

Excellent (A+, A, A-)

High

Good (B+, B, B-)

Significant

Fair (C+, C, C-)

Moderate

Marginal (D)

Basic

Failure (F)

Not even reaching marginal levels

Assessment Task

4. Formative take-home assignments

Criterion

CAPACITY for LEARNING to understand the principles of analysis

Excellent (A+, A, A-)

High

Good (B+, B, B-)

Significant

Fair (C+, C, C-)

Moderate

Marginal (D)

Basic

Failure (F)

Not even reaching marginal levels

Part III Other Information**Keyword Syllabus**

Limit, continuity, least upper bound axiom, open and closed sets, compactness, connectedness, differentiation, uniform convergence and generalization to higher dimensions.

Reading List**Compulsory Readings**

Title	
1	"Understanding Analysis" by Stephen Abbott, 2010.

Additional Readings

Title	
1	Nil