**Capital University of Economics and Business**

**Overseas Chinese College**

**Course Syllabus**

|  |  |
| --- | --- |
| **Year and Semester** | 2021 Spring (March 1, 2021 - June 20, 2021) |
| **Course Name** | Probability and Statistics |
| **Course Code** | MAT231 |
| **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,MAT112,MAT221 |
| **Instructor** | Meng Li |
| **Contact Information** | Office: C217 |
|  | Tele: (010)83951082 |
|  | Email: occ\_limeng@cueb.edu.cn |
| **Office Hour** | W: 8:00-10:00；13:30-15:30  F: 15:30-17:30; |
| **Learning Centre** | M: 15:30-17:30; T: 18:00-20:00; |
| **Grade/Section** | 2019CFA |
| **Course Time/Place** | M 13:30-15:20 TH 8:00-9:50 Room 210,Bo Xue building |
| **Textbook** | |
| JAY L.DEVORE, Probability and Statistics | |
|  | |
| **Reference Book** | |
| * R. Spiegel. Schaum's outline of theory and problems of probability and statistics. Schaum's outline series. McGraw-Hill, New York, 1975. • L. Blank. Statistical procedures for engineering, management, and science. McGraw Hill, New York, 1980. • K. Subrahmaniam. A primer in probability, volume 111 of Statistics: textbooks and monographs. Marcel Dekker, New York, second edition, 1990. * Feller. An introduction to probability theory and its applications. Wiley series in probability and mathematical statistics. Wiley, New York, third edition, 1967-1968. * C. Giri. Introduction to probability and statistics (in two parts), volume 7 of Statistics: textbooks and monographs. Marcel Dekker, New York, 1974. • * Y. G. Sinay. Probability theory, an introductory course. Springer-Verlag, Berlin; New York, 1992. | |
| The textbook and reference book mainly cover the knowledge that instructor introduced in the class, but not limited to these books, students should have the ability to search and expose to the resources to support study. | |
| **Course Description** | |
| An introduction to probability theory and mathematical statistics that emphasizes the probabilistic foundations required to understand probability models and statistical methods. The purpose of *Statistics for Business and Economics* is to provide students, primarily in the fields of business administration and economics, with a sound conceptual introduction to the field of statistics and its many applications. The course is applications-oriented and topics covered will include the probability axioms, basic combinatorics, discrete and continuous random variables, probability distributions, mathematical expectation, common families of probability distributions, and the central limit theorem, which help decision making in all world. | |
|  | |
| **Student Learning Objectives** | |
| After completing this course, students will be able to:   * have a good understanding of the theory of probability, both discrete and continuous, including a variety of useful distributions, expectation and variance, analysis of sample statistics, and central limit theorems, as described in the syllabus. * develop the ability to solve problems using probability. * master some of the basic methods of statistics and prepare them for further study in statistics. * develop abstract and critical reasoning by studying logical proofs and the axiomatic method as applied to basic probability. * find connections between probability and other branches of mathematics, and to see some of the history of probability. | |
|  | |
| **Teaching Methods** | |
| This course contains lectures, class discussions, homework, quizzes, presentation and exams. 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 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 and practice problems. Students should rely primarily on homework assignments to give them a sense of what they may see for material on exams. | | Mid-Term Test | 20% | 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 it should be completed within 60 minutes in class. | | Homework | 15% | 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. The graded assignments will be kept by the tutor for reference and won’t be returned to students. | | Quizzes | 15% | There will be at least 2 quizzes during the semester. Quizzes may or may not be announced in advance. 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. | | Participation | 10% | 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 | 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% (5% of critical thinking) |  | | Final exam |  | 20% (5% of critical thinking) | | 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: Week 8 (TBA)  Presentation: Week 12  Final Exam: Week 16 (TBA) | |
