Capital University of Economics and Business
Overseas Chinese College
Course Syllabus

Year and Semester	2022 Spring (February 28, 2022 – July 17, 2022)
Course Name	Calculus II
Course Code	MAT 112
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	Ling Li
Contact Information	Office: C217
	Tel: 010-83961082
	Email: liling@cueb.edu.cn
Office Hour	TBA
Learning Centre	TBA
Grade/Section	2021BA
Course Time/Place	T 8:00-9:35 TH: 9:55-11:30/ 5#109

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 (Seventh Edition). John Wiley & Sons, Inc(2002). ISBN: 0-471-38157-8

Course Description

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. After learning this course, students will extend their knowledge with techniques of integration, application of integration, parametric and polar curves, series and power series, partial derivatives as well as the multiple integration. 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 applications of integration
- ⬦ Evaluate integrations by using different techniques
- ⬦ Master the further applications of integration
- ⬦ Apply methods of calculus to parametric curves and polar coordinates
- ⬦ Understand the definition of differential equation
- ⬦ Master the application of series and power series
- ⬦ Evaluate the partial derivatives of functions with several variables
- ⬦ Evaluate the multiple integrals in Cartesian and polar coordinates

Capability:

- ⬦ Develop skills and work problems involving functions and models
- ⬦ Develop skills and work problems involving integral calculation
- ⬦ Develop skills and work problems involving partial derivatives
- ⬦ 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	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%	Refer to attendance policy listed below
Total	**100%**	

Detailed Grade Computation

	Before Midterm	**After Midterm**
Attendance	5%	5%
Participation	5%	5%
Homework	5%	10%
Quizzes	5%	10%
Presentation		10%
Midterm test	20%	
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: Apr 25-Apr 29
Final Exam: July 11-July 15

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
1	Feb.28-Mar.4	● Chapter 5 1.　Master how to find area between curves 2.　Can find the volume by the slicing method	＿＿＿
2	Mar.7-Mar.11	● Chapter 5 1.　Can find the volume by the shell method 2.　Self-study the average value of function ● Chapter 7 1. Understand the basic techniques of integration 2. Master integration by parts	＿＿＿
3	Mar.14-Mar.18	● Chapter 7 1.　Master the trigonometric integration 2.　Master the trigonometric substitution	＿＿＿
4	Mar.21-Mar.25	● Chapter 7 1.　Master the partial fraction of integration 2.　Understand other methods of integration 3.　Master the improper integral calculation	＿＿＿

5	Mar.28-Apr.1	● Chapter 8 1. Master how to find the length of curves 2. Master how to find the surface area 3. Self-study on the physical application	———
6	Apr.4-Apr.8	● Chapter 9 1. Understand modeling with differential equation 2. Master the separable equations 3. Master the linear equations ● Quiz 1	———
7	Apr.11-Apr.15	● Chapter 10 1. Master the parametric equations 2. Master the polar coordinate 3. Master the application of calculus in polar coordinate	———
8	Apr.18-Apr.22	● Chapter 11 1. Understand the definition of sequence 2. Master the definition of series	———
9	Apr.25-Apr.29	● Chapter 11 1. Master the divergence and integral test 2. Master the comparison tests 3. Master the alternating series ● Review and midterm test	———
10	May.2-May.6	● Chapter 11 1. Master the convergence and ratio and root tests 2. Summarize about the test of series 3. Master how to approximate functions with polynomials	———
11	May.9-May.13	● Chapter 11 1. Master the property of power series 2. Understand the definition of Taylor series 3. Master the application of Taylor series	———
12	May.16-May.20	● Chapter 12 1. Understand functions with several variables 2. Self-study the graphs and level curves 3. Master the limits and continuity calculation	———
13	May.23-May.27	● Chapter 12 1. Master the partial derivatives of multivariable functions 2. Master the chain rules of partial derivatives of multivariable functions	———
14	May.30-June.3	● Chapter 12 1. Understand the directional derivatives and the gradient 2. Self-study about the tangent planes and linear approximation 3. Master the maximum/minimum problems of multivariable functions	———
15	Jun.6-Jun.10	● Chapter 13 1. Understand the definition of double integral 2. Master the double integrals over rectangle 3. Master the double integrals over general region	———
16	Jun.13-Jun.17	● Chapter 13 1. Master the double integrals in polar coordinates 2. Self-study the applications of double integrals	———

		3. Understand the triple integral ● Quiz 2	
17	Jun.20-Jun.24	● Students' presentation	——
18	Jun.27-Jul.1	● Chinese Review Session I	——
19	Jul.4-Jul.8	● Chinese Review Session II ● Self-review by the students	——
20	Jul.11-Jul.15	● 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

Spring Semester, 2022	February 28, 2022— July 17, 2022
February.28	Classes Begin
April.5	Qing Ming Holiday (tentative)
April.22	Spring Sports
April.25-April.29	Midterm Test (tentative)
May.1	National Labor's Holiday (tentative)
June.3	Duan Wu Holiday (tentative)
June.20-June.24	Final Exam Period (Sophomores and Juniors)
June.27-July.17	Social Practice for Sophomores and Juniors
July.11-July.15	Final Exam Period (Freshman)
July.19	Summer 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: <u>Li Ling</u>　　　　　　　　**Department Head:** <u>Prof. Jingning Li</u>

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