

Mathematical Statistics I

STAT 6021, 2025 Fall Semester

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Course Description:

- This **graduate-level course** covers distribution theories and elementary statistical inferences, concentrating on mathematical rigors with theorems and proofs.
- The course is designed for
 - graduate students in Statistics who will take the Qualifying Examination, or in Biostatistics who are required to take a mathematical statistics course,
 - graduate students in other majors who want to deepen their understanding of statistical concepts with formal theories, and
 - undergraduate students planning to take 6000/7000 level statistics courses that require STAT 6021 as a prerequisite. **Note:** There is an undergraduate-level mathematical statistics course, **STAT 4121**, offered **for undergraduate students**.
- Expected learning outcomes: After successfully passing this course, students will be able to
 - understand the concept of statistical models and the principles of parameter estimation,
 - and be partially prepared to take the Qualifying Examination.
- In this course, students are expected to develop the following transferable skills in different career settings:
 - identify a stochastic problem and translate it into the probability language and
 - deliver the statistical analysis outcome in plain language.

Textbook: Introduction to Mathematical Statistics, **8th edition**, by Hogg, McKean, and Craig.

Course Webpage: All course-related information will be posted on Canvas. Please check the course website periodically.

- You can also install the "Canvas Student" app on your smartphone.
<https://apps.apple.com/us/app/canvas-student/id480883488>
https://play.google.com/store/apps/details?id=com.instructure.candroid&hl=en_US&gl=US

Lecture notes:

- The lecture notes are provided for students' convenience to relieve the burden of taking notes during lectures.
- Bring an electronic version or a hard copy of lecture notes to each class.

The exams will cover not only the lecture notes but also any material covered in lectures, reading assignments, and homework.

Office hours:

For an in-person meeting, please sign the form through the link or the QR code.

<https://www.signupgenius.com/go/10C0D4CA5AF2AA5FFC70-hang1>



- Please sign up **at least one hour before the meeting**.
- Put your name, year, and program so the instructor can be prepared beforehand.
- Double-check that you successfully signed up
 - by pressing the "Save & Continue" button after selecting the session, then press the "Sign Up Now" button.
 - If you correctly signed up, you should receive a confirmation email from SignUpGenius.

Tentative Exam Dates: (The date can be adjusted depending on the coverage/speed of the lectures)

Midterm 1: Wed, Oct 1, in regular class

Midterm 2: Fri, Nov 7, in regular class

Final Exam: Fri, Dec 5, in regular class

- All tests are closed-book exams (as in the Qualifying Examination).
- Unlike undergraduate-level courses, no sample test exam will be provided. However, the coverage of exams will be clearly announced in the classes.
- **Any act of cheating will not be tolerated.** See the “Academic Integrity Policy” section below.

Homework:

- Homework and its due date will be posted on Canvas throughout the semester.
- Submit an electronic version of homework via Canvas: a photocopy of your handwriting or an electronic document produced from a word processor software.
- **All assignments must be accepted on time.**
- Present your work in a clear and readable format with sufficient details. **No credit** will be given to solutions lacking details or that are hard to read.
- All students must submit the work written in their own words. **No academic misconduct will be tolerated.** See the “Academic integrity policy” section on the next page.

Semester Grade Calculation:

Your final course grade will be assigned based on the total **100 points** that you have accumulated from

Homework: 30pts, Attendance: 10 pts, Exam 1: 20pts, Exam 2: 20pts, Final Exam: 20pts,

according to the following grading scales:

Grade	A	A-	B+	B	B-	C+	C	F
Accumulated Scores	93.0 - 100.0	90.0 - 92.9	86.0 - 89.9	83.0 - 85.9	80.0 - 82.9	75.0 - 79.9	60.0 - 74.9	0.0 - 59.9

Attendance:

- For the first unexcused absence, no point is deducted. Starting the second, each unexcused absence counts for a one-point deduction up to a maximum of 10 points deduction.
- Academic-/athletic-/medical-related absences may be excused upon prior notice to the instructor and permission.
- If you need to miss a class, please let the instructor know before/after the absence.
- **Grades for Auditing:** To get a “T” for auditing, students are required to attend classes with no more than 5 unexcused absences. The students who audit the course are not required to turn in HW and take exams.

