**Capital University of Economics and Business**

**Overseas Chinese College**

**Course Syllabus**

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| **Year and Semester** | 2021 Spring (March 1, 2021 – July 16, 2021) |
| **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** | MAT111 |
| **Instructor** | Jianming Huang  |
| **Contact Information** | Office: C217 |
|  | Tel: 010-83961082 |
|  | Email: huangjianming@cueb.edu.cn |
| **Office Hour** | TBA |
| **Learning Centre** | TBA |
| **Grade/Section** | Y03/Y04/Y06 |
| **Course Time/Place** | Y03 M: 15:40-17:30 TH: 10:10-12:00/A104Y04 M: 13:30-15:20 W: 10:10-12:00/A105Y06 T: 15:40-17:30 TH: 8:00-9:50/A203 |
| **Textbook** |
| William L. Briggs, Lyle L. Cochran, Bernard Gillett. Calculus (2nd Edition). China Renmin University Press. ISBN: 978-7-300-28047-9 |
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| **Reference Book** |
| 1. Colin Adams, Joel Hass, Abigail Thompson: How to Ace Calculus-The Streetwise Guide, W H Freeman & Co (1998), ISBN: 0-716-73160-62.Anton, Bivens & Davis. Calculus (Seventh Edition). John Wiley & Sons, Inc(2002). ISBN: 0-471-38157-8 |
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| **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, sequence and series, parametric and polar curves, 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.  |
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| **Student Learning Objectives** |
| After completing this course, students will be able to:🞟 Evaluate integration in different techniques🞟 Apply integration to find volume and area🞟 Differentiate Cartesian and parametric functions using key theorems 🞟 Find the convergence or divergence of a given series🞟 Master how to work with Taylor series🞟 Solve maximum and minimum problems for multivariable function🞟 Solve partial derivative problems🞟 Master double integrals over general regions🞟 Master triple integral calculation  |
| **Website Source** |
| 1. https://www.khanacademy.org2. https://www.geogebra.org |
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| **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. |
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| **Grade Criterion** |
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| **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% |  |

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| **Detailed Grade Computation** |
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|  | **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% |

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| **Grading Policy** |
| A+ 97-100 A 93-96 A- 90–92 B+ 87-89 B 83-86 B- 80–82C+ 75-79 C 70-74 C- 67–69 D+ 63–66 D 62-60 F 0- 59 |
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| **Exam Schedule** |
| Midterm Test: Apr.26-Apr.30Final Exam: July 12-July 16 |
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| **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. |
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| **Topical Course Outline** |
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| **Week** | **Date** | **Topics** | **Homework** |
| 1 | Mar.1-Mar.5 | ⚫ Chapter 81. Understand the basic techniques of integration2. Master integration by parts3. Master the trigonometric integration | \_\_\_\_ |
| 2 | Mar.8-Mar.12 | ⚫ Chapter 81. Master the trigonometric substitution
2. Master the partial fraction of integration
3. Understand other methods of integration
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| 3 | Mar.15-Mar.19 | ⚫ Chapter 81. Master the improper integrals
2. Understand the differential equation
 | —— |
| 4 | Mar.22-Mar.26 | ⚫ Chapter 61. Understand velocity and net changes
2. Master how to find area between curves
3. Can find the volume by slicing
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| 5 | Mar.29-Apr.2 | ⚫ Chapter 61. Can find the volume by shells
2. Master how to find the length of curves
3. Self-study on how to find the surface area
4. Self-study on the physical application

⚫ Quiz 1 | —— |
| 6 | Apr.5-Apr.9 | ⚫ Chapter 91. An overview about sequence and series
2. Introduction about sequence
3. Introduction about series
 | —— |
| 7 | Apr.12-Apr.16 | ⚫ Chapter 91. Master the divergence and integral test
2. Master the ratio, root and comparison tests
 | —— |
| 8 | Apr.19-Apr.23 | ⚫ Chapter 91. Master the alternating series
2. Summarize about the test of series
 | —— |
| 9 | Apr.26-Apr.30 | ⚫ Chapter 101. Master how to approximate functions with polynomials
2. Master the property of power series

⚫ Midterm Test | —— |
| 10 | May.6-May.8 | Chapter 101. Understand the definition of Taylor series
2. Master the application of Taylor series
3. Review and summarize about series
 | —— |
| 11 | May.10-May.14 | ⚫ Chapter 111. Master the parametric equations
2. Master the polar coordinate
3. Master the application of calculus in polar coordinate
 | —— |
| 12 | May.17-May.21 | ⚫ Chapter 121. Understand vectors in plane
2. Master the dot products and cross product
3. Master the application of lines and curves in space
 | —— |
| 13 | May.24-May.28 | ⚫ Chapter 131. Understand functions with several variables
2. Understand the graphs and level curves
3. Master the limits and continuity of multivariable functions
 | —— |
| 14 | May.31-June.4 | ⚫ Chapter 131. Master the partial derivatives of multivariable functions
2. Master the chain rules of partial derivatives of multivariable functions
 | —— |
| 15 | Jun.7-Jun.11 | ⚫ Chapter 131. 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
 | —— |
| 16 | Jun.15-Jun.18 | ⚫ Students’ presentation | —— |
| 17 | Jun.21-Jun.25 | Chapter 141. Understand the definition of double integral
2. Master the double integrals over rectangle
3. Master the double integrals over general region
 | —— |
| 18 | Jun.28-Jul.2 | ⚫ Chinese Review Session I | —— |
| 19 | Jul.5-Jul.9 | ⚫ Chinese Review Session II⚫ Self-review by the students | —— |
| 20 | Jul.12-Jul.16 | ⚫ Final Exam | —— |

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| ***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.* |
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| **Teacher’s Office Hours** |
| 🞟 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. |
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| **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".** |
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| **Important Dates** |
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| **Spring Semester, 2021** | **March 1, 2021— July 16, 2021** |
| March.1 | Classes Begin（Freshmen） |
| April.4 | Qing Ming Holiday (tentative) |
| April.16 | Spring Sports |
| April.26-April.30 | Midterm Test (tentative) |
| May.1 | National Labor’s Holiday (tentative) |
| June.12-June.14 | Duan Wu Holiday (tentative) |
| June.21-June.25 | Final Exam Period (Sophomores and Juniors) |
| June.28-July.18 | Social Practice for Sophomores and Juniors |
| July.12-July.16 | Final Exam Period (Freshman) |
| July.19 | Summer Vacation Begins |

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| ***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.* |
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| **Instructor: Prof. Jianming Huang Department Head: Prof. Jingning Li**  |

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