

Math 3033 Real Analysis

Course Outline - Spring 2023-2024

Course Home Page

<https://canvas.ust.hk/>

Instructor

Dr. Jishan Hu

Lecture: MoWe 10:30 - 11:50, Room 2406

Contact Details: Room 3447; Phone: 2358-7434; e-mail: majhu@ust.hk

Office Hour: MoWe 12:00–13:00

Teaching Assistant

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|---|---|
| • T1a: ZHENG, Zhen
Tutorial: Th 18:00 - 18:50
Room 4579
e-mail: zzhengax@connect.ust.hk
Office Hour: Mo 16:30-17:30 | • T1b: HUO, Mengyu
Tutorial: Tu 20:00 - 20:50
Room 4504
e-mail: mhuaaa@connect.ust.hk
Office Hour: Tu 16:30-17:30 |
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Math Support Center, Room 3011-3013 (Lift 3 or Lift 2)

Course Description

Duration: one semester. Credits: 4 units.

This course teaches mathematical analysis for undergraduates who study mathematics, physics, economics, and engineering.

Exclusions: MATH 3043

Prerequisite: (MATH 2011 / MATH 2023) AND (MATH 2033 / MATH 2043) AND (MATH 2111 / MATH 2121 / MATH 2131 / MATH 2350)

Assessment Scheme

Based on one midterm examination, one final examination, and the homework assignments.

Homework: 20%; Midterm Exam: 40%; Final Exam: 40%.

Midterm:

14:00 – 17:00 Mar 17 (Sunday) Venue: to be announced

Student Learning Resources

Textbooks:

Lecture Notes by Jishan Hu

Teaching Approach

Lectures: The instructor will focus on illustrating the concepts of the course content.

Tutorials: We will focus on examples and problem solving.

Intended Learning Outcomes

Upon successful completion of this course, students should have solid foundation for future study in pure mathematics, applied mathematics, and other physical sciences.

Course Schedule

Week	Content	Remarks
1	Uniform Convergence	
2	Function Space & The Weierstrass Approximation Theorem	
3	Power Series	
4	Fourier Series	
5	Contraction Mapping Principle	
6	The Implicit Function Theorem	
7	Measurable Sets	
8	Measurable Functions	
9	Lebesgue Integration	
10	Lebesgue Integration	
11	Properties of Integration	
12	Convergence Theorems	