

City University of Hong Kong
Course Syllabus

offered by Department of Mathematics
with effect from Semester A 2016 / 17

Part I Course Overview

Course Title:	Analysis
Course Code:	MA3522
Course Duration:	One semester
Credit Units:	3
Level:	B3
Proposed Area: <i>(for GE courses only)</i>	<input type="checkbox"/> Arts and Humanities <input type="checkbox"/> Study of Societies, Social and Business Organisations <input type="checkbox"/> Science and Technology
Medium of Instruction:	English
Medium of Assessment:	English
Prerequisites: <i>(Course Code and Title)</i>	MA2502 Calculus II or MA2508 Multi-variable Calculus
Precursors: <i>(Course Code and Title)</i>	Nil
Equivalent Courses: <i>(Course Code and Title)</i>	Nil
Exclusive Courses: <i>(Course Code and Title)</i>	MA2501 Calculus I

Part II Course Details

1. Abstract

(A 150-word description about the course)

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

2. Course Intended Learning Outcomes (CILOs)

(CILOs state what the student is expected to be able to do at the end of the course according to a given standard of performance.)

No.	CILOs [#]	Weighting* (if applicable)	Discovery-enriched curriculum related learning outcomes (please tick where appropriate)		
			A1	A2	A3
1.	explain rigorously concepts of limit and continuity.	40%	*	*	*
2.	recognize basic properties of metric space.	20%	*	*	
3.	understand the concepts of uniform continuity and uniform convergence.	30%	*	*	*
4.	the combination of CILOs 1-3.	10%	*	*	*
		100%			

* If weighting is assigned to CILOs, they should add up to 100%.

[#] Please specify the alignment of CILOs to the Gateway Education Programme Intended Learning outcomes (PILOs) in Section A of Annex.

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 self-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.

3. Teaching and Learning Activities (TLAs)

(TLAs designed to facilitate students' achievement of the CILOs.)

TLA	Brief Description	CILO No.						Hours/week (if applicable)
		1	2	3	4			
Lecture	Learning through teaching is primarily based on lectures.	Y	Y	Y	Y			39 hours in total
Take-home assignments	Learning through	Y	Y	Y	Y			after-class

	take-home assignments helps students understand basic concepts and techniques of analysis.								
Math Help Centre	Learning activities in Math Help Centre provides students extra help.	Y	Y	Y	Y				after-class

4. Assessment Tasks/Activities (ATs)

(ATs are designed to assess how well the students achieve the CILOs.)

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 Tasks/Activities	CILO No.					Weighting*	Remarks
	1	2	3	4			
Continuous Assessment: <u>30</u> %							
Test	Y	Y				30%	Questions are designed for the first part of the course to see how well students have learned concepts about limit, continuity and sets.
Hand-in assignments	Y	Y	Y	Y			These are skills based assessment to help students understand basic concepts and techniques of analysis.
Examination				Y		70%	Examination questions are designed to see how far students have achieved their intended learning outcomes.

									Questions will primarily be skills and understanding based to assess the student's versatility in analysis.
Formative take-home assignments	Y	Y	Y	Y				0%	The assignments provide students chances to demonstrate their achievements on analysis learned in this course.
Examination: <u>70</u> % (duration: 2 hours , if applicable)									
								100%	

* The weightings should add up to 100%.

5. Assessment Rubrics

(Grading of student achievements is based on student performance in assessment tasks/activities with the following rubrics.)

Assessment Task	Criterion	Excellent (A+, A, A-)	Good (B+, B, B-)	Adequate (C+, C, C-)	Marginal (D)	Failure (F)
1. Test	ABILITY to APPLY and EXPLAIN the basic concepts and methodology of analysis	High	Significant	Moderate	Basic	Not even reaching marginal levels
2. Hand-in assignments	CAPACITY for LEARNING to understand the principles of analysis	High	Significant	Moderate	Basic	Not even reaching marginal levels
4. Examination	ABILITY to DERIVE mathematical proofs in analysis	High	Significant	Moderate	Basic	Not even reaching marginal levels
5. Formative take-home assignments	CAPACITY for LEARNING to understand the principles of analysis	High	Significant	Moderate	Basic	Not even reaching marginal levels

Part III Other Information (more details can be provided separately in the teaching plan)

1. Keyword Syllabus

(An indication of the key topics of the course.)

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

2. Reading List

2.1 Compulsory Readings

(Compulsory readings can include books, book chapters, or journal/magazine articles. There are also collections of e-books, e-journals available from the CityU Library.)

1.	“Understanding Analysis” by Stephen Abbott, 2010.
2.	
3.	
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2.2 Additional Readings

(Additional references for students to learn to expand their knowledge about the subject.)

1.	
2.	
3.	
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