Capital University of Economics and Business
Overseas Chinese College
Course Syllabus

Year and Semester	2021 Fall (Sept 6, 2021 - January 14, 2022)
Course Name	Calculus I
Course Code	MAT 111
Course Type	☑ General Education (Required) ☐ General Education (Elective) ☐ Professional Course (Required) ☐ Professional Course (Elective) ☐ Basic Disciplinary Course
Course Credits	4
Course Hours	64
Prerequisites	None
Instructor	Lemon Li
Contact Information	Office: C217 Tel: 010-83961082 Email: occ_limeng@cueb.edu.cn
Office Hour	M10-12,T 15:30-17:30,Th 9-10,F 9-10
Learning Centre	T 15:30-17:30;18:00-20:00
Grade/Section	2021CFA/2021ACCA2
Course Time/Place	M/TH 13:30-15:20/10-12;T/F 13:30-15:20/10-12

Textbook

James Stewart. *Calculus (8th Edition)*. China Renmin University Press. ISBN: 978-7-300-28088-2

Reference Book

1. Colin Adams, Joel Hass, Abigail Thompson: *How to Ace Calculus-The Streetwise Guide*, W H Freeman & Co (1998), ISBN: 0-716-73160-6

2.Anton, Bivens & Davis. *Calculus (7th Edition)*._John Wiley & Sons, Inc(2002). ISBN: 0-471-38157-8

Course Description

This is a complete course in first-semester calculus. This course emphasizes a multi-representational approach to calculus, with concepts, results, and problems being expressed graphically, numerically, analytically, and verbally. It is designed for students intending to major in business, economics, or natural and social sciences. Topics include the meaning, use, and interpretation of the derivative; techniques of differentiation; applications to curve sketching and optimization in a variety of disciplines; the definite integral and some applications; and the Fundamental Theorem of Calculus. After learning this course, students will extend their knowledge with concepts of function, limits and continuity, differentiation rules, application to extremum problems as well as the Fundamental Theorem of Calculus. This course also develops students' understanding of the concepts of calculus and provides experience with its methods and applications.

Student Learning Objectives

After completing this course, students will be able to:

Knowledge:

- Master the properties of different functions
- Evaluate limits using algebraic, geometric, analytic techniques
- Differentiate complexly constructed elementary functions
- Find the tangent line to a given graph at a given point
- Solve maximum and minimum problems using differentiation
- Apply calculus to curve sketching
- Apply Fundamental Theorem of Calculus to integral calculation
- Evaluate definite and indefinite integrals by using substitution rule

Capability:

- Develop skills and work problems involving functions and models
- Develop skills and work problems involving limits and rates of change
- Develop skills and work problems involving derivative and its application
- Develop skills and work problems involving integral and its application
- Demonstrate proficiency in Calculus application for real life problems

Mindset:

- Foster the interest of learning Calculus
- Develop their logical thinking ability and creative thinking ability
- Cultivate the spirit of cooperation and team work
- Get the awareness of connecting between knowledge and life experiences
- Develop their patriotic emotion through learning Calculus

Website Source

1. https://www.khanacademy.org
2. https://www.geogebra.org

Teaching Methods

This course consists of lectures, discussions and student presentations. Students will be divided into small groups with a group leader helping others in the group. Students must be prepared to finish some small questions and small quizzes during the class.

Grade Criterion

Component	Weight	Description
Final Exam	20%	A cumulative final examination will be given based on all of the contents of the class. A minimum of 25% of the exam (5 of the 20%) will consist of questions utilizing the application of critical thinking.
Mid-Term Test	10%	A cumulative midterm examination will be given based on all of the contents of the first half of the class. A minimum of 25% of the exam (5 of the 20%) will consist of questions utilizing the application of critical thinking.
Homework	10%	Homework problems will be assigned throughout the term, including but

		not limited to: terminologies, research project, and reading assignments.
Quizzes	10%	There will be at least 2 quizzes during the semester. The purpose of the quizzes is to ensure that students keep up with the readings. It may also be used as a way to check the attendance. Quizzes will test your knowledge of both concepts and the application of those concepts.
Presentation	10%	The students will be divided into several groups to prepare a presentation. Each student is required to be involved in the presentation. The topics can be selected from the textbook or lectures. Each group need to finish a PPT related to the topic which is given and hand in the related resources to the teacher before the presentation. The percentage is : content50%+organization10%+language15%+performance25%
Participation	20%	Individuals will be asked to participate individually in questions during the semester. Students are required to meet with their teachers every week. Their performances should be counted in their participation.
Attendance	20%	Refer to attendance policy listed below
Total	100%	

Detailed Grade Computation

	Before Midterm	After Midterm
Attendance	10%	10%
Participation	10%	10%
Homework & Quiz	10%	10%
Presentation		10%
Midterm test	10%	
Final exam		20%
Total	40%	60%

Grading Policy

A+ 97-100	A 93-96	A- 90–92	B+ 87-89	B 83-86	B- 80–82
C+ 75-79	C 70-74	C- 67–69	D+ 63–66	D 62-60	F 0- 59

Exam Schedule

Midterm Test: Oct. 25-29, 2021

Final Exam: Jan. 10-14, 2022

Assessment of Student Performance

☞ ***Self-Study and Reading ability Practice***

Instructor will give out the chapters or the reference books to read and use class hours to have discussion; students should be able to show a proactive attitude and ability for self-study and reading. Knowledge and oral English will be elements of homework or presentation score.

