ECON 400 — Introduction to Statistics and Econometrics

University of North Carolina, Spring 2022

Course information

Instructor: Christopher Handy, chandy@unc.edu

Class meetings: Tuesday and Thursday, 3:30pm–4:45pm, Stone Center 103

Office hours: see information on Sakai

Course description

This course is a comprehensive introduction to statistics, including descriptive statistics and statistical graphics, probability theory, distributions, parameter estimation, hypothesis testing, simple and multiple regression, and use of powerful statistical estimation software. This course includes a substantial introduction to basic econometrics.

Prerequisites: ECON 101, STOR 155, and one of MATH 152, 231, STOR 112, 113

Course objectives

In this course you will …

- analyze situations involving uncertainty using probability and random variables;
- use estimators and sampling distributions to conduct inference in the form of confidence intervals and hypothesis tests;
- study correlations and make comparisons using linear regression, and understand the conditions under which an estimated regression coefficient would have a causal interpretation;
- use statistical software to manipulate data, produce descriptive statistics, and estimate linear regression models; and
- learn to choose and implement the appropriate description or inference when given data and a research question.

Materials

Text: OpenIntro Statistics, available cheaply at www.openintro.org/book/os/

Software: Stata/BE, available at www.stata.com/order/new/edu/profplus/student-pricing/ and in campus computer labs

Website: Sakai, sakai.unc.edu

Course components and grading

Your grade will be determined from the following components.

Assignments	25%
Exam 1	20%
Exam 2	20%
Final exam	30%
Highest exam	5%

I will use the following grading scale, although I may curve numerical grades to higher letter grades at the end of the semester if needed. I do not round grades to the nearest whole number.

A	[93, 100]	C+	[77, 80)
A–	[90, 93)	C	[73, 77)
B+	[87, 90)	C–	[70, 73)
B	[83, 87)	D+	[67, 70)
B–	[80, 83)	D	[60, 67)
		F	[0, 60)

Assignments: The assignments will typically include a mix of theoretical questions and empirical work for which you will use Stata. There will be approximately six assignments, and tentative due dates are included on the schedule below. I will drop the lowest assignment score before computing your assignment average. You must first attempt each assignment on your own. After that, you may work with classmates, but you may not simply share answers.

Midterm exams: There will be two in-class exams. The dates of these are on the schedule below.

Final exam: The final exam will be Saturday, April 30, 4:00–7:00pm, in Stone Center 103. If you obtain an official exam excuse, you may take the exam Wednesday, May 4, at a time and place to be announced closer to that date.

Highest exam: I will use the highest of your three exam scores for this component of your grade. For example, if you do particularly well on exam 1 but have a bad day for exam 2, then exam 1 will end up counting a little more toward your grade than exam 2.

Academic policies

Attendance: I expect you to attend class if you are able, and to prepare for class by doing any assigned reading and watching any assigned videos. I will post a recording of each day's class, and you should watch it if you have to miss class for any reason.

Conduct: Please respect your fellow students by behaving professionally. This includes arriving on time, not leaving class unnecessarily, and not distracting others.

Course delivery: As long as it is possible to do so safely, we will be meeting in person this semester. I understand the ongoing COVID-19 pandemic may require changes to this plan and will be monitoring the situation closely. If I need to change the format of the course temporarily due to outbreaks of illness, I will announce this via email and the course Sakai site.

Honor code: I expect you to follow the guidelines of the UNC honor code; each of you has pledged "not to lie, cheat, or steal." You may not consult materials from any previous offering of this course for any reason, and I expect you not to share materials with any future students of this course. If you have questions about the honor code, please ask me or consult the Honor System webpage.

Late assignments: Assignment due dates are firm. I know that things like personal emergencies or computer problems may prevent you from submitting an assignment, which is why I drop the lowest assignment score before computing your assignment average. Exceptions to this policy will generally only be made if you accumulate a significant number of University Approved Absences.

