

STATS 412, Section 003
Introduction to Probability and Statistics
Winter 2025

Last updated March 11, 2025

Lectures: Tue Thur 2:30-4:00 pm

Location: DENT G322

Instructor: Richard Guo, Assistant Professor of Statistics (he/him)

Office: 269 West Hall

Office Hours: Tue 10:00-11:30am, Thur 4:00-5:30pm, 269 West Hall

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Office Hours: Wed 1:00-2:30pm (G219 Angel Hall), Fri 1:00-2:30pm ([zoom](#))

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Course Objectives STATS 412 introduces topics in probability and statistics for engineering and the sciences, with emphasis on understanding fundamental concepts, interpretation, and communication. Topics include probability, statistical models, point estimation, confidence intervals, hypothesis tests, and linear regression.

Prerequisites MATH 215 or MATH 285 (Calculus III, multivariable calculus).

Course Resources

- **Canvas:** Course management system. Updates will be posted to Canvas. Please make sure that your Canvas settings for an ‘**Announcement**’ will alert you ‘**ASAP**’.
- **Textbook:** *Statistics for Engineers and Scientists* (5th edition), William Navidi (freely available from [UMich library](#)). Textbook is used for the **homework assignments**. We will follow the text for the most part. However, there are some things that we do in class that are different from the text, and you are responsible for knowing where and what those differences are.
- **Slides:** Lecture slides available under Canvas ‘Files’; have them available for class meetings.
- **Piazza:** We will use [Piazza](#) (accessed from Canvas) instead of email for posting and answering questions. Personal questions should be directed to your instructor.

- **Email:** While most course related questions should be posted on Piazza, you can email the instructor and GSI for other requests or suggestions. When emailing us, please use your umich email and have ‘STATS 412’ in the subject line.
- **Lecture Recording:** Available after each lecture in Canvas. Lecture recordings are not meant to be a replacement for class attendance.

Grading Policy The graded work for STATS 412 includes 11 homework assignments and 3 exams. Your final course total will be based on

Class attendance	2%
Homework	18%
Exam 1	25%
Exam 2	25%
Exam 3	30%

Final course grades will be assigned based on the following grading scale. If an adjustment is necessary, it will be announced after final grades have been calculated (no announcement means no adjustment).

A+	[97, 100]	B+	[87, 90]	C+	[77, 80]	D+	[67, 70]	E	Below 60
A	[93, 97)	B	[83, 87)	C	[73, 77)	D	[63, 67)		
A-	[90, 93)	B-	[80, 83)	C-	[70, 73)	D-	[60, 63)		

Class attendance The class will be in person, and attendance will be 2% of the overall grade calculation. To receive the attendance credit for a lecture, you must be physically present and answer (correctly or incorrectly) at least 75% of the poll questions using iClicker Cloud. The attendance component of your grade is computed based on the formula

$$(\min(x, 10)/10) \times 2\%,$$

where x = number of lectures you attend. See [here](#) to set up iClicker Cloud on your mobile device. Use [this link](#) to enroll in iClicker for this class.

Please adhere to classroom norms by arriving promptly, muting your devices, refraining from private conversations, and showing respect to others in the room, among other etiquette guidelines.

Exams Exams are **closed book and closed notes**. Normal, Student’s t and χ^2 distribution tables will be provided with Exams when needed. In addition, you are allowed to bring **two pieces of letter-sized paper (you can write on both sides)** as cheat sheet; preparing your cheat sheet is an excellent chance to review the materials. Practice exams will be available approximately one week before each exam. All the exams will be held in **DENT G322** during lecture time.

Exam 1 (25%): Tue Feb 25 topics = lectures from Jan 9 – Feb 20 (except for §4.5)
Exam 2 (25%): Tue April 1 topics = lectures from Feb 11 – Mar 20
Exam 3 (30%): Tue April 22 topics = lectures from Mar 11 – Apr 17

No make-up exams will be given unless you have made arrangements with me before the exam. Make-up exams will only be granted in exceptional/unforeseen circumstances or for university excused absences. If you miss an exam and have not made arrangements, you will earn 0 points on that exam.

Accommodation If you need extra time or other special accommodations, please reserve a seat with the **Testing Accommodation Center**, where you can schedule your exam to be proctored in comfort. Please plan ahead of time and visit <https://ssd.umich.edu> to register. Let me know if you have any questions.