|  | |
| **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 | Mar. 2 | * Syllabus * Introduction to Statistics, Data & Statistical Thinking Introduction | Homework will be given on the Superstar App(学习通) | | Mar. 5 | * Introduction to statistics | Homework will be given on the Superstar App(学习通) | | 2 | Mar. 9 | * Probability Theory （relationship） * Introduction to Sample spaces | Homework will be given on the Superstar App(学习通) | | Mar. 12 | * Counting principles * Addition rule * Product rule * Permutation * Combination | Homework will be given on the Superstar App(学习通) | | 3 | Mar. 16 | * Introduction to Probability * More about Probability | Homework will be given on the Superstar App(学习通) | | Mar. 19 | * Conditional probabilities * Bayes formula * Independent events | Homework will be given on the Superstar App(学习通) | | 4 | Mar. 23 | * Probability Theory * Theorem of the total probability | Homework will be given on the Superstar App(学习通) | | Mar. 26 | * Application of probability theory * Exercise review | * Homework will be given on the Superstar App(学习通) | | 5 | Mar. 30 | * Introduction to Random Variables * Discrete Random Variables and Their Probability Distributions | Homework will be given on the Superstar App(学习通) | | Apr. 2 | * More on distributions of random variables | Homework will be given on the Superstar App(学习通) | | 6 | Apr. 6 | * Introduction to expected value * Examples of expected values | Homework will be given on the Superstar App(学习通) | | Apr. 9 | * Expected Value Expectation of a Function of a Random Variables * Variance * Exercise | Homework will be given on the Superstar App(学习通) | | 7 | Apr. 13 | * Introduction to continuous random variables * Continuous random variables and their distributions | Homework will be given on the Superstar App(学习通) | | Apr. 16 | * Distributions of Continuous Variables * Exercise | Homework will be given on the Superstar App(学习通) | | 8 | Apr. 20 | * Quiz I |  | | Apr. 23 | * Midterm examination |  | | 9 | Apr. 27 | * Introduction to standard normal distribution | Homework will be given on the Superstar App(学习通) | | Apr. 30 | * Introduction to normal distribution * Examples and exercise | Homework will be given on the Superstar App(学习通) | | 10 | May. 4 | * Introduction to statistic and parameter * Introduction to sampling distribution | Homework will be given on the Superstar App(学习通) | | May. 7 | * Sampling distribution of a statistic and simulation | Homework will be given on the Superstar App(学习通) | | 11 | May. 11 | * Sampling distribution of sample mean * Exercise | Homework will be given on the Superstar App(学习通) | | May. 14 | * Sampling distribution of sample Proportion * Exercise | Homework will be given on the Superstar App(学习通) | | 12 | May. 18 | * Presentation I |  | | May. 21 | * Presentation II |  | | 13 | May. 25 | * Introduction to point estimation | Homework will be given on the Superstar App(学习通) | | May. 28 | * Methods of point estimation | Homework will be given on the Superstar App(学习通) | | 14 | Jun. 1 | * Introduction to interval estimation | Homework will be given on the Superstar App(学习通) | | Jun. 4 | * Interval estimation of mean and proportion * Exxercise | Homework will be given on the Superstar App(学习通) | | 15 | Jun. 8 | * More on interval estimation | Homework will be given on the Superstar App(学习通) | | Jun. 11 | * Quiz II |  | | 16 | Jun. 15 | * Review for final examination I |  | | Jun. 18 | * Review for final examination I |  |   ***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".** | |
|  | |
| ***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.* | |
| **Important Dates**   |  |  | | --- | --- | | **Spring Semester, 2021** | **Feb 28, 2021— July 18, 2021** | | Feb. 28 | Registration | | Mar. 1 | Classes Begin | | Apr.4 | Qing Ming Festival | | Apr.16 | Spring Sports | | Apr.26 -30 | Midterm Test (tentative) | | May 1 | Labor Day | | June 14 | Dragon-Boat Festival | | June 21-25 | Final Exams for Sophomores and Juniors | | June 28-July18 | Social Practice for Sophomores and Juniors (tentative) | | July 3-11 | Revision (Freshmen) | | July 12-16 | Final Exam Period (Freshmen) | | July 19 | Summer Vacation Begins | | |
| **Instructor: Meng Li**  **Department Head: Jingning Li** |

🏶 🏶 🏶 🏶 🏶 🏶