Capital University of Economics and Business
Overseas Chinese College
Course Syllabus

Year and Semester	2023 Fall					
Course Name	Calculus I					
Course Code	MAT111					
Course Type	☑ General Education (Required) ☐ General Education (Elective) ☐ Basic Disciplinary Course ☐ Professional Course (Required) ☐Professional Course (Elective) ☐Professional Course (Expanded) ☐Professional Course (Advanced)					
Course Credits	4					
Course Hours	Total Class Hours	60	Lecture Hours	60	Experiment (Computer) Hours	0
Applicable object	☑ Freshman ☐ Sophomore ☐ Junior ☐Senior					
	☐ Business Administration (Accounting)					
	☐ Information Management and Information Systems (Finance)					
Prerequisites	None					
Instructor	Lemon Li/Li Ling					
Contact Information	Office:C217					
	Tele: 010-83951092					
	Email:occ_limeng@cueb.edu.cn/liling@cueb.edu.cn					
Office Hour	Lemon Li: M 11:35-12:20 T 11:35-12:20 W 9:55-12:20 Li Ling: M 8:00-9:35 T 13:30-14:15 TH 9:55-12:20					
Learning Centre	Lemon Li: TH 9：55-11：30 T18：00-20：00 （online） Li Ling: M 18:00-20:00 (online) F 8:00-9:35					
Grade/Section	23CFA/BA2/ACCA2/BA1/IT/ACCA1					
Course Time/Place	M/T67/34 TTH12 M/TH 34/89 T/TH12 M/TH34/67 TF34					
Textbook	微积分 詹姆斯.斯图尔特 张乃岳译					

Reference Book

《数学模型》第 2 版，谭永基、蔡志杰编著，复旦大学出版社，2011.

《数学建模方法及其应用》，韩中庚，高等教育出版社，2005.

Course Description

Mathematical models describe a variety of real-world situations, providing unique information and insight. Systems that can benefit from modeling range from daily occurrences (e.g. optimizing campus parking) to highly complex interactions (e.g. predicting weather) to currently theoretical scenarios (e.g. computing the best vaccination or treatment strategy in case of bioterrorist attack).

Mathematical modeling is a mathematical tool for solving real world problems. In this course, students study a problem-solving process. They learn how to identify a problem, construct or select appropriate models, figure out what data needs to be collected, test the validity of a model, calculate solutions and implement the model. Emphasis lies on model construction in order to promote student creativity and demonstrate the link between

theoretical mathematics and real world applications.

Student Learning Objectives

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

Knowledge	Explain the concept of calculus . Determine derivatives by a variety of techniques including explicit differentiation, implicit differentiation, and logarithmic differentiation. Use these derivative to study the characteristics of curves. Determine derivatives using implicit differentiation and use to study characteristics of a curve. Use basic techniques of integration to find particular or general antiderivatives.
Capability	◆Analyze and apply the notions of continuity and differentiability to algebraic and transcendental functions ◆ Apply the Fundamental theorem of calculus to evaluate definite integrals. ◆Use differentiation and integration to solve real world problems such as rate of change, optimization, and area problems.
Mindset	◆Be logical, methodical, consistent and accurate ◆Apply critical thinking in the process of decision making

Website Source

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

Teaching Methods

Throughout this semester, we study a variety of modeling types. Topics include proportionality models, fitting models to data, creating simulations, dimensional analysis, probabilistic modeling, optimization, and both discrete and continuous models. For day-to-day details, see the calendar pages of our class website.

Additionally, students work in small groups on a semester-long modeling project. Early-semester activities include discussions of possible project ideas, a workshop on technical writing, project proposals, and brief presentations in class. Later activities include individual group meetings, peer-reviewed rough drafts, and longer final presentations to 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	20%	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	15%	Homework problems will be assigned throughout the term, including but not limited to: terminologies, research project, and reading assignments.

Quizzes	15%	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	10%	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	10%	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.
Total	100%	

Detailed Grade Computation

	Before Midterm	After Midterm
Attendance	5%	5%
Participation	5%	5%
Homework	5%	10%
Quizzes	5%	10%
Presentation		10%
Mid-Term Test	20%	
Final exam		20%
Total	40%	60%

Assessment of Student Performance

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

Instructor will give out the Learning modules 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（original）

Week	Topics	Platform	Homework
4	● Introduction of the syllabus ● Chapter 1 1. Definition and properties of functions 2. Calculation of composite function 3. The inverse trigonometric function	Wechat group & Xuexitong Classroom	Homework for Chapter 1
5	● Chapter 1 1. Definition of limit 2. Limit calculation by using limit laws expertly	Wechat group & Xuexitong Classroom	Homework for Chapter 1
6	● Chapter 1 1. Limits at infinity 2. Vertical and horizontal	Wechat group & Xuexitong Classroom	Homework for Chapter 1

	asymptotes		
7	● Chapter 1 1. Definition and property of continuity 2. Definition of derivative 3. Derivative as a function ● Quiz 1	Wechat group & Xuexitong Classroom	Homework for Chapter 1
8	● Chapter 2 1. Rules of differentiation 2. Derivative of trigonometric functions 3. The chain rules	Wechat group & Xuexitong Classroom	Homework for Chapter 2
9	● Chapter 2 1. Derivative of implicit functions 2. Higher derivatives 3. Derivative of logarithmic functions	Wechat group & Xuexitong Classroom	Homework for Chapter 2
10	● Chinese review session ● Midterm Test	Wechat group & Xuexitong Classroom	——
11	● Chapter 3 1. Maximum and minimum values of a function 2. Derivative and the shape of a graph 3. Optimization problems	Wechat group & Xuexitong Classroom	Homework for Chapter 3
12	● Chapter 3 1. Linear approximation and differentials 2. Mean value theorem	Wechat group & Xuexitong Classroom	Homework for Chapter 3
13	● Chapter 3 1. The L'Hospital's Rule 2. Anti-derivative of function	Wechat group & Xuexitong Classroom	Homework for Chapter 3
14	● Chapter 4 1. The area and distance problem 2. Definition of definite integral	Wechat group & Xuexitong Classroom	Homework for Chapter 4
15	● Chapter 4 1. The fundamental theorem of calculus 2. Calculation of integration	Wechat group & Xuexitong Classroom	Homework for Chapter 4
16	● Chapter 4 1. Integral calculation: The substitution rule 2. The substitution rule: Practice ● Quiz 2	Wechat group & Xuexitong Classroom	Homework for Chapter 4
17	● Presentation	Wechat group & Xuexitong Classroom	——
18	● Chinese Review Session ● Self-review by the students	Wechat group & Xuexitong Classroom	——
19	● Final exam period		——

Note: *In the first three weeks, Tencent Meeting,Xuexitong and the Wechat group will be used as themain teaching methods. The Wechat group will be mainly used to inform thestudents daily study activities and tasks Tencent Meeting andXuexitong will be used as the main studyplatform to teach and*

organize the study activities When classes change back to school, Tencent Meeting will be stopped to use.Xuexitong will be mainly used to upload PPTS and release some learningmaterials.

Some Learning modules 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

Midterm Test	**Week 9 or 10**
Final Exam	**Week 18 or 19（Refer to the notice of the Academic Affairs Office）**

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: Lemon Li /Li Ling **Department Head: Li Jingning**

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