STATS 412, Section 002
Introduction to Probability and Statistics
Fall 2025

Last updated September 2, 2025

Lectures: Mon Wed 2:30-4:00 pm
Location: CHEM 1400

Instructor: Richard Guo, Assistant Professor of Statistics (he/him)
Office: 269 West Hall
Office Hours: Mon Thur 4:00-5:00 pm, 269 West Hall
E-mail: ricguo@umich.edu

GSIs: Shushu Zhang, Daniel Zou
Office Hours: Tue Thur 2:30-4:00 pm (Tue in G219 Angell Hall, Thur via zoom)
E-mail: shushuz@umich.edu, zoudj@umich.edu

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. 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. Annotated slides will also be posted after class.

- **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 12 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

$$(\min(x, 24)/24) \times 2\%,$$

where $x =$ number of lectures you attend (out of 25 lectures in total). 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 **CHEM 1400** during lecture time.

Exam 1 (25%):	Wed Oct 15	topics = lectures from Aug 25 – Oct 08
Exam 2 (25%):	Mon Nov 10	topics = lectures from Oct 06 – Nov 05
Exam 3 (30%):	Mon Dec 08	topics = lectures from Nov 05 – Dec 03

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 **12 homework assignments**, assigned approximately weekly (except for weeks with an exam), and due on **Wednesdays before lecture**. To handle "life happens" situations, your **single lowest homework score** (including 0 due to no submission) will be dropped so each of the remaining assignment counts for 1.64% 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 Wed). **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 Well-being Collective.

Schedule Below is a tentative schedule.

Week	Mon	Wed	Chapter	Due
1	L1 (8/25)	L2 (8/27)	§2.1, §2.2	
2	*Labor day*	L3 (9/03)	§2.3	HW1
3	L4 (9/08)	L5 (9/10)	§2.3, §2.4	HW2
4	L6 (9/15)	L7 (9/17)	§2.4, §2.5	HW3
5	L8 (9/22)	L9 (9/24)	§2.6	HW4
6	L10 (9/29)	L11 (10/01)	§4.1, §4.2 §4.3, §4.4	HW5
7	L12 (10/06)	L13 (10/08)	§4.5, §4.7	HW6
8	*Study break*	**Exam 1** (10/15)		
9	L14 (10/20)	L15 (10/22)	§4.8, §4.9, §4.11	HW7
10	L16 (10/27)	L17 (10/29)	§4.9, §4.10, §5.1, §5.2	HW8
11	L18 (11/03)	L19 (11/05)	§5.3, §5.4, §5.6, §5.7	HW9
12	**Exam 2** (11/10)	L20 (11/12)	§6.1, §6.2, §6.3, §6.4	
13	L21 (11/17)	L22 (11/19)	§6.5, §6.6, §6.7, §6.12, §6.13	HW10
14	L23 (11/24)	*Thanksgiving*	§6.10, §7.1	HW11
15	L24 (12/01)	L25 (12/03)	§7.2, §7.3, §7.4	HW12
16	**Exam 3** (12/08)			