

MA8100: ANALYSIS IN HIGH DIMENSIONS AND APPLICATIONS

Effective Term

Semester A 2026/27

Part I Course Overview

Course Title

Analysis in High Dimensions and Applications

Subject Code

MA - Mathematics

Course Number

8100

Academic Unit

Mathematics (MA)

College/School

College of Science (SI)

Course Duration

Non-standard Duration

Other Course Duration

10 one-hour lectures

Credit Units

1

Level

R8 - Research Degree

Medium of Instruction

English

Medium of Assessment

English

Prerequisites

Nil

Precursors

Nil

Equivalent Courses

Nil

Exclusive Courses

Nil

Additional Information

Nil

Part II Course Details**Abstract**

This course gives explanation on how analysis (functions, ODEs, PPEs ...) in finite dimensions leads to analysis in the space of probability measures as the dimension grows to infinity.

Course Intended Learning Outcomes (CILOs)

CILOs		Weighting (if app.)	DEC-A1	DEC-A2	DEC-A3
1	Techniques of wasserstein space	50%	x	x	x
2	Finite dimensional projection of functions in wasserstein space	50%	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	Lectures	Learning through teaching is primarily based on lectures	1, 2	

Additional Information for LTAs

Nil

Assessment Tasks / Activities (ATs)

ATs		CILO No.	Weighting (%)	Remarks ("- " for nil entry)	Allow Use of GenAI?
1	Homework assignments	1, 2	100	Nil	No

Continuous Assessment (%)

100

Examination (%)

0

Additional Information for ATs

Nil

Assessment Rubrics (AR)**Assessment Task**

Homework assignments

Criterion

Demonstration of the understanding of the basic principles, relevant research topics and mathematical knowledge

Excellent (A+, A, A-)

High

Good (B+, B, B-)

Significant

Fair (C+, C, C-)

Moderate

Marginal (D)

Basic

Failure (F)

Not even reaching basic levels

Additional Information for AR

Nil

Part III Other Information**Keyword Syllabus**

Wasserstein space, probability measure

Reading List**Compulsory Readings**

Title	
1	Nil

Additional Readings

Title	
1	Nil