Course logistics

Instructor	Prof. Rina Barber	rina@uchicago.edu	Jones 214
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Website:	canvas.uchicago.edu	(all grades, assignments, announcements, etc)	

Times & locations:

Mon	Tue	Wed	Thu	Fri
	HW due in class		10-11:30am Rina OH	
2-4pm Rina OH	S1 2-3:20pm E206 S2 3:30-4:50pm E133		S1 2-3:20pm E206 S2 3:30-4:50pm E133	
5:30-7:30pm TA OH Pick 016		5-6pm TA OH Jones 226		4-5pm TA OH Jones 226

Grading

- Your course grade: homework (25%), midterm (30%), final (45%)
- As a default, students will receive a quality grade (A,A-,B+,...). Alternately, you may register for grade R (audit), or may request a P/F (pass/fail) grade or a W (withdrawal). Requests for P/F or W must be sent from your uchicago.edu email account, to the instructor, before the start of the final exam. A grade I (incomplete) will be given only in clear cases of emergency and must be approved by the department chair.
- Exams are closed-book. You should bring a calculator. For the final exam, you may bring a two-sided page of formulas.
- You are encouraged to check that your exams and assignments are graded accurately, and that the grades are entered correctly into Canvas.
- HWs are due Tuesdays at the beginning of class, or may be sent by email to the instructor/TAs by this time.
- In case of an emergency, you may be excused from one HW in the quarter. **Late HWs will not be accepted, and we cannot excuse a 2nd HW—there will be no exceptions.**

Collaboration policy

You are encouraged to discuss the HW with other students, but must write up solutions on your own and do your own calculations. Copying from another student's solution, or sharing your own solutions with another student or posting them online, are both considered violations of this policy. We encourage you to talk with the instructor if you have any concerns or questions regarding the expectations for collaboration and academic honesty.

Textbook

The textbook for this course is:
Rice, John A. Mathematical Statistics and Data Analysis, 3rd edition.
This book will be used primarily as a reference. Homework problems will not be assigned from the book.

Course schedule

The topics listed for each day are tentative; we may remove or add topics as needed. Before each exam, we will post an updated list of topics & textbook sections that were covered.

	Date	Topics	Book	Due
1	9/26	Intro to probability; set notation; counting; sampling	1.2, 1.3, 1.4	
	9/28	Conditional probability; independence; discrete random variables	1.5. 1.6, 2.1	
2	10/3	Discrete distributions; Functions of discrete r.v.; continuous r.v.'s	2.2, 2.3	HW1
	10/5	Mixed r.v.'s; functions of continuous r.v.; expected value	2.3, 4.1	
3	10/10	Variance & SD; discrete/continuous joint distributions	4.2, 3.2, 3.3, 3.4	HW2
	10/12	Joint distributions continued		
4	10/17	Conditional distributions	3.5	HW3
	10/19	Covariance/correlation; conditional expectation; tower law	4.3, 4.4	
5	10/24	Law of total variance; Bayesian inference; normal distribution	4.4, 15.3	HW4
	10/26	Bivariate normal distribution; Rejection sampling	3.5	
6	10/31	**Midterm exam (in class)**		
	11/2	Central limit theorem	5.3	
7	11/7	Central limit theorem; χ^2 and t distributions	5.3, 6.2, 6.3	HW5
	11/9	Frequentist & Bayesian inference for normals; parameter estimation	8.3, 8.5	
8	11/14	Maximum likelihood estimation; bias & variance; Fisher's theorem	8.3, 8.5	HW6
	11/16	Confidence intervals for MLE; Bayesian inference	8.3, 8.5, 8.6	
9	11/21	Hypothesis testing; likelihood ratio test; p-values; multiple testing	9.1, 9.2	HW7
	11/23	**Thanksgiving—no class**		
10	11/28	Generalized likelihood ratios; Pearson's χ^2 test	9.4, 9.5	HW8
	11/30	**Reading period—review session**		
	12/5	**Final exam (Section 1): 1:30-3:30pm**		
	12/7	**Final exam (Section 2): 4-6pm**		