Math1014-L1 Calculus II

Course Outline - Fall 2024

https://canvas.ust.hk/courses/59480

1. Instructor(s)

Name: Dr. LAM, Tsz Kin

Contact Details:

Office: Room 3419 Phone: 2358-7457 Email: tklam@ust.hk

Office Hours: Wed 16:00-18:00 (in the Math Support Center; starting in Week 2)

2. Teaching Assistant(s)

Name: Felix Kwok (mafelix@connect.ust.hk)

3. Meeting Time and Venue:

Lecture:

Date/Time/Venue:

L1: TuTh 16:30 – 17:50, LTD

Tutorial:

Date/Time/Venue:

T1A:	Fri	12:00 - 12:50	Rm 2463
T1B:	Fri	13:30 - 14:20	Rm 1527
T1C:	Thu	15:00 - 15:50	Rm 4620
T1D:	Tue	11:30 - 12:20	Rm 6580
T1E:	Wed	11:30 - 12:20	Rm 6580
T1F:	Mon	18:00 - 18:50	Rm 4619

4. Course Description

Credit Points: 3

Pre-requisite: Math1012, or Math1013, or Math1023, or grade A- or above in Math1003

Exclusion: Math1020, Math1024.

Brief Information/synopsis:

This course is a sequel to Math1012 or Math1013. Topics include applications of definite integrals, integration techniques, improper integrals, infinite sequences and infinite series, power series and Taylor series, and vectors.

5. Intended Learning Outcomes

On successful completion of this course, students should be able to:

No.	ILOs
1	apply basic integration skills;
2	apply the method of integration on formulating and solving problems;

3	solve convergence problems of infinite sequences and series;
4	apply various vector operations in dimension 2 and 3.

6. Assessment Scheme

a. Examination duration: midterm exam: 1.5 hr; final exam: 3 hrs

b. Percentage of coursework, examination, etc.:

Assessment	Assessing Course ILOs
10% by online WeBWork homework (https://webwork.math.ust.hk)	1, 2, 3, 4
35% by midterm exam	1, 2, 3, 4
55% by final exam	1, 2, 3, 4

c. The grading is assigned based on performance in assessment tasks. The provisional grade scale is

A+/A/A- > 85% > B+/B/B- > 70% > C+/C/C- >50% > D > 40% > F

d. Grade descriptors:

A+/A/A-	Excellent performance on conceptual understanding and computational tasks with completely/almost-completely/roughly-completely correct approaches and solutions to fundamental calculus problems.
B+/B/B-	Good performance on conceptual understanding of calculus, with good/satisfactory/inadequate computational skills
C+/C/C-	Satisfactory performance on conceptual understanding of calculus with adequate/weak/inadequate level of computational skills
D	Marginal level of performance, showing lack of understanding and low level of computational skills
F	Unsatisfactory level of performance, showing no understanding

7. Student Learning Resources

Text/Reference:

J. Stewart, “Calculus–Early Transcendentals”. Cengage.

J. Hu, W.-P. Li, Y. Wu, “Calculus for scientists and engineers with matlab”.

8. Teaching and Learning Activities

Scheduled activities: 4 hrs (lecture + tutorial)

9. Course Schedule

Keyword Syllabus:

- Review of definite integrals and the Fundamental Theorem of Calculus.
- Integration by parts, trigonometric integrals, trigonometric substitutions, polar coordinates and calculus, partial fractions.
- Numerical integration
- Improper integrals.
- Area of a region between curves
- Volume by the methods of slicing and cylindrical shells.
- Length of curves, surface area, work, average value of a function.
- Sequences and infinite series, divergence and integral, ratio, root, and comparison tests, alternating series.
- Taylor polynomials, power series and Taylor series.
- Vectors in two and three dimensions, dot products, cross products.