3818-200 – Introduction to Statistics Summer 2017 Syllabus/Course Information

Lecture: MTWRF 9:15-10:50

Instructor: Joshua Schabla, Econ 309B (Third floor, south side of the building)
Office Hours: MTWRF 8:00 a.m. – 9:00 a.m. and by appointment
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Course Website: D2L

TA's: Yuwei Jia, Econ 307 and Ali Almelhem Econ 306

I. Course Description

Econ 3818 is the first course in the theory and methods of statistics. We will study basic probability and probability distributions, especially the normal distribution, and descriptive and inferential statistics, including estimation and hypothesis testing. Emphasis is on both theory and applications. Weekly problem sets will explore issues in statistical theory and practice. The course will use Microsoft Excel to do data analysis on hypothetical and real-world data.

II. Requirements

- Three midterm exams (15% each)
 - **Dates:** 7/18, 7/26, 8/4
- Problem Sets (20%)
 - Due dates will be assigned on each problem set. These problem sets will have a variety of problems, both graded and non-graded. Due to the constraints of the class I will only make a couple problems graded and will indicate them as such. You are strongly encouraged to do all problems however as problems on the exams will be very similar.
- Final Exam (20%), Friday, 8/11
- Recitation and Attendance (15%), Determined by your TA
 - Attendance is mandatory for both lecture and recitation. I will give you two (2) missed classes (total, this means you can miss 2 lectures, 2 recitations, or 1 of each before I start knocking out points), but given the speed the class moves at, missing class will set you back tremendously. As such, every class and/or recitation you miss after the first two will cost you 10% of the Recitation and Attendance grade, which means 1.5% of your final grade each missed class.

Course grades will be assigned as follows, based on overall percentage of course score:

< 60	60-65	66-69	70-73	74-76	77-79	80-83	84-86	87-89	90-92	>92
F	D	D+	C-	С	C+	B-	В	B+	A-	А

III. Prerequisites

Course requirements are Econ 1000, or 2010 and 2020; and either Econ 1078 and 1088 or equivalent math courses. The latter prerequisites (math) are strictly enforced. If you are listed as not meeting the

course prerequisites, please send me an email indicating that you indeed met them if you haven't already.

IV. Text

Caniglia, <u>Statistics for Economists</u>, An Intuitive Approach. HarperCollins Publisher, 1991. This text has only one edition so any copy is equivalent. It's the text used in stats classes here for the last several years so it shouldn't be hard to obtain for cheaper than the bookstore price.

V. Miscellaneous

Notice for students with disabilities:

If you qualify for accommodations because of a disability, please submit to me a letter from Disability Services in a timely manner so that your needs be addressed. Disability Services determines accommodations based on documented disabilities. Contact: 303-492-8671, Willard 322, and www.Colorado.EDU/disability services Disability Services' letters for students with disabilities indicate legally mandated reasonable accommodations. The syllabus statements and answers to Frequently Asked Questions can be found at www.colorado.edu/disability services

Honor Code Policies

All students of the University of Colorado at Boulder are responsible for knowing and adhering to the academic integrity policy of this institution. Violations of this policy may include: cheating, plagiarism, aid of academic dishonesty, fabrication, lying, bribery, and threatening behavior. All incidents of academic misconduct shall be reported to the Honor Code Council (honor@colorado.edu; 303-735-2273).

Students who are found to be in violation of the academic integrity policy will be subject to both academic sanctions from the faculty member and non-academic sanctions (including but not limited to university probation, suspension, or expulsion). Other information on the Honor Code can be found at http://www.colorado.edu/policies/honor.html and at http://www.colorado.edu/academics/honorcode/

VI. Student Responsibilities

This is a one-semester course in statistics. In a typical 15 week semester, there are three 50 minute lectures, which means there are 14 (one week subtracted for testing) weeks x 3 lectures/week x 50 minutes/lecture = 2,100 minutes of class. We only have a total of 21 classes x 95 minutes per class = 1995 minutes so we'll be moving faster than the regular semester.

As such, for a student with average mathematical ability and background, an additional hour to an hour and a half, *per day* will be required to read the text and work out assignments to fully understand the course material. The material in this class builds upon itself, that is week 2 material will likely be unintelligible unless week 1 material has been mastered. In fact, Wednesday's segments may not make sense unless Monday and Tuesday's segments have been understood. Therefore, to make understanding material easier, the answers to problem sets will be made available immediately after class the day they are due. This means strict deadlines on when problem sets can be completed.

VII. Some Helpful Tips As Someone Who Has Struggled With Statistics Myself

There's no way around it, statistics can be very difficult. I helped my mom through her calculus courses when I was 11 years old and it took me a long time to understand statistics. I've come to realize this was because while math is very intuitive for me, statistics is not. I would try to take short cuts through stats problems the same way I do math problems and quickly realized that I neither understood the material nor had the intuition for statistics. I will present a problem at some point this semester that demonstrates that pigeons are better at grasping statistics and probability than humans are. This is due to our desire to recognize patterns and consequences in the world around us and the patterns that statistics and probability have are far more subtle than the patterns of the sun rising every day causing the air to heat up. However, both statistics and probability demonstrate patterns which this class will begin to elucidate, however these problems require careful thought and a total understanding of what we mean precisely.

To that end here are some things I found made statistics much easier to grasp.

- 1) Work out the problems, step by step, no matter how tedious. I can see through problems now in a way that would have baffled me when I was taking this class. It only came through repetitious, and quite frankly horribly boring, step by step practice. By doing the problems thoroughly and carefully, not only are you more likely to catch a mistake, but it reinforces material and definitions.
- 2) Know your definitions. Words in statistics and probability have a very precise meaning and taking the time to really think about what we are defining can help you understand far more complex concepts. It amazes me how simple the definition for an Expectation is, and when I give it you'll probably spend 13 seconds looking at it then move on. Yet, the first time I give a problem asking you to find an Expectation you won't have a clue. Expectation is arguably the single most important concept in probability and statistics yet it's one that is so simple that most people, myself included, ignore it and thus struggle mightily when asked to find it.
- 3) Don't stop practicing. Our world is a data driven one. Companies are turning to statistics in amazing ways and understanding statistics and econometrics is going to turn into one of the single most valuable skills you will obtain in college. I would argue that no series of classes will make you more money than understanding the concepts taught in this class. But, to be completely frank you won't have the time to fully digest everything in here. It took me years and years to build the understanding and will certainly require the same of you. What you should look to accomplish in this class is laying the groundwork that will be reinforced when you take Econometrics (hopefully this fall). Don't stop looking over concepts. If you really take the time to think about these concepts you'll find they are far deeper than you realize or that we can cover in this class. Practice practice practice practice.