Homework There will be 11 homework assignments, assigned approximately weekly, and due on **Thursdays before lecture**. To handle “life happens” situations, your **lowest two homework scores** (including 0s due to no submission) will be automatically dropped so each of the remaining assignment counts for 2% of the grade. Homework assignments will be posted on Canvas and collected via [Gradescope](#).

1. You may handwrite and/or type (with LaTeX or [GNU TeXmacs](#)) your homework solutions — just be sure that your work is readable in Gradescope.

Gradescope can be accessed from Canvas. Watch these [videos](#) on how to submit your homework. To submit your homework,

- (1) Create a PDF that will be uploaded to Gradescope. Make sure it is legible.
- (2) Upload the PDF to Gradescope.
- (3) Gradescope will prompt you to **associate the questions** stated in the submission form with the answers you supplied in your PDF on a page by page basis.

Important: If you fail to correctly associate each question with the answer page in your uploaded file, any question unassigned (or incorrectly assigned) will earn zero credit. Go back and check that you correctly associated each question with the answer page in your PDF by clicking on the questions in the outline (right side of screen). This will ensure that the grader can see your submitted homework assignment.

2. Full credit for each homework problem can only be earned through showing your justification/work on each problem. So, please show any work beyond trivial calculations. Almost all free-response questions are eligible for partial credit, provided appropriate work is shown. Showing calculator input is usually not sufficient for full credit.

3. Homework must be submitted before the due time (2:30pm Thur). **Late homework** will **NOT be accepted** for any reason (this includes any part of the homework you forgot to attach with your submission). Remember that sometimes technology issues happen, so you should plan ahead to make sure that your homework is submitted to Gradescope by the time it is due.
4. Solutions to the homework assignments will be posted on Canvas after the assignment closes on Gradescope.
5. Attempt all homework problems as soon as you receive them. You are encouraged to discuss problems and concepts with the instructor, fellow students, and the GSI, but do so after you have thought about them on your own. Please do not hesitate to go to the GSI's or instructor's office hours. The homework you submit should, however, be your own work. You are required to comply with the University of Michigan and LSA regulations on [academic integrity](#).

Receiving an 'I' for the Course Granting an incomplete in the course is up to the instructor's discretion. You cannot receive an incomplete for the course unless about 70% of the work in the course to date has been completed (e.g., almost all quiz and homework assignments to date have been turned in and all exams to date have been taken). In addition, you must be earning at least a C- on work to the point at which you ask for an incomplete. Extenuating circumstances will be handled on a case-by-case basis. For more information on LSA's policy on incomplete grades, visit [here](#).

Well-being and Self-care We all need to take our physical and mental well-being very seriously. If you are experiencing concerns, seeking help is a courageous thing to do for yourself and those who care about you. If the source of your stressors is academic, please contact me so that we can find solutions together. For personal concerns, UM offers a variety of resources, many which are listed on the Resources for [Student Well-being webpage](#).

Schedule Below is a tentative schedule.

Week	Tue	Thur	Chapter	Due
1		L1 (1/09)	§2.1	
2	L2 (1/14)	L3 (1/16)	§2.2, §2.3	HW1
3	L4 (1/21)	L5 (1/23)	§2.3, §2.4	HW2
4	L6 (1/28)	L7 (1/30)	§2.4, §2.5	HW3
5	L8 (2/04)	L9 (2/06)	§2.6.	HW4
6	L10 (2/11)	L11 (2/13)	§2.6, §4.3, §4.4	HW5
7	L12 (2/18)	L13 (2/20)	§4.5	HW6
8	Exam 1 (2/25)	L14 (2/27)	§4.7, §4.8, §4.11	
Spr Break				
9	L15 (3/11)	L16 (3/13)	§4.9, §4.10, §5.1	HW7
10	L17 (3/18)	L18 (3/20)	§5.2, §5.4, §5.7, §6.0	HW8
11	L19 (3/25)	L20 (3/27)	§6.1, §6.2, §6.4-6.7	HW9
12	Exam 2 (4/01)	L21 (4/03)	§6.11, §6.12	
13	L22 (4/08)	L23 (4/10)	§6.10, §7.1, §7.2	HW10
14	L24 (4/15)	L25 (4/17)	§7.2, §7.3	HW11
15	Exam 3 (4/22)			