Missed exams: If you miss a midterm exam and you have a University Approved Absence, I will replace the grade on that exam with the average of your other exam grades. For the final exam, the university policy is that you may only take the exam outside the scheduled time if you have an official final exam excuse, and requests involving religious observance or a scheduling conflict must be made no later than the final day of classes. Exams missed without an official approval or excuse will generally receive a reduced grade or a grade of zero.

Recitations: The recitation sections are opportunities for you to get additional practice, gain familiarity with Stata, and ask questions in a smaller setting. I strongly encourage you to attend recitations. You may attend the recitation section of your choice, space permitting, and the full recitation schedule will be posted on Sakai.

Syllabus changes: I reserve the right to make changes to the syllabus, including assignment due dates and exam dates. These changes will be announced as early as possible.

University mask policy: This semester, while we are in the midst of a global pandemic, all enrolled students are required to wear a mask covering your mouth and nose at all times in our classroom. This requirement is to protect our educational community — your classmates and me — as we learn together. If you choose not to wear a mask, or wear it improperly, I will ask you to leave immediately, and I will submit a report to the Office of Student Conduct. At that point you will be disenrolled from this course for the protection of our educational community. Students who have an authorized accommodation from Accessibility Resources and Service have an exception. For additional information, see Carolina Together.

Academic resources and student support

Accessibility Resources and Services: The University of North Carolina at Chapel Hill facilitates the implementation of reasonable accommodations, including resources and services, for students with disabilities, chronic medical conditions, a temporary disability or pregnancy complications resulting in barriers to fully accessing University courses, programs and activities. Accommodations are determined through the Office of Accessibility Resources and Service (ARS) for individuals with documented qualifying disabilities in accordance with applicable state and federal laws. See the ARS Website for contact information or email ars@unc.edu.

Counseling and Psychological Services: CAPS is strongly committed to addressing the mental health needs of a diverse student body through timely access to consultation and connection to clinically appropriate services, whether for short or long-term needs. Go to their website or visit their facilities on the third floor of the Campus Health Services building for a walk-in evaluation to learn more.

Title IX resources: Any student who is impacted by discrimination, harassment, interpersonal (relationship) violence, sexual violence, sexual exploitation, or stalking is encouraged to seek resources on campus or in the community. Reports can be made online to the EOC. Please contact the University's Title IX Coordinator (Elizabeth Hall, interim, titleixcoordinator@unc.edu), Report and Response Coordinators in the Equal Opportunity and Compliance Office (reportandresponse@unc.edu), Counseling and Psychological Services (confidential), or the Gender Violence Services Coordinators (gvsc@unc.edu; confidential) to discuss your specific needs. Additional resources are available at safe.unc.edu.

Schedule of topics and assessments

Week	Dates	Tuesday	Thursday	Sunday
1	Jan. 10–16	Summarizing data	Summarizing data	
2	Jan. 17–23	Probability	Probability	A1 due
3	Jan. 24–30	Discrete random variables	Discrete random variables	
4	Jan. 31–Feb. 6	Continuous random variables	Continuous random variables	A2 due
5	Feb. 7–13	Exam practice problems	**Exam 1**	
6	Feb. 14–20	Joint and conditional distributions	Joint and conditional distributions	
7	Feb. 21–27	Point estimates and sampling distributions	Point estimates and sampling distributions	A3 due
8	Feb. 28–Mar. 6	Confidence intervals	Confidence intervals	
9	Mar. 7–13	Hypothesis tests	Hypothesis tests	
10	Mar. 14–20	No class: Spring Break	No class: Spring Break	A4 due
11	Mar. 21–27	Exam practice problems	**Exam 2**	
12	Mar. 28–Apr. 3	Simple regression	Simple regression	
13	Apr. 4–10	Simple regression	Multiple regression	A5 due
14	Apr. 11–17	Multiple regression	No class: Wellness day	
15	Apr. 18–24	Multiple regression	Multiple regression	A6 due
16	Apr. 25–May 1	Exam practice problems		

Final exam: Saturday, April 30, 4:00–7:00pm, Stone Center 103