

MATH2033 Mathematical Analysis (L2)
Course Outline
Spring Semester 2020-2021

1. Instructor

Name: Dr. Leung Chi Man (Call me LCM if you wish)

Office: Room 3446 (Lift 25-26)

E-mail: chimanleung@ust.hk

Office hours: Fri 5:00p.m.- 6:00p.m. or by appointment

(*The meeting will be conducted through Zoom-meeting. Please join the meeting with your webcam and mic on.)

2. Teaching Assistant

Name and e-mail: SHEN, Yinan (e-mail: yshenay@ust.hk)

TANAKA, Hiroki (e-mail: htanakaaa@ust.hk)

3. Meeting time and Venue

Lecture L2: Every Tuesday and Thursday 1:30p.m.-2:50p.m.

(**Zoom ID for lecture:** 938-3138-3488, **Passcode:** 356727)

Tutorial: T2A: Every Wednesday, 6:00p.m.-6:50p.m.

T2B: Every Monday, 6:00p.m.-6:50p.m.

(*Note 1: According to university's guideline, the classes (including lectures and tutorials) will be conducted in online interactive mode using Zoom until further notice.)

(*Note 2: No tutorial in the first week and the first tutorial will start in Week 2 (8th Feb, 2021-11th Feb, 2021).)

(*Note 3: The materials covered in two tutorial sessions are similar and you can choose to attend any one of the sessions.)

4. Course Description

Credit point: 3 credits

Prerequisites: MATH1014 or MATH1018 or MATH1020 or MATH1024

The course will focus on the proofs of some basic theorems of analysis, as appeared in one variable calculus. The concepts and techniques developed will be useful in developing/understanding advanced theories in future courses. Topics included, Sets and functions, countability, supremum/infimum, density of rational number and irrational number, limit of sequence, series, limits of function, continuity, differentiability, Riemann integral and improper integral.

5. Intended Learning Outcome (ILOs)

Upon successful completion of this course, students should be able to understand the following topics:

1. Recognize the power of sequential or function limit in convergence problems, and apply logical reasoning to investigate mathematical work.
2. Apply the concept of limits to analyze and solve problems related to continuity and approximation in the math profession.

6. Student Learning Resources

We will use our own Lecture notes in this course. The lecture note is written based on the lecture note written by Prof. LI, Kin Yin. Additional problem sets will be provided. All materials can be found in canvas: (<https://canvas.ust.hk>)

7. Teaching and Learning Activities

Lectures (3 hours per week) and Tutorial (1 hour per week)

8. Tentative Course Schedule

Chapter 1: Logic

Chapter 2: Sets, function and equivalent relation

Chapter 3: Countability and its application

Chapter 4: Real number, supremum and infimum property

Chapter 5: Limit of Sequence, Series.

Chapter 6: Limit of function and continuity

Chapter 7: Differentiability and its application

Chapter 8: Riemann Integral

9. Assessment Scheme

There are 3 assessment tasks in this course:

	Weight	CLOs assessed
Assignment	20%	1,2
Midterm examination	25%	1
Final examination	55%	1,2

(a) Assignment (20% of the total grade)

(b) Online proctored Midterm Examination (25% of the total grade)

Date: 30th Mar, 2021 (Tuesday)

Time: 7:30p.m.-9:00p.m.

(*Note: The detail of midterm examination will be announced later)

(c) Online proctored Final Examination (55% of the total grade)

The exam will cover all materials taught in the course. The exam schedule will be announced by ARR. The detail of final examination will be announced later.