



Nanchang University

MATH 303 Probability Theory and Statistics

Credit: 4

Contact Hours

This course is composed of 24 lecture sessions, 3 tutorial sessions and 9 office contact hours. Each lecture session takes 2 contact hours in length; each tutorial session takes 3 contact hours in length; There will be a Q-A review session (3 contact hours) and Final Exam (3 contact hours) at the end of this term. This course has 72 contact hours in total.

Course Description

This course builds on naive models of probability and aims to provide a solid mathematical foundation, designed to provide a rigorous demonstration of probability theory, intending to cover the following topics: sample spaces, axioms of probability, combinatorial probability, conditional probability, discrete variables, joint continuous random variables, moment, limit theorems, and Poisson process.

Required Textbook

A Modern Introduction to Probability and Statistics, F.M. Dekking et al. ISBN 978-1852338961

Grading

- Class Attendance 10%
- Quizzes 10%
- Mid-term Exam 40%
- Final Exam 40%



A+ 96-100	A 90-95	A- 85-89
B+ 82-84	B 78-81	B- 75-77
C+ 71-74	C 66-70	C- 62-65
D 60-61	F < 60	

Course Schedule

The course has 24 class sessions in total. All sessions are 2 contact hours in length. At the end of this term, there will be a Q-A review session(3 contact hours) and Final Exam (3 contact hours).

Note: the course outline and required readings are subject to change.

Class 1:

Introduction to the course, review of syllabus

Class 2:

The Random Experiment and the Sample Space

Class 3:

Probability Measure and Axioms of Probability

Class 4:

Review of Equally likely model and Combinatory

Class 5:

Conditional Probability and Permutation

Class 6:

Independence and Bayes's Rule



Class 7:

Discrete Random Variables

Class 8:

Probability Mass Functions

Class 9:

Binomial Distribution and Poisson Random Variables

Class 10:

Hypergeometric Distribution and Discrete Distribution Problems

Class 11:

Joint Discrete Random Variables: Two Random Variables

Class 12:

Joint Discrete Random Variables: Multiple Random Variables

Class 13:

Conditional Probability Mass Formula and Independent Random Variables

Class 14:

Mid-term

Class 15:

Expected Values of Discrete Random Variables; Variance and Covariance

Class 16:

Continuous Variables



Class 17:

Conditional Expectation and Variance

Class 18:

PDF and CDF

Class 19:

Uniform and Exponential Random Variables

Class 20:

The Bivariate Normal Distribution

Class 21:

Moment Generating Functions

Class 22:

Laws of Large Numbers and The Central Limit Theorem

Class 23:

The Poisson Process

Class 24: Final Exam

Attending Policy

Regular and prompt attendance is required. Under ordinary circumstances, you may miss two times without penalty. Each absence over this number will lower your course grade by a third of a letter and missing more than five classes may lead to a failing grade in the course. Arriving late and/or leaving before the end of the class period are equivalent to absences.



Policy on “Late Withdrawals”

In accordance with university policy, appeals for late withdrawal will be approved ONLY in case of medical emergency and similar crises.

Academic Honesty

Nanchang University expects all students to do their own work. Instructors will fail assignments that show evidence of plagiarism or other forms of cheating, and will also report the student's name to the University administration. A student reported to the University for cheating is placed on disciplinary probation; a student reported twice is suspended or expelled.

General Expectations:

Students are expected to:

- Attend all classes and be responsible for all materials covered in class and otherwise assigned;
- Complete the day's required reading and assignments before class;
- Review the previous day's notes before class and make notes about questions you have about the previous class or the day's reading;
- Participate in class discussions and complete required written work on time;
- Refrain from texting, phoning or engaging in computer activities unrelated to class during the class period;
- While class participation is welcome, even required, you are expected to refrain from private conversations during the class period.

Special Needs or Assistance

Please contact the Administrative Office immediately if you have a learning disability, a medical issue, or any other type of problem that prevents professors from seeing you have learned the course material. Our goal is to help you learn, not to penalize you for issues which mask your learning.