Nanchang University

MATH 304 Introduction to Mathematical 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

The course aims to provide a rigorous introduction of elementary probability theory to help students analyze typical statistic problems. We will go over how probability theory develops different statistics models, including estimation, hypothesis tests, linear regression, and distributions.

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 Probability and Statistics: Limit Theorems Revisit

Class 2:Point Estimation: Introduction

Class 3:Maximum Likelihood Principle and Decision-Theoretic Approach

Class 4:Other Methods of Estimation

Class 5:Testing Hypotheses

Class 6:Parameters of Normal Distribution, Likelihood Ratio Tests

Class 7:Applications of LR Tests: Goodness-of-Fit Tests and Others

Class 8:Sequential Sampling

Class 9:Confidential Intervals

Class 10:Presence of Nuisance Parameter

Class 11:Approximating Confidence Intervals

Class 12:Mid-term Exam

Class 13:General Linear Hypothesis

Class 14:Least Square Estimators and Law of Large Numbers Revisit

Class 15:Unbiased Estimators

Class 16:Testing Hypotheses: Test Statistic and Null Hypothesis

Class 17:TypeI and Type II Error

Class 18:Confidence Intervals and Hypotheses Testing

Class 19:Critical Region and Values

Class 20:T-test

Class 21:T-test

Class 22:Summary of Distributions

Class 23:Nonparametric Inference

Class 24:Final Review

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:

一 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.