☞ ***Homework***

Students should finish their homework by themselves. Copying from others will be treated as cheating and the homework scores will be lowered. Students should hand in all assignments on time. Late assignments will be accepted at the discretion of the instructor (i.e., when the student was ill or had an

excused absence). Late assignments without reasonable proof will be reduced in score by 50%.

☞ ***Attendance***

Because the course covers a great deal of material, attending every class session is very important for performing well.

- Being late for 15 minutes or more is considered an absence.
- Five hours or above of unexcused absences will result in the lower level of the final grade by one grade band (e.g. from C – to D +). Any excused absence must be discussed directly with the teacher.
- Absence which is more than 1/3 of the total teaching hours will cause an F (a failing grade) directly, but students are welcome to continue attending classes.
- An incomplete grade (I) will be considered in case of medical or family emergencies.

☞ ***Participation***

- Students should participate in classes actively. Half of participation grade is determined by their presentation in class. They are encouraged to ask questions relevant to the subject and express their own opinions. Every student should respect the ideas, opinions, and questions of their classmates.
- Students should also use office hours to ask questions or talk with the instructor for good communication and effective learning.
- Frequent visiting the instructor and chatting in English during office hours is highly recommended.
- Any misbehavior and non-class related activities in class will result in the lower level of the participation grade, including ringing cell phones.
- All above behaviors will be solely evaluated by the instructor for scoring.

☞ ***Textbook***

Students must bring the textbook to class.

Topical Course Outline

Week	Date	Topics	Homework
2	Sept.13-Sept.17	● Chapter 1 1. Definition and properties of functions 2. Calculation of composite function 3. The inverse trigonometric function	——
3	Sept.20-Sept.24	● Chapter 2 1. Definition of limit 2. Limit calculation by using limit laws expertly	——
4	Sept.27-Oct.1	● Chapter 2 1. Limits at infinity 2. Vertical and horizontal asymptotes	——
5	Oct.4-Oct.8	● Chapter 3 1. Definition and property of continuity 2. Definition of derivative 3. Derivative as a function ● Quiz 1	——
6	Oct.11-Oct.15	● Chapter 3 1. Rules of differentiation 2. Derivative of trigonometric functions	——

		3. The chain rules	
7	Oct.18-Oct.22	● Chapter 3 1. Derivative of implicit functions 2. Higher derivatives 3. Derivative of logarithmic functions	——
8	Oct.25-Oct.29	● Midterm Test	——
9	Nov.1-Nov.5	● Chapter 4 1. Maximum and minimum values of a function 2. Derivative and the shape of a graph 3. Optimization problems	——
10	Nov.8-Nov.12	● Chapter 4 1. Linear approximation and differentials 2. Mean value theorem	——
11	Nov.15-Nov.19	● Chapter 4 1. The L'Hospital's Rule 2. Anti-derivative of function	——
12	Nov.22-Nov.26	● Chapter 5 1. The area and distance problem 2. Definition of definite integral	——
13	Nov.29-Dec.3	● Chapter 5 1. The fundamental theorem of calculus 2. Calculation of integration	——
14	Dec.6-Dec.10	● Chapter 5 1. The fundamental theorem of calculus 2. Calculation of integration(practice)	——
15	Dec.13-Dec.17	● Chapter 5 1. Integral calculation: The substitution rule 2. The substitution rule: Practice	——
16	Dec.20-Dec.24	● Chapter 5 1. Integral calculation: Integration by parts 2. Integral calculation: trigonometric integrals ● Quiz 2	
17	Dec.27-Dec.31	● Presentation	
18	Jan.3-Jan.7	● Chinese Review Session ● Self-review by the students	
19	Jan.10-Jan.14	● Final Exam	

Note: *Some chapters or sections may leave for self-study, this is the students' duty to learn and understand, they may also be included in the quizzes or exams.*

A review in Chinese may be held during L.C. and O.H. in the semester.

Teacher's Office Hour

- The instructor's office hour is shown in the front of the office door.
- Students are suggested to use the instructor's office hour and learning center to ask questions or talk with the instructor once at least per week for good communication and effective learning, which is recorded in the students' participation.
- The time can be scheduled by instructors or students, or both.

Cheating and Plagiarism

Cheating is not tolerated. Any student caught cheating on a quiz; test or exam will be given a mark of zero (0) for the particular work. At the beginning of the semester the definition of plagiarism will be

carefully explained, when any thoughts or writings of another person are used, they must be clearly identified (usually one uses quotation marks) and the source notes. **If any student is caught cheating on any homework assignment, the highest score the student can earn in that course is a "C".**

Important Dates

Fall Semester, 2021	**September 6, 2021— January 14, 2022**
Sept. 2-3	Registration
Sept. 6-10	Freshman Education
Sept. 13	Classes Begin (Freshmen)
Sept. 21	Mid-Autumn Festival
Oct. 1	National Day Holiday
Oct. 25-Oct. 29	Mid-term Test (tentative)
Jan. 1,2022	New Year's Day Holiday
Jan. 10-14	Final Exam Period
Jan. 17	Winter Vacation Begins

Note: *This syllabus is tentative and may be changed or modified throughout the semester. All students will be notified and a new syllabus will be given.*

Instructor: Li Ling **Department Head: Prof. Jingning Li**