Statistics for Economists - Econ 2250[1]

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Course Time: TTh 9.35-10.55am
Course website on T-Square
Office Hours: Tuesday 11am-12pm
Thursday 2.30-3.30pm

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Office Hour: Monday 4-5pm, Wednesday 1-2pm
Old CE Room 205

Course Overview

This course is designed to give you an understanding of probability theory, descriptive statistics, statistical inference, and data analysis. These tools are necessary for you to be a good practitioner and consumer of empirical economics. The material we cover in this class will lay the foundations for, and enable to you succeed in further econometrics and regression courses such as ECON 3161 and other quantitative methods courses.

For this class I will assume that you have taken a course in single variable differentiation and integration and we will expand these concepts to multiple variables. The concepts will be important when we discuss probabilistic concepts such as expectations, standard deviations, and conditional expectations.

Learning Objectives

After this course you will be able to:

1. Describe the properties of discrete and continuous distributions of random variable and discuss the appropriateness of using each distribution in particular situations
2. List desirable finite-sample and asymptotic properties for estimators
3. Draw statistical inference from point estimates of estimated parameters and interpret these estimates
4. Demonstrate statistical properties of estimators using simulation techniques in STATA.
5. Demonstrate the ability to clean and analyze a data set.

Textbook

We will be using one textbook for the semester, but I will supplement the textbook with a few other readings at various points during the semester. All supplements will be posted to T-Square.

[1] This is the preliminary version of the syllabus and may be changed during the semester to accommodate changes in the course.

Anderson, Sweeney, Williams, Camm, Cochran (2014) *Statistics for Business and Economics*, Revised 12th ed., Cengage Learning.

We will be using Cengage's online problem sets and quizzes for this course. This means that you will need to buy access to this feature via their website. You can register and purchase this at: `https://login.cengagebrain.com/course/MTPP2C7PGWJ3`. There are also instructions posted on TSquare in the Resources>Course Tools folder.

Assignments

We will be using an online homework system in this course that accompanies the textbook. You will be assigned and expected to complete one homework assignment and one quiz each week of the semester to accompany the textbook readings and lecture. The homework assignments will not be graded but the quizzes will count toward your grade in the class. You are encouraged to work through the homework problems before taking the quizzes. The quizzes will need to be completed by Monday at 11.59pm the week after the chapter was covered in class.

The best way to learn statistics is to practice solving problems and to apply your knowledge to different situations. The problem sets and quizzes will help you focus your efforts on learning the major points of the course but are not intended to cover all of the material you will need to understand for the exams. You are encouraged to work through extra exercises on concepts that you are having troubles with.

In addition to the problem sets and quizzes, you will be asked to complete tasks on a data set that you have downloaded yourself. At the end of the semester you will turn in a Data Analysis Portfolio (DAP) that shows all of the work you have done on this data set during the semester.

You will be presenting your partially complete DAP to the class during the semester. The goal of this is for you to learn what your classmates are working on and to learn how to present empirical information to a new audience. More details about the presentations will be distributed closer to the first presentation date in February.

To complete the Data Analysis Portfolio you will need to learn how to use the statistical software, STATA. Stata is good had handling large data sets and will help you become familiar with learning information from large amounts of data. You are also likely to use this software in other classes in the economics department.

We will spend time during class getting everyone's feet wet in Stata and I will provide you with a number of documents about how to use it. You do not need to purchase Stata for yourself since it is available in the GT Virtual Lab. However, if you would like to install Stata on your computer you can purchase a semester, year, or perpetual license.

While I will provide some guidance on how to use Stata, there are a few resources worth mentioning. First, UCLA has developed a number of tutorials that will help you familiarize yourself with Stata and learn how to perform basic tasks. The tutorials can be found at: `http://www.ats.ucla.edu/stat/stata/sk/default.htm`. Second, as is usually the case with computer questions, Google is your friend. Typically you can type `stata [thing you want to do]` and you will get some good answers.

Grading

Your course grade will be based on 4 components:

Online Questions	25%
High Exam	27%
Low Exam	23%
Data Analysis Portfolio	25%

Late homework assignments will not be accepted.

Grades in the class will be assigned by the following rubric:

- A 90% or above
- B below 90% and 80% or above
- C below 80% and 70% or above
- D below 70% and 60% or above
- F below 60%

If you are taking this class Pass/Fail, you will need to achieve at least a C to receive a passing grade.

Exams

There will be two exams approximately one-third and two-thirds of the way through the semester. Exams will consist of analytical problems and derivations. The exams will cover the material covered in lecture and from the assigned portions of the textbook. Each exam will focus on the material covered since the previous exam but may contain questions from earlier portions of the course as well. To succeed on the exams you will need a good understanding of all of the previous examined material due to the cumulative nature of the course. **You must attend all exams.**

Make-up exams will not be given except with the approval of the Dean of Students. If you have an emergency, please let me know immediately to make alternative arrangements.

In order to give you some extra room for improvement, the highest of your two exam grades will receive a 27% weight and the other will receive a 23% weight.

If the class mean on a particular exam falls below 76%, I will add a curve to that test to bring it up to 76%. For example, if the class mean on the second exam is 73%, I will add a 3% curve to that exam. This protects you from tests that may be somewhat more difficult than others. If there is a curve, I will make a specific announcement about it. Only individual tests are curved if necessary. There is no additional curve at the end of the semester.

Attendance

You are expected to attend all class sessions and to have completed the assigned reading. If you need to miss a class, you are responsible to find out what material was covered in class and any announcements that were made. We will typically cover the material on the syllabus for that date, but there may also be deviations from the schedule listed on the syllabus.

Honor Code and Plagiarism

You are expected to follow the Georgia Institute of Technology Honor Code at all times. As mentioned above, you are allowed to collaborate with your fellow classmates on the homework and studying for exams. However, exams are an individual endeavor and you may not consult any outside information sources (other students, textbooks, notes, etc.) except as noted on the exam. For any questions involving these or any other Academic Honor Code issues, please consult me or `http://www.honor.gatech.edu`.

Email Policy

Substantiative questions are best asked in person during my office hours and will typically not be answered over email. However, you should feel free to email about clarifications and minor questions. I will do my best to answer your email within 48 hours (and hopefully sooner). It is your responsibility to ensure that you are regularly checking your email for class announcements.

Special Accommodations

If you need any special accommodations to due to a physical or learning disability, please let me know during the first week of class. In order to receive the requested accommodations you will need to obtain a form from the Access Disabled Assistance Program for Tech Students (ADAPTS) and give me this form. The ADAPTS Office is located in the Smithgall Student Services Building, Suite 210 and the website is `http://www.adapts.gatech.edu`.

Also, if you will be missing any classes for religious holidays or other events, let me know as soon as you know you will be missing class. You will still be required to know the material from that class period.

Important Dates

Exam 1	February 16
Exam 2	April 5
Data Analysis Portfolio Due	April 26

Keys to Success

- Practice all of the analytical problems multiple times and find similar types of problems to help you study for the exam. Simply watching someone else solve the problems or following along is much less helpful.
- Come to class having read the assigned sections of the textbook so that you can ask questions about the portions you do not understand.
- Come talk to me about any problems you are having with the material or the class.
- Take advantage of my office hours. I am here to help you learn and succeed in the class. Seeking help after you do poorly on an exam is a sub-optimal strategy since you'll need to catch up on the concepts as well as learn the new concepts that are built on the old ones.