Course Syllabus

STAT 400 – Statistics and Probability I

Fall 2025 Syllabus

Instructor: David Unger

Student Learning Objectives: See the full list of topics and learning objectives on Canvas.

Course Description

Catalog Listing: Introduction to mathematical statistics that develops probability as needed; includes the calculus of probability, random variables, expectation, distribution functions, central limit theorem, point estimation, confidence intervals, and hypothesis testing. Offers a basic one-term introduction to statistics and also prepares students for **STAT 410 (http://catalog.illinois.edu/search/?P=STAT+410)** and **STAT 425 (http://catalog.illinois.edu/search/?P=STAT+425)** .

Prerequisites

- **MATH 231: Calculus II (http://catalog.illinois.edu/search/?P=MATH+231)**
- Not intended for first-time freshmen.
- Knowledge of basic computer concepts such as locating files, creating folders, saving files, using a text editor, zipping/extracting .zip files, and so on.

Canvas

Supplemental materials, assignments, solutions, grades, and other course resources will be posted on **Canvas**. Your Canvas user name and password is the same as your NetID email user name and password.

Ed Discussion

Our course message board may be accessed at **Ed Discussion (https://edstem.org/us/dashboard)** . You will need to create an account using your @illinois.edu email address. Course staff will manually add you to the site's roster.

Gradescope

All Homework assignments will be submitted through **Gradescope (https://www.gradescope.com/)** . You will need to create an account using your @illinois.edu email address. There is *no course code* to enroll on the site. Course staff will manually add you to the site's roster. Details for submission are on the Homework Policy page.

RStudio

All students in my sections have access to the department server hosting RStudio at **morrow.stat.illinois.edu (https://morrow.stat.illinois.edu/)** . R is a powerful and versitile statistical computing software. For this class, you can think of R as a souped-up calculator. Many tutorials are available online. We will discuss its relevance to STAT 400 later in the semester.

References

There is no required textbook for this course, but the guiding texts for our course are recommended for review when you want another perspective. Upon last check, recent editions are available in the **Math Library Reserves* (https://www.library.illinois.edu/mtx/)** , but almost any edition will be useful. (* During the Altgeld Hall renovations, there have been some changes to services and to locations of reserve textbooks.)

- ***Probability and Statistical Inference* (https://i-share-uiu.primo.exlibrisgroup.com/permalink/01CARLI_UIU/gpjosq/alma99954373212205899)** , Tenth Edition; by Robert V. Hogg, Elliot A. Tanis, Dale L. Zimmerman; Hoboken, NJ: Pearson; 2020.
- ***Mathematical Statistics with Applications* (https://i-share-uiu.primo.exlibrisgroup.com/permalink/01CARLI_UIU/1f3o1ua/alma99339081712205899)** , 7th Edition; by William Mendenhall, Dennis Wackerly, Richard Scheaffer; Boston: PWS-Kent Pub. Co.; 2008.
- ***Introduction to Mathematical Statistics* (https://i-share-uiu.primo.exlibrisgroup.com/permalink/01CARLI_UIU/gpjosq/alma99689672012205899)** , 7th Edition; by Robert Hogg, Joseph McKean, Allen Craig; Hoboken, NJ: Pearson; 2012.
- ***Introduction to Mathematical Statistics and Its Applications* (https://i-share-uiu.primo.exlibrisgroup.com/permalink/01CARLI_UIU/gpjosq/alma99836529312205899)** , 6th Edition; by Richard Larsen, Morris Marx; Hoboken, NJ: Pearson; 2017.

Assessment

For both undergraduate and graduate students:

- Homework Assignments: 30%
  - 14 assignments in total.
  - All students will get to drop their 1 lowest score.
  - Students who also satisfy the DiscPA requirement below get to drop their 2 lowest scores.
- Participation Assignments: 5%

- Earned via Canvas (e.g., PA01-x) and Discussion (e.g., DiscPA03).
- There will be approximately 70 PA points available via Canvas and exactly 30 PA points (3 pts x 10 weeks) available via Discussion. That comes to a total of approximately 100 PA points.
- The proportion of all earned PA points will be rounded up to the next higher decile. Any proportion above 1.00 does not round and stays as is.
- **Meeting Discussion requirement:** Students who attend 10 of the 14 Discussions earn full credit for their earned DiscPA points and get to drop their 2 lowest HW scores.
  - E.g. Earning 65 CanvasPA and 28 DiscPA from 10 discussions results in 65 + 28 = 93 PA points. Then, 93/100 = 0.93, which rounds to a final PA% of 1.00.
- **Exceeding Discussion requirement:** Students who attend more than 10 Discussions can earn more than 30 PA points to count toward their score.
  - E.g. Earning 65 CanvasPA and 37 DiscPA from 13 discussions results in 65 + 37 = 102 PA points. Then, with the bonus points the final PA% = 102/100 = 1.02.
- **Failing Discussion requirement:** Students who fail to attend at least 10 of the 14 Discussions will receive 0 points for all DiscPAs.
  - E.g. Earning 65 CanvasPA and 20 DiscPA from 7 discussions results in 65 + 0 = PA points. Then, 65/100 = 0.65, which rounds to a final PA% of 0.70.

