

The George Washington University
Department of Statistics
STAT 6201-Section 10: Mathematical Statistics I
Tentative Syllabus (Updated on Aug 19, 2021)

Course information

Semester: Fall 2021, from Aug 31 (T, first class) to Dec 2 (R, last class)
Class: **T 6:10pm-8:40pm (DC Time, i.e., Eastern Time)**
Location: **FNGR 210**
No Class: Dec 7 (T, Designated Friday)

Instructor

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Office hours: **TBA**, or by appointment

Grader

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

Course Description:

This course focuses on basic probability theory, the foundation for statistical inference. The following topics will be introduced: basics of probability theory, random variables and transformations, common families of distributions, multiple random variables, sampling distributions, convergence concepts and order statistics (if time permitting).

Course Prerequisites:

MATH 2233 (Multivariate Calculus) and MATH 2184 (Linear Algebra I).

Learning Outcomes:

After completing this course, students are expected to be able to make probabilistic arguments based on the theoretical results/skills learned in this course.

Textbook:

Statistical Inference, 2th ed., by George Casella and Roger L. Berger.

Blackboard.

Blackboard is the only online management system for this course and please get familiar with Blackboard and check it frequently. It will be used by the instructor and/or

TA for posting announcements (**Announcements**), course materials (**Electronic Reserves**), assignments (**Assignments**), tests (**Tests**), lecture recordings (**GW Lecture Capture**), grades, etc.

Schedule of Topics:

This is a tentative plan. The actual schedule may be slightly different.

Week	Topics
1-3	Basics of Probability Theory
4-6	Random Variables and Transformations
7-9	Common Families of Distributions
10-12	Multiple Random Variables
13-15	Sampling Distributions. Convergence Concepts/Order Statistics (if time permitting)

Grading: Total=100%

1. Homework (30%):
 - a. Homework will be assigned and posted on **Blackboard/Assignments**.
 - b. Each student will be **assigned to a group (group assignment TBA by the instructor)** before the first homework. Each group will submit one copy of each homework, and **all members in the same group will receive the same grade** for each homework. Group discussion is encouraged, but all submitted homework by different groups must be completed independently.
 - c. Each homework **MUST be submitted by email to the TA at TBA** by its due date/time. **The email writer MUST CC all the other members in the same group; otherwise the homework won't be accepted. Late homework will NOT be accepted either.**
 - d. Homework answers may be either typed, or handwritten and then scanned, or both, but **ONLY ONE file (MS Word or PDF)** may be submitted. 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 the answers and sufficient justification. Solutions will be posted on Blackboard.
2. Exams (70%):
 - a. Midterms (40% = 20% + 20%): Two midterms will be given. The dates are **Oct 19 (T)** and **Nov 16 (T)**. Detailed information will be given about one week before each midterm.
 - b. Final exam (30%): The final exam will be given on **TBA**. Detailed information will be given by the last week of the semester.

Course policies

1. Attendance: Attendance is required for all students but won't be checked. If you miss a class, the instructor will NOT provide a makeup class; please go to Blackboard to find relevant course materials and announcements. Those who are not enrolled in this course are NOT allowed to attend any class.
2. Makeup quizzes/exams: **No makeup quizzes or exams will be given except for emergencies with proper documentation.** Requests for makeup quizzes or exams must be made to the instructor by email for approval BEFORE the original quiz/exam time. If approved, students are responsible for both reminding the instructor of giving makeup quizzes/exams and taking them within one week of the original quiz/exam dates. Any missed quiz or exam will be counted as zero point.
3. Disputes on grades: Contact the instructor and TA within one week after the grades are posted 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 convenience to reply (writing emails is NOT texting).** The instructor typically checks emails ONLY on workdays.

Advice

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: Please bring the textbook to each class.**
3. Attitude: Sufficient in-class and out-of-class efforts are needed to receive a satisfactory grade (no pain no gain).
4. In-class learning: **Due to time limit, lectures by the instructor focus on motivations, concepts, important formulas and skills, and representative examples (not many).**
5. Recommended learning strategy:
 - a. Attend lectures.
 - b. After each lecture:
 - i. Review recordings, lecture notes, your own notes and corresponding chapters of the textbooks, independently or in groups, preferably within one day after each class (suggested by the Ebbinghaus "forgetting curve").
 - ii. Redo lecture examples independently or in groups.
 - iii. Attend office hours with your remaining questions.
 - c. After each homework is assigned:
 - i. Start working on each homework as soon as it is assigned.
 - ii. Scan through homework problems. If you feel difficult in working on a majority of them, review the notes and textbooks again, and/or discuss with classmates; otherwise do homework independently with minimum reference to the notes or textbooks.

- iii. After each homework is returned, compare your answers with solutions and/or discuss with other classmates. If there are many errors, review the notes and textbooks again, and/or discuss with other classmates.
 - iv. Attend office hours with your remaining questions; do more textbook exercises if necessary.
6. Calculators: **Get familiar with your calculator** (and your backup calculator). Use it when doing homework (for this course and others).
 7. Internet: Search engines are our friends!

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

Disclaimer

The instructor retains the right to revise the syllabus. Whenever the syllabus is changed, announcements will be made in class and/or on Blackboard.