

ECON 400 Summer II 2: Introduction to Statistics and Econometrics

June 28, 2021

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Office Hours: 11:30-12:30, Mon-Fri, via Zoom (link: <https://unc.zoom.us/j/5499147845> (Meeting ID: 549 914 7845)).

Instruction: 9:45-11:15, Mon-Fri, synchronous lecturing via Zoom (link: <https://unc.zoom.us/j/5499147845> (Meeting ID: 549 914 7845)).

Description:

This course will introduce you to probability theory and mathematical statistics. In addition to learning the theory, you will engage in the basic topics in R. The goal of this course is to equip you with knowledge such that you are capable of answering empirical economic questions in a both qualitative and quantitative way. Also, this course is designed to build foundations for further training in econometrics, either at future career or in more advanced course. The learning objectives are:

- Interpret probability models and build appropriate probability model for random events.
- Understand descriptive statistics and draw statistical graphs.
- Estimate parameters of probability models and interpret estimates with inference analysis including hypothesis testing and confidence interval.
- Analyze the relationships between variables.
- Calculate and interpret coefficients and other statistics for single linear regression, and predict future outcome based on estimated regression.
- Use R to solve simple statistical questions.

Target Audience and Prerequisite

Any student has taken STOR 155 and ECON 101.

Course Materials

Diez, D. M., Barr, C.D., and Cetinkaya-Rundel, M. (2019). OpenIntro Statistics, 4th Edition.

Course structure and schedule of topics

The course will be divided into two parts, the probability theory and the statistics theory. Specifically, the following topics will be covered:

- Week 1 - 2 (June 28 - July 9): summarizing data, probability, conditional probability, discrete and continuous distributions, distribution of multiple random variables, and the central limit theorem.
- Week 2 - 3 (July 6 - July 16): point estimation, confidence interval, hypothesis testing, and inference for categorical data.
- Week 4 (July 19 - July 23): inference for numerical data.
- Week 5 (July 26 - July 29): estimation, interpretation, and inference for simple linear regression.

Requirement

- Participation: You are expected to attend every class and contribute to the in-class discussions. Some lectures require that you read the assigned materials in advance and actively participate as we discuss them in class.
- Homework: There will be weekly homework assignments over the topics covered during that week, to give an indication what might be covered on the exam from that particular topics. In each assignment, it is expected to be 10 problems including programming problems using R. Please collect all your answers in **one** PDF and submit it through Assignment tab on Sakai. The scheduled due dates are:

Assignment	Due date
Week 1	July 6
Week 2	July 12
Week 3	July 19
Week 4	July 26
Week 5	July 30

Your assignments should be submitted **before classes** of the due dates.

Feel free to discuss with each other on homework assignments, but each person is responsible for submitting their own unique assignment.

- Exam: There will be two exams: Midterm exam (July 16, in class), Final Exam (August 2nd, 8:00-11:00).

Overall, you are expected to spend about five hours per week outside of classes.

Grading

- Grading weights: Each assignment and exam during the semester will comprise a certain percentage of your final grade, with the percentages given in the schedule below:

Participation: 10%

Homework assignments: 40%

Midterm exam: 20%

Final exam: 30%

- Grading scale: The final grade will be assigned a letter grade based on the weighted earned scores during the semester according to the following grade schedule:

$\geq 93\%$	$: A$
$\geq 90\%$ and $< 93\%$	$: A-$
$\geq 87\%$ and $< 90\%$	$: B+$
$\geq 83\%$ and $< 87\%$	$: B$
$\geq 80\%$ and $< 83\%$	$: B-$
$\geq 77\%$ and $< 80\%$	$: C+$
$\geq 73\%$ and $< 77\%$	$: C$
$\geq 70\%$ and $< 73\%$	$: C-$
$\geq 67\%$ and $< 70\%$	$: D+$
$\geq 60\%$ and $< 67\%$	$: D$
$< 60\%$	$: F$

Exam Dates

Midterm: July 16, 9:45-11:15am.

Final: August 2nd, 8-11am.

Attendance Policy

No right or privilege exists that permits a student to be absent from any class meetings, except for these University Approved Absences:

1. Authorized University activities
2. Disability/religious observance/pregnancy, as required by law and approved by Accessibility Resources and Service and/or the Equal Opportunity and Compliance Office (EOC)
3. Significant health condition and/or personal/family emergency as approved by the Office of the Dean of Students, Gender Violence Service Coordinators, and/or the Equal Opportunity and Compliance Office (EOC).

However I also understand that life can create unexpected challenges or hardship that fall outside of these official approved absences. Please communicate with me early about potential absences, and I will try to accommodate reasonable requests. Please be aware that you are bound by the Honor Code when making a request for a University approved absence.

Honor Code Policies

I expect all students to follow the guidelines of the UNC honor code. In particular, students are expected to refrain from “lying, cheating, or stealing” in the academic context. You can read more about the honor code at honor.unc.edu. In any course, including mine, what constitutes cheating can change from one activity to another. For example, collaboration may be encouraged for an assignment but qualify as cheating during an exam. Please see my guidelines for each activity, and if you are unsure, please ask me to clarify. In remote classes, there may be many temptations for using online exchange sites, such as Chegg. Note that these sites provide names of students who have used their materials, and they routinely cooperate with institutions around academic integrity issues. Please don’t get caught up with honor code issues just because it appears to be simple and untraceable. It is not!

Make-Up Exams

If for any reason you miss an exam and need to make it up, I will schedule a time with The Testing Center. If multiple make-up exams need to be taken an attempt will be made to schedule all make-ups at the same time.

The College of Arts and Sciences provides a secure, proctored environment in which exams can be taken. The center works with instructors to proctor exams for their undergraduate students who are not registered with ARS and who do not need testing accommodations as provided by ARS. In other words, the Center provides a proctored testing environment for students who are unable to take an exam at the normally scheduled time (with pre-arrangement by your instructor). For more information, visit <http://testingcenter.web.unc.edu/>.

Accessibility Resources

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 difficulties with accessing learning opportunities.

All accommodations are coordinated through the Accessibility Resources and Service Office. See the ARS Website for contact information: <https://ars.unc.edu> or email ars@unc.edu.

Relevant policy documents as they relate to registration and accommodations determinations and the student registration form are available on the ARS website under the About ARS tab.

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: <https://caps.unc.edu/> or visit their facilities on the third floor of the Campus Health Services building for a walk-in evaluation to learn more.

Syllabus Changes

I reserve the right to make changes to the syllabus and the schedule, including assignments due dates, test dates, and the order of topics. These changes will be announced as early as possible.