Stat 304: Distribution Theory — Autumn 2025 Syllabus

Course description This course is a systematic introduction to random variables and probability distributions. Topics include standard distributions (i.e. uniform, normal, beta, gamma, F, t, Cauchy, Poisson, binomial, and hypergeometric); properties of the multivariate normal distribution and joint distributions of quadratic forms of multivariate normal; moments and cumulants; characteristic functions; exponential families; modes of convergence; central limit theorem; and other asymptotic approximations.

Course info

- Instructor: Rina Barber, `rina@uchicago.edu`
- TA: Qichuan (Ethan) Yin, `qichuan@uchicago.edu`
- The main course page is on Canvas and you can find all slides, assignments, etc there. Homework is due on Wednesdays, and will be handed in and graded on Gradescope. We will also use Ed Discussion for announcements and Q&A.
- Office hours: Tuesdays 4-5pm (Ethan, in Jones 304), Fridays 9:30-10:30am (Rina, in Jones 214).
- Midterm exam: **Wednesday Oct 29 9:00-10:20am (during class time)**. Please contact the instructor ASAP if you have any time conflicts, or if you need to arrange for accommodations such as extended time.
- Final exam: the date and time will be determined by the registrar (Final exam week is Dec 8-12). Please contact the instructor ASAP if you have any time conflicts, or if you need to arrange for accommodations such as extended time.

Textbook The textbook for this course is:

- *Elements of Distribution Theory*, Thomas A. Severini.

Note—this book is available for free online through the UChicago Library website.

Contacting us

- We will aim to reply to all questions within 24 hours on weekdays (response time will be slower on weekends).
- For any questions about the material or for general questions about the HW, please post a public question on Ed (you can choose to post anonymously).
- For specific questions about your work on the HW (i.e., questions that cannot be posted publicly because it would reveal too much of the solution), please ask us via a private post on Ed.
- For any regrade requests or clarifications on the grading for HW or exams, please use the regrade request feature on Gradescope.
- For administrative questions such as enrollment, prerequisites, accommodations, makeup times for exams, etc (i.e., anything that is not related to the course material)—please contact the instructor by email.

Handing in assignments

- Assignments are due **by 5pm on Wednesdays**.
- At the end of the quarter, the lowest HW grade (or one missing grade) will be dropped. We cannot excuse any missed HWs beyond the one that is dropped.
- Late HWs will be accepted with a penalty of 4% per hour (late time is rounded up, i.e., one minute late counts as one hour late). We cannot make exceptions to the late penalty.
- Assignments are submitted and graded via Gradescope (which can be accessed from the Canvas course page). The submission must be a single PDF.
- If you are having trouble uploading to Gradescope and run out of time, please email your work to the instructor or TA before the time HW is due as proof of completion. The time of your email will count as the time of your HW submission. We do not accept the time stamp of the file on your computer as proof of completion.
- Please tag the pages for each problem. Note that the time stamp on your homework is the upload time—you will not be penalized if tagging pages takes extra time.

Grading The final grade will be determined by homework plus midterm and final exams, in these proportions:

- Problem sets: 30% (with lowest HW grade or one missing HW dropped)
- Midterm exam: 30%
- Final: 40%

Collaboration guidelines & plagiarism policy For problem sets, students are free to discuss the problems and collaborate on strategies for solving the problems, but all writing, code, etc, should be done completely on your own. For example, working out a solution as a group, then transferring it to your own page, is not acceptable. No collaboration or discussion of any kind is allowed on the exams.

Any copied material (from websites, published materials, or another students' work) that is handed in without attribution will be considered to be plagiarism and will be reported to the appropriate university department. Feel free to reach out to the instructor or TAs if you have any questions about what is appropriate for collaboration or online resource use.

Please consult the student manual on university policies and regulations that make it clear that the University will not tolerate cheating and plagiarism: `https://studentmanual.uchicago.edu`

Special Accommodations The University of Chicago is committed to ensuring equitable access to our academic programs and services. Students with disabilities who have been approved for the use of academic accommodations by Student Disability Services (SDS) and need a reasonable accommodation(s) to participate fully in this course should follow the procedures established by SDS for using accommodations. Timely notifications are required in order to ensure that your accommodations can be implemented. Please contact the instructor to discuss your access needs in this class after you have completed the SDS procedures for requesting accommodations.
SDS contact info — Phone: (773) 702-6000, Email: `disabilities@uchicago.edu`