Math 2033 Mathematical Analysis
Course Outline – Spring 2016

1. Instructor

Name: Dr. Kin Y. Li
Contact Details: Rm 3471; phone 2358-7420; e-mail: makyli@ust.hk
Office Hour: Wednesday 15:00am-15:50am (or by appointment)

2. Teaching Assistants

Name: CHEUNG Ho Man (for T1A, T1B)
Contact Details: Rm 3214; phone 2358-7467; e-mail: hmcheungae@ust.hk

Name: LEUNG Wing Hong (for T1C, T1D)
Contact Details: Rm 3214; phone 2358-7467; e-mail: whleungaj@connect.ust.hk

3. Meeting Time and Venue

Lectures:

Date/Time/Venue L1 Mondays 3:00pm-4:20pm, Fridays 10:30am-11:50am Lecture Threatre D

Tutorials:

Date/Time/Venue T1a Wednesdays 6:00pm-6:50pm Rm 4502
Date/Time/Venue T1b Tuesdays 3:30pm-4:20am Rm 4502
Date/Time/Venue T1c Mondays 5:00pm-5:50pm Rm 1032 LSK Bldg
Date/Time/Venue T1d Fridays 6:00pm-6:50pm Rm 2302

4. Course Description

Credit Points: 4

Pre-requisite: MATH 1014 or MATH 1018 or MATH 1020 or MATH 1024

Exclusions: MATH 2031, MATH 2043

Brief Information: This course will focus on the proofs of basic theorems of analysis, as appeared in one variable calculus. Along the way to establish the proofs, many new concepts will be introduced. Understanding them and their properties are important for the development of the present and further courses. Key topics include countability, supremum/infimum, limits of sequence of numbers and functions, Cauchy condition, continuity, differentiation, Riemann integrals and improper integrals.

5. Intended Learning Outcomes

Upon the end of the course, students should have opportunities to and should be able to

No.	ILOs
1	recognize the power of sequential or function limit in convergence problems, and apply logical reasoning to investigative mathematical work,
2	communicate effectively calculus techniques in solving difficult problems to a range of audiences using available equipments or presentation softwares,
3	apply the concept of limits to analyze and solve problems related to continuity and approximation in the math profession.

6. Assessment Scheme

Assessment	Assessing Course ILOs
5% by Homeworks	1, 3
10% by Presentation	2
30% by Midterm	1, 3
55% by Final Exam	1, 3

All records of grades will be put on the website *http://grading.math.ust.hk/checkgrade/* as soon as they are available.

7. Student Learning Resources

Lecture Notes and Transparencies:
Lecture notes and transparencies may be downloaded from the course home page http://www.math.ust.hk/∼makyli/UG.html (Please scroll down to Math 2033 section.)

8. Teaching and Learning Activities

a. Lectures: There will be lectures by the instructor on materials presented in the lecture notes or transparencies with emphasis on proofs. By understanding proofs and doing homeworks, you will gradually attain the ability for ILO 1.

b. Tutorials: Students will form groups and do presentations in the tutorials. The presentations may be done by using whiteboard, overhead projector, WORD documents, power-point presentations or any math softwares. These will train them for ILO 2. For ILO 1 and 3, there will be written assignments and tests.

9. Course Schedule

(4 hours) Syllabus. Logic. Sets and Functions.

(3 hours) Countability

(4 hours) Real Numbers. Supremum and Infimum.

(8 hours) Limit of Sequences. Cauchy Condition. Limit of Functions.

(4 hours) Continuity

(6 hours) Differentiation.

(7 hours) Riemann integral. Improper Integral.