

The George Washington University
Department of Statistics
STAT 8262: Nonparametric Inference
Tentative Syllabus (Updated on Aug 19, 2022)

Course Information

Semester: Fall 2022
Class Time: **W 6:10pm-8:40pm**
Classroom: **Bell 309**
No Class: Nov 23 (Thanksgiving Break)

Instructor

Name: Dr. Xiaoke Zhang
Campus Address: 765 Rome Hall
Work Phone: (202) 994-8294
Email: xkzhang@gwu.edu
Office hours:

- Virtual: MW 1pm-2pm (<https://gwu-edu.zoom.us/my/xkzhang>)
- By appointment

Grader

Name: TBA
Campus Address: TBA
Email: TBA
Office hours: **TBA**, or by appointment

Course Description

Inference when the form of the underlying distribution is unspecified.

Course Prerequisites

STAT 6201 and STAT 6202.

Learning Outcomes

Students are expected to be able to use the methodologies and theoretical results/skills learned in this course in their research.

Textbook

All of Nonparametric Statistics, by Larry Wasserman.

Blackboard

Blackboard is the only online management system for this course. It will be used by the instructor and/or Grader for posting announcements (**Announcements**), course materials (**Electronic Reserves**), assignments (**Assignments**), grades, etc.

Programming and Software

Programming will be involved, and R is the preferred programming language.

Schedule of Topics

This is a tentative plan based on the textbook. The actual schedule may be slightly different.

Week	Suspended Classes	Topics
1		Introduction; Distributions: empirical CDF
2		Distributions: functional delta method
3		Distributions: kernel density estimation
4		Correlations: Pearson, Spearman, Kendall
5		Nonparametric Regression and Inference: local polynomial regression
6		Nonparametric Regression and Inference: local polynomial regression, splines
7		Nonparametric Regression and Inference: splines, additive models
8		Semiparametric Regression
9		Functional Data Analysis
10		Functional Data Analysis
11		Student Presentations
12		Student Presentations
13	Thanksgiving Break (W)	
14		Student Presentations
15		Student Presentations

Grading

Total (100%) = Homework (60%) + Presentation with Report (40%).

1. Homework (60%):
 - a. Homework will be assigned and posted on Blackboard.
 - b. For each homework, one should complete it in a team of up to two persons. Any two persons can team up once at maximum. Typically, two members in the same team for a homework will receive the same grade. Discussion is highly encouraged, but all submitted homework from different teams must be completed independently.
 - c. All homework **MUST be submitted to the grader by email** by its due date/time. **The email writer of each team MUST CC the other team member, if any; otherwise the homework won't be accepted.** Late homework will NOT be accepted either.
 - d. Homework answers may be typed, handwritten and then scanned, or both, but **ONLY ONE PDF file** may be submitted. If numerical studies are involved, **relevant code, e.g., a .R file**, that can reproduce the results should be submitted too. Multiple submissions are allowed, but **only the last submission by its due date/time will be graded.**

- e. Grade will be given based on the correctness of answers AND sufficient justifications. **One homework with the lowest grade will be dropped** before calculating the overall grade.
2. Presentation with Report (40%): The instructor will provide a few groups of papers, with each group on the same topic. Each person will choose a group of papers, give an in-class presentation and submit a final report. **Details are TBA.**

Course Policies

1. Attendance: Attendance is required for all students. If you miss a class, please go to Blackboard to find course materials and announcements. Those who do not register for this course are NOT allowed to attend any class without the instructor's permission.
2. Recording: No audio or video recording is allowed in class without the instructor's permission.
3. Disputes on grades: Contact the instructor within one week of posting the grades on Blackboard.
4. Asking questions: Office hours are absolutely the best time to ask questions and receive prompt answers. It is not recommended to ask questions by email since it is very inefficient, and it is often unrealistic to receive immediate responses. If you have to ask questions by email, itemize all your questions in one email for clarity and for convenience to reply (writing emails is NOT texting). The instructor typically checks emails ONLY on weekdays.

Miscellaneous

1. Syllabus: The syllabus serves as a reliable guideline for the course. Please keep the latest version of the syllabus and get familiar. You can find the answers to a lot of your questions regarding this course from the syllabus.
2. **Textbook and Lecture Notes: Please bring the textbook and lecture notes to each class.**
3. In-class learning: Due to time limit, lectures focus on motivations, concepts, intuitions, important formulas and skills, and representative proofs/examples.
4. Recommended out-of-class learning strategy:
 - a. After each class:
 - i. **Review notes and related textbook chapters**, independently or in groups, preferably **within one day after each class** (suggested by the Ebbinghaus "forgetting curve").
 - ii. Attend office hours with your remaining questions.
 - b. After each homework is assigned:
 - i. Scan through homework problems. If you feel difficult in working on most of them, review notes and textbook chapters again; otherwise do homework with minimum reference to the notes or textbook.
 - ii. Compare your answers with solutions after each homework is returned. If there are many errors, review notes and textbook chapters again, and/or discuss with classmates.
 - iii. Attend office hours with your remaining questions.