- Intermediate Exams (3): 15% each
  - If your Final Exam grade is better than your lowest Intermediate Exam grade, the Final Exam grade will replace that Intermediate Exam grade.
- Final Exam: 20%
  - The Final Exam grade is factored into every student's Course Grade.

Final course percentages are truncated (not rounded) to the hundredths position. For example, a calculation of 0.949 is a final course percentage of 0.94.

Letter grade equivalencies

Course-Grade%	Letter Grade
TBD	A+
0.93–1.00	A
0.90–0.92	A-
0.87–0.89	B+
0.83–0.86	B
0.80–0.82	B-
0.77–0.79	C+
0.73–0.76	C
0.70–0.72	C-
0.67–0.69	D+
0.63–0.66	D
0.60–0.62	D-

0.00-0.59	F

Homework Assignments

Just like in any other course, Homework is an opportunity for students to develop their understanding and skill set individually and without the time constraint of a quiz or exam.

It is extremely important for you to get feedback on your work. Therefore, your work will be commented on and points will be deducted for any part of a program or report that does not follow the specific exercise instructions and solution. Do not take deductions personally. These are meant to help you realize how you can personally improve.

Questions about the grading can be directed to course staff for clarification using the Regrade feature in Gradescope. You may discuss the homework with other students, but sharing or copying any part of the homework is unacceptable.

See the full Homework Policy page on Canvas for full details.

Partcipation Assignments

Participation Assignments (PAs) will be distributed each week on Canvas via quiz items and in Discussion via group exercises.

- For Canvas PAs, the deadline will be 11:59pm each Monday following the week of new material. Each CanvasPA exercise will be worth 1 point.
- For Discussion PAs (DiscPA), the deadline is the end of your registered Discussion section. Each DiscPA is worth 3 points. For more details on DiscPA, see the Discussion Section page of Canvas.

There is no make up or extension for any missed PAs of either type.

Exams

The (Intermediate) Exams occur in regular intervals throughout the semester while the Final Exam occurs at the very end. Unlike Assignments, the Exams are meant to test your knowledge and abilities in a condensed time frame with limited resources. Specific details on the Intermediate and Final Exams will be provided later in the semester.

If your Final Exam grade is better than your lowest Intermediate Exam grade, the Final Exam grade will replace that Intermediate Exam grade. If each of your Intermediate Exam grades are better than your Final Exam grade, there is no replacement. The Final Exam grade stands as the Final Exam grade under all circumstances.

Academic Integrity

All students are expected to abide by the campus regulations on academic integrity: **https://studentcode.illinois.edu/article1/part4/1-401/ (https://studentcode.illinois.edu/article1/part4/1-401/)** . These standards will be enforced and infractions of these rules will not be tolerated in this course. Sharing, copying, or providing any part of a homework solution or code is an infraction of the University's rules on Academic Integrity.

We will be actively looking for violations of this policy in homework and project submissions. Any violation will be punished as severely as possible with sanctions and penalties typically ranging from a failing grade on this assignment up to a failing grade in the course, including a letter of the offending infraction kept in the student's permanent university record.

Again, a good rule of thumb: *Keep every written and typed word and piece of code your own.*

Disability Accommodations

Students with learning, physical, or other disabilities requiring assistance should contact the instructor as soon as possible. If you're unsure if this applies to you or think it may, please **contact Disability Resources & Educational Services (http://disability.illinois.edu/)** as soon as possible.

Questions

If it's a general question that all students would benefit from, please use the Ed Discussion message boards to post and course staff will post responses there. To get in touch with the instructor, please use the DM feature as opposed to email for quickest response.

Contact Us: Use **Ed Discussion (https://edstem.org/us/dashboard)** to either send a Chat > Direct Message or a Private post.

Student Office Hours: See the Where to Get Help page on Canvas.

Email is not preferred for quickest response, but if sending email, all course emails should be sent from your official illinois.edu email address and contain a subject line which begins with the text **[STAT 400]**.

Course Summary:

Date	Details	Due