“Planned” Chapter Coverage / “Tentative” Schedule:

Chapters 1.1(*), 1.2, 1.3, 1.4, 1.5-1.7, 1.8-1.9, 1.10 [HW1, 2; Midterm 1]

Chapters 2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 2.7, 2.8 [HW3, 4; Midterm 2]

Chapters 3.4, 3.5, 3.3, 3.6, 3.1, 3.2 [HW 5]

Chapters 4.1, 4.2 [HW6; Final Exam]

- (*) Chapter 1.1 will be covered by the reading assignment only.
: Please read the textbook and lecture notes for the chapter, whose contents may be covered by homework or tests. You do not need to turn in any summary for the reading assignment.
- Note: This is just a tentative plan. **Actual coverage may be different.**

Special Note: This syllabus is a guideline for the course. Except for changes that substantially affect the implementation of the evaluation (grading) statement, this syllabus is subject to change with advanced notice.

Policies

Academic integrity policy: The University Rules, including the Student Code of Conduct, and other documented policies of the department, college, and university related to academic integrity will be enforced. Any violation of these regulations, including acts of plagiarism or cheating, will be dealt with on an individual basis according to the severity of the misconduct.

(http://www.uc.edu/conduct/Academic_Integrity.html)

Note: Any misconduct may fail **the entire course (with a semester grade of F)**, not only the failure of a test or homework.

In this class, the academic misconduct includes, but is not limited to, the following actions:

- copy **classmates' homework** or cheat on **classmates' exams**,
- copy **homework solutions** provided to students who took the same course **in previous semesters**,
- copy **homework solutions** downloaded or available **from the internet** (even if there are no copyrights or warnings on the documents displayed) or an anonymous source,
- as well as other misconducts which the Student Code of Conduct prohibits.

Personal communication devices policy: Cell phones must be turned off or in vibrate mode during class. Additionally, please make every effort to refrain from using cell phones during class time.

Email communication policy: All communications must be via a **valid UC email**. The instructor will try to reply within a business day of receiving emails. Any correspondence using a personal account, e.g., a Gmail account, will not be responded to.

Policy about early/make-up exams: The student must request the early/make-up test within a reasonable amount of time before/after one of the following **excusable** events occurs:

- **Illness.** Need official certification from your doctor, typed on medical stationery (with their license # to practice medicine).
- **Athletic event participation.** You need a signed letter from your coach, no later than **one week before** the day of the exam.
- **Attending the funeral of an immediate relative.** Need proof of attending the funeral with the date of the ceremony.
- **Mandatory courtroom appearance.** Need a copy of your official court summons with the date.

Taking an exam early/late due to a **travel plan** will not be permitted.

Special needs policy: If you have any special need related to your participation in this course, including identified visual impairment, hearing impairment, physical impairment, communication disorder, and/or specific learning disability that may influence your performance in this course, you should meet with the instructor to arrange for reasonable provisions to ensure an equitable opportunity to meet all the requirements of this course. At the instructor's discretion, some accommodations may require prior approval by Accessibility Resources. To take advantage of those available accommodations, students should contact the Accessibility Resources Office (<https://www.uc.edu/accessibility>).

Religion-related absence: Ohio law and the University's Student Religious Accommodations for Courses Policy 1.3.7 permits a student, upon request, to be absent for reasons of faith or religious or spiritual belief system or participate in organized activities conducted under the auspices of a religious denomination, church, or other religious or spiritual organization and/or to receive alternative accommodations about examinations and other course requirements due to an absence permitted for the above-described reasons. Not later than fourteen days after the first day of instruction in the course, a student should provide the instructor with written notice of the specific dates for which the student requests alternative accommodations. For additional information about this policy, please contact the Executive Director of the Office of Equal Opportunity and Access at (513) 556-5503 or oeohelp@ucmail.uc.edu

Regrading policy: If a student believes that grading errors have occurred, the student should request regrading **within the next four business days after receiving the graded work**. This will apply even if the student is absent on the day the work is returned unless prior permission was obtained from the instructor.