暨南大学
JINAN UNIVERSITY

0701M320

Introduction to Probability

Instructor: TBA
Time: June 13, 2022 - July 15, 2022
Office Hours: 2 hours (according to the teaching schedule)
Contact Hours: 60 (50 minutes each)
Credits: 4
E-mail: TBA

Course Description

This course is to introduce the language and core concepts of probability theory. Topics including probability spaces, random variables, independence, conditional expectation and probability, joint distributions, consequences, the Central Limit Theorem, conditional distribution.

Required Textbook(s)

Introduction to Probability, David F. Anderson, Timo Seppäläinen, and Benedek Valkó; ISBN: 978110841585

Prerequisite

0701M230   Calculus II

Course Outline

Chapter 1 Experiments with random outcomes
- 1.1 Sample spaces and probabilities
- 1.2 Random sampling
- 1.3 Infinitely many outcomes

- 1.4 Consequences of the rules of probability
- 1.5 Random variables: a first look

Chapter 2 Conditional probability and independence
- 2.1 Conditional probability
- 2.2 Bayes' formula
- 2.3 Independence
- 2.4 Independent trials

Chapter 3 Random variables
- 3.1 Probability distributions of random variables
- 3.2 Cumulative distribution function
- 3.3 Expectation
- 3.4 Variance

Chapter 6 Joint distribution of random variables
- 6.1 Joint distribution of discrete random variables
- 6.2 Jointly continuous random variables
- 6.3 Joint distributions and independence
- 6.4 Further multivariate topics

Chapter 7 Sums and symmetry
- 7.1 Sums of independent random variables

Chapter 8 Expectation and variance in the multivariate setting
- 8.1 Linearity of expectation
- 8.2 Expectation and independence
- 8.4 Covariance and correlation
- 8.5 The bivariate normal distribution
- 8.6 Finer points

Chapter 9 Tail bounds and limit theorems
- 9.1 Estimating tail probabilities
- 9.2 Law of large numbers
- 9.3 Central limit theorem

Chapter 10 Conditional distribution
- 10.1 Conditional distribution of a discrete random variable
- 10.2 Conditional distribution for jointly continuous random variables
- 10.3 Conditional expectation

Grading Policy

Quizzes (4)	30%
Weekly Exams (4)	40%
Final Exam	30%
Total	**100%**

Homework: Homework from the textbook will be assigned frequently. Students are expected to complete each homework assignment and are encouraged to work together on these assignments. The homework itself will not be graded, but problems from the homework assignment will be used for mid-week quizzes.

Mid-Week Quizzes: Each Wednesday a quiz will be given. The quizzes will contain questions from the homework assignments. The main goal of the quizzes is to prepare students for weekly exams. There will be 4 quizzes.

Weekly Exams: Each Friday for the first 4 weeks we will have a test on the topics of the week. The tests will be given during the second half of the class and a review by TA will be given during the first part. There will be 4 such tests.

Final Exam: The all-inclusive final exam will be given on the fifth week. This exam will include every section we have studied during the semester. Solutions to the final exam will be given during the last class of the semester on Friday.

Grading Scale

The instructor will use the grading system as applied by JNU:

Definition	Letter Grade	Score
Excellent	A	90~100
Good	B	80~89
Satisfactory	C	70~79
Poor	D	60~69
Failed	E	Below 60

Academic Integrity

As members of the Jinan University academic community, students are expected to be honest in all of their academic coursework and activities. Academic dishonesty, includes (but is not limited to) cheating on assignments or examinations; plagiarizing, i.e., misrepresenting as one's own work any work done by another; submitting the same paper, or a substantially similar paper, to meet the requirements of more than

one course without the approval and consent of the instructors concerned; or sabotaging other students` work within these general definitions. Instructors, however, determine what constitutes academic misconduct in the courses they teach. Students found guilty of academic misconduct in any portion of the academic work face penalties that range from the lowering of their course grade to awarding a grade of E.