University policies

Academic Integrity Code

Academic integrity is an essential part of the educational process, and all members of the GW community take these matters very seriously. As the instructor of record for this course, my role is to provide clear expectations and uphold them in all assessments. Violations of academic integrity occur when students fail to cite research sources properly, engage in unauthorized collaboration, falsify data, and otherwise violate the Code of Academic Integrity. If you have any questions about whether or not particular academic practices or resources are permitted, you should ask me for clarification. If you are reported for an academic integrity violation, you should contact the Office of Student Rights and Responsibilities (SRR) to learn more about your rights and options in the process. Consequences can range from failure of assignment to expulsion from the university and may include a transcript notation. For more information, please refer to the SRR website (<https://studentconduct.gwu.edu/academic-integrity>), email rights@gwu.edu, or call 202-994-6757.

University policy on observance of religious holidays

Students must notify faculty during the first week of the semester in which they are enrolled in the course, or as early as possible, but no later than three weeks prior to the absence, of their intention to be absent from class on their day(s) of religious observance. If the holiday falls within the first three weeks of class, the student must inform faculty in the first week of the semester. For details and policy, see “Religious Holidays” at provost.gwu.edu/policies-procedures-and-guidelines.

Use of Electronic Course Materials and Class Recordings

Students are encouraged to use electronic course materials, including recorded class sessions, for private personal use in connection with their academic program of study. Electronic course materials and recorded class sessions should not be shared or used for non-course related purposes unless express permission has been granted by the instructor. Students who impermissibly share any electronic course materials are subject to discipline under the Student Code of Conduct. Please contact the instructor if you have questions regarding what constitutes permissible or impermissible use of electronic course materials and/or recorded class sessions. Please contact Disability Support Services at disabilitysupport.gwu.edu if you have questions or need assistance in accessing electronic course materials.

Academic support

Writing Center

GW's Writing Center cultivates confident writers in the University community by facilitating collaborative, critical, and inclusive conversations at all stages of the writing process. Working alongside peer mentors, writers develop strategies to write independently in academic and public settings. Appointments can be booked online at gwu.mywconline.

Academic Commons

Academic Commons provides tutoring and other academic support resources to students in many courses. Students can schedule virtual one-on-one appointments or attend virtual drop-in sessions. Students may schedule an appointment, review the tutoring schedule, access other academic support resources, or obtain assistance at academiccommons.gwu.edu.

Support for students outside the classroom

Disability Support Services (DSS) 202-994-8250

Any student who may need an accommodation based on the potential impact of a disability should contact Disability Support Services at disabilitysupport.gwu.edu to establish eligibility and to coordinate reasonable accommodations.

Counseling and Psychological Services 202-994-5300

GW's Colonial Health Center offers counseling and psychological services, supporting mental health and personal development by collaborating directly with students to overcome challenges and difficulties that may interfere with academic, emotional, and personal success. healthcenter.gwu.edu/counseling-and-psychological-services.

Safety and Security

- In an emergency: call GWPD 202-994-6111 or 911
- For situation-specific actions: review the Emergency Response Handbook at: safety.gwu.edu/emergency-response-handbook
- In an active violence situation: Get Out, Hide Out, or Take Out. See go.gwu.edu/shooterpret
- Stay informed: safety.gwu.edu/stay-informed

Title IX Statement

The George Washington University (GW) and its faculty are committed to creating a safe and open learning environment for all students. If you or someone you know has experienced sexual harassment, including sexual assault, dating or domestic violence, and stalking, please know that help and support are available. GW strongly encourages all members of the community to take action, seek support, and report incidents of sexual harassment to the Title IX Office. You may contact the Title IX Office at 202-994-7434 or at titleix@gwu.edu or learn more by visiting titleix.gwu.edu. Please be aware that faculty members are required to disclose information about suspected or alleged sexual harassment or other potential violations of the Title IX Sexual Harassment and Related Conduct Policy to the Title IX Office. If the Title IX Office receives information about an incident, they will reach out to offer information about resources, rights, and procedural options as a member of the campus community. Community members are not required to respond to this outreach. If you, or another student you know, wishes to speak to a confidential resource who does not have this reporting responsibility, please contact Counseling and Psychological Services through the Colonial Health Center 24/7 at 202-994-5300, or the Office Of Advocacy and Support at 202-994-0443 or at oas@gwu.edu.

Disclaimer

- I, the instructor, retains the right to revise the syllabus. Whenever the syllabus is changed, announcements will be made in class and/or on Blackboard.
- My lectures and course materials, including slides, homework, tests, and similar materials, are protected by U.S. copyright law. I am the exclusive owner of the copyright in those materials I create. You may take notes and make copies of course materials for your own use. You may also share those materials with another student who is registered and enrolled in this course. You may not reproduce, distribute or display (post/upload) lecture notes or recordings or course materials in any other way - whether or not a fee is charged - without my express written consent. You also may not allow others to do so.