

The George Washington University
Department of Statistics
STAT 8264
Spring 2024

Course and contact information

Course: STAT 8264, Advanced Mathematical Statistics II

Meeting time: Thursday, 6:10pm–8:40pm

Location: TBD

Instructor

Name: Feifang Hu

Campus Address: 727 Phillips Hall

Phone: 804-310-0383

E-mail: feifang@gwu.edu

Office hours: Thursday, 3:30pm-5:00pm.

Grader: TBD

Some reference Books

Title I: Mathematical Statistics (Second Edition)

Author: Jun Shao

Publisher: Springer

ISBN-13: 978-0-387-95382-3

ISBN-0: 0-38795382-5

Title II Nonparametric and Semiparametric Models

[*Springer Series in Statistics*](#)

Authors [Wolfgang Karl Härdle](#), [Marlene Müller](#), [Stefan Sperlich](#), [Axel Werwatz](#)

Publisher Springer Science & Business Media, 2012

ISBN 364217146X, 9783642171468

Course description

The propose of this course is bridging PhD students to their research. We will focus on some basic ideas of several important topics. In this course we focus on the following themes: (1) Discussion of general framework of statistical inference; (2) Optimal hypothesis tests and likelihood ratio test; (3) Discussion of Empirical Distribution and Empirical Likelihood; (4) Understanding Bootstrap and resampling methods; (5) Understanding nonparametric and semiparametric models;(6) Some other research topics: A/B testing, Network Data, Causal Inference, Deep Learning, LLM and Others

Course prerequisites

The course is designed for PhD students who have completed STAT 8263 (Advanced Mathematical Statistics I).

Learning outcomes

As a result of completing this course, students will be able to

1. Understand the general framework of Statistical Inference;
2. Understand optimal hypothesis tests and likelihood ratio test;
3. Understand empirical likelihood, bootstrap and resampling methods;
4. Understand the nonparametric and semiparametric models;
5. Develop skills about literature study and research.
6. Develop presentation skills.

Topics

1. Discussion of general framework of statistical inference, hypothesis testing.
2. Discussion of empirical likelihood.
3. Bootstrap and resampling methods.
4. Nonparametric and semiparametric models.
5. A/B testing and Network Data.
6. Some other research topics: Causal Inference, and Others

Credit hour policy

The average minimum amount of out-of-class or independent learning expected per week is 10 hours.

Grading

The course grade will be based on homework (20%), classroom participation (10%), exams (30%) and a final project (40%).

Class Attendance

Class discussions will extend the materials covered in the textbook. Therefore, it is important that you attend the class. You are responsible for any materials covered or any announcements made in class, whether or not you are present.

University policies

University policy on observance of religious holidays

In accordance with University policy, students should notify faculty during the first week of the semester of their intention to be absent from class on their day(s) of religious observance. For details and policy, see: students.gwu.edu/accommodations-religious-holidays.

Academic integrity code

Academic dishonesty is defined as cheating of any kind, including misrepresenting one's own work, taking credit for the work of others without crediting them and without appropriate authorization, and the fabrication of information. For details and complete code, see: studentconduct.gwu.edu/code-academic-integrity

Safety and security

In the case of an emergency, if at all possible, the class should shelter in place. If the building that the class is in is affected, follow the evacuation procedures for the building. After evacuation, seek shelter at a predetermined rendezvous location.

Support for students outside the classroom

Disability Support Services (DSS)

Any student who may need an accommodation based on the potential impact of a disability should contact the Disability Support Services office at 202-994-8250 in the Rome Hall, Suite 102, to establish eligibility and to coordinate reasonable accommodations. For additional information see: disabilitysupport.gwu.edu/

Mental Health Services 202-994-5300

The University's Mental Health Services offers 24/7 assistance and referral to address students' personal, social, career, and study skills problems. Services for students include: crisis and emergency mental health consultations confidential assessment, counseling services (individual and small group), and referrals. For additional information see: counselingcenter.gwu.edu/