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
Course Code	MAT111
Course Type	☑ General Education (Required) ☐ General Education (Elective) ☐ Professional Course (Required) ☐ Professional Course (Elective) ☐ Basic Disciplinary Course
Course Credits	4
Course Hours	60
Prerequisites	None
Instructor	Jianming Huang
Contact Information	Office: C217 Tele: (010)83951082 Email: huangjianming@cueb.edu.cn
Office Hour	Mon.: 10:00-12:00 Wed.: 14:30-17:30 Thur. 10:00-11:00
Learning Centre	Tue. 18:00-20:00 Wed. 10:00-12:00
Grade/Section	2021ACCA1
Course Time/Place	T&F: 8:00-9:50 /A101

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 contains online lectures, group discussions, homework, quizzes, presentation and final exam. Textbook content will be introduced first. Then real case and practice questions will be delivered to students as a way to test their understanding of the knowledge. This will require individual or group assignment in or after 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. The exam paper may be composed of multiple-choice questions, short answer questions, essay questions. Students should rely primarily on homework assignments and class exercise as reference for exams.
Mid-term Test	10%	A cumulative midterm test will be given based on all of the contents that have been taught in class. The test paper may be mainly composed of multiple-choice questions and short answer questions. It should be

		completed within 30 minutes in class.
Homework & Quiz	20%	Most of the assigned homework is taken from the Exercises in the textbook. Assignments will be collected at the clearly stated date. Late assignments will not be accepted. In general, each assignment should be prepared in Office software as appropriate. Hand-written assignments will not be accepted. The graded assignments will be kept by instructor for reference and won't be returned to students.
Presentation	10%	The students will be individual prepare a presentation. The topics can be selected from the textbook or lectures. Each student need to finish a PPT related to the topic which is given and hand in the related resources to the teacher before the presentation.
Participation	20%	Individuals will be asked to participate individually in a question and answer at least 5 times during the semester. The 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%
Mid-term 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: November 1-5, 2021;
Final Exam: January 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 Index	Content
Week 1-3	New students registration
Week 4	**Ch1 Functions and Models** 1. Better understanding of definition and properties of functions 2. Master some essential kinds of functions 3. Can get new functions from old functions 4. Know properties of exponential functions
Week 5	**National Holiday**
Week 6	**Ch2 Limits and Derivatives** 1. Understand the tangent and velocity problem 2. Master the definition of limit 3. Can calculate limits by using limit laws expertly 4. Understand the precise definition of a limit

Week 7	5. Master the definition and property of continuity, can determine whether a function is continuous or not, can apply intermediate value theorem to some questions; 6. Know how to calculate limits at infinity, and know how to find vertical and horizontal asymptotes 7. Master the definition of derivative, and can use definition to find derivative 8. Can find derivative as a function
Week 8	**Ch3 Differentiation Rules** 1. Know how to find derivative of polynomials and exponential functions 2. Master the product and quotient rules 3. Know how to calculate derivative of trigonometric functions 4. Can use chain rule to find derivative of composite functions
Week 9	**Midterm Examination**
Week 10	5. Know how to find derivative of implicit functions 6. Know how to find higher derivatives
Week 11	7. Can find derivative of logarithmic functions Review of midterm exam
Week 12	Analysis for Midterm Exam Master the definition of differentials **Ch 4 Applications of differentiation** 1. Can find maximum and minimum values of a function
Week 13	2. Master the mean value theorem and its application 3. Know how derivative affect the shape of a graph 4. Know what is indeterminate form and the can use L'Hospital's Rule to find limit
Week 14	5. Know how to use calculus to solve optimization problems 6. Know the meaning of antiderivatives and can find it
Week 15	**Ch5 Integrals** 1. Understand the area and distance problem 2. Master the definition of definite integral
Week 16	3. Master the fundamental theorem of calculus 4. Master the definition of indefinite integral and the net change theorem, 5.Can calculate integral by using substitution
Week 17	**Quiz II** Review &Presentation
Week 18	**Final Examination**

Note: *All chapters and 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

Sep. 5	Registration (Sophomores, Juniors and Seniors)
Sep. 6	Classes Begin (Sophomores, Juniors and Seniors)
Sep. 10	Last Day to Drop or Add a Course (Sophomores, Juniors and Seniors)
Sep. 18	Registration (Freshmen)
Sep. 20-24	Entrance Education (Freshmen)
Sep. 21	Mid-Autumn Festival
Sep. 27	Classes Begin (Freshmen)
Oct. 1	National Day
Nov. 1-5	Midterm Test
Jan. 1, 2022	New Year's Day
Jan. 1-4	Revision (Sophomores, Juniors and Seniors)
Jan. 5-14	Final Exam Period (Sophomores, Juniors and Seniors)
Jan. 10-14	Final Exam Period (Freshmen)
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: Jianming Huang **Department Head: Jingning Li**

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