Syllabus, Economics and Business Statistics

MWF 9am-9:50am, B&E room 301

Course description: This course studies statistical concepts and quantitative methods in wide use in economics and other business disciplines. The material in Eco 391 is by itself an integral part of a major in economics or a related discipline, and is also essential to further study in these areas (for example, Eco 491 or Eco 499 both rely heavily on material taught in Eco 391). Roughly, the course will be divided into thirds. The first third will cover basic concepts in probability and statistics, such as the central limit theorem, confidence intervals, and hypothesis testing. Some of this material will be a review of Sta 291, a course prerequisite. The second third will introduce and refine models of multiple regression analysis. The final third will discuss model building and applications, and will cover economics journal articles in addition to textbook chapters. Though a large portion of the course's material will be communicated through lectures and textbook readings, students will also use Excel to implement the concepts they have learned.

Contact info: My name is Jeremy Sandford, and I am an assistant professor in the economics department at UK. Please call me Jeremy if you are comfortable doing so, otherwise Dr./Prof. Sandford is fine. My email address is jeremy.sandford@uky.edu. My website is jasandford.com. It has a detailed schedule, which I will update after each class, and information on homeworks and exams.

Office meetings: I will have regular office hours from 2:00-3:00pm each Monday. Additionally, I am often in my office during business hours, so you may stop by outside of office hours with a quick question. If you have a more involved question, please email me to set up an appointment (or come during office hours).

While many students can do well in the course without ever meeting with me, there is almost always a strong positive correlation between amount of time spent seeking my help and course grade.

Homework: There will be 5-6 graded homework assignments. In addition to influencing your course grade, the homeworks are excellent preparation for the midterms and final exam, and so you should plan on devoting the bulk of your time for this course to understanding them.

You should be able to complete some homework problems immediately after attending the relevant class. Others may require reading the assigned chapters, while some problems you may find quite puzzling at first and the answer apparent only after considerable contemplation and several failed attempts. Problem solving skills are crucial in both Eco 391 and the economics major. The process of being stuck and having to invest effort in some homework problems is vital to developing your problem solving skills within economics and gaining the economic intuition which will help you in future classes.

Working together on homeworks is fine, however each student must turn in his own write-up of the answers. Identical or nearly identical answers will be treated as academic dishonesty and will receive no credit. That said, this policy allows for students to solve all of the problems together, so long as each student writes up her answers individually.

Group regression project: In February, I will assign each student to a group of 4-5 students. Each group will then conceive of and execute a project using regression analysis. I will give you a sheet detailing the

assignment in the beginning of October. In brief, you will need to come up with an interesting question, explain why multiple regression is an appropriate tool to answer your question, locate data that are relevant to your question, acknowledge and (if possible) correct any inadequacies in your data or your model, and present easily digestible results that summarize your findings.

Exams: The course has three 50-minute exams, in class on Monday, February 4, Friday, March 1, and Friday, April 5. The final exam is on Wednesday May 1 from 8am-10am. It is not possible to take any of these 4 exams at a different time, short of a university-excused activity which is discussed with me as far in advance as possible, or a documented serious illness (please note that a note saying that you visited a doctor's office is not sufficient evidence of a serious illness). If you will not be available for any of these exam times, please do not take this course.

Course materials: The course has one required book, "Statistics," 9th edition by Gerald Keller, and several required readings which will be posted to my website. I do not require any purchase beyond the textbook (i.e. electronic access codes). I suggest you consider purchasing a used copy of the book on Amazon or a similar site. Also, consider also buying an older edition, which as far as I can tell differ only slightly from the current 9th edition. At the time I am writing this, a used 8th edition goes for $3.97 on Amazon. If you have access to a different business and economics statistics book, and are willing to put in the extra work to verify that you are studying the appropriate sections, this would be unlikely to seriously hinder your performance in the class.

Grading: Course grades will be determined by a weighting of homework assignments (10% total), a group regression project (20%), 3 in-class exams (39% total), and a cumulative final exam (31%). My typical undergraduate grade distribution is about $\frac{1}{4}$ A's, $\frac{1}{3}$ B's, $\frac{1}{3}$ C's and $\frac{1}{12}$ D's and F's. I expect the grade distribution this semester in Eco 391 will be similar.

In-class exams, the final exam, and homeworks will include free-response questions, with most of the points coming from problem-solving questions. The nature of this format means that exam averages may be considerably lower than you may be used to from introductory classes and multiple choice exams. Indeed, a typical average for an upper-level economics exam is between 50 and 70. Do not panic when you see your exam score, instead wait to fit it into the context of how the class as a whole did. After returning exams, I will give you an idea of how to translate your numerical score into a letter grade.

All students will be given the same opportunity to do well in this class. In particular, no student will receive a higher letter grade than a student with a higher numerical score, so appeals to me for a particular grade are very likely to be fruitless. There is no extra credit, and all students will have their grade calculated in the same manner. The circumstances of a particular student (such as a desire to obtain a particular GPA) are not relevant to the grade that student will be assigned in the class.

Academic dishonesty: Cheating on exams or quizzes or plagiarizing a homework assignment are both serious violations of university policy and it is my responsibility to the university to pursue each. I will seek to impose the maximum penalty allowed under university guidelines should I become aware of a student having cheated on a quiz or exam or plagiarizing a homework assignment. Note that, in most cases, working

with a classmate on a homework assignment will not constitute cheating, while copying another's homework verbatim will.

Students with disabilities: If you have a documented disability and need an accommodation, please make arrangements with me during the first week of the term. Please request that the counselor for students with disabilities send me a letter verifying your disability.

Topics Covered

Lecture	Topic	Keller chapter
1 (4 classes)	Discrete probability distributions	7
2 (4 classes)	Continuous probability distributions	8
3 (3 classes)	Sampling distributions	9
4 (9 classes)	Estimation and hypothesis testing	10, 11
5 (6 classes)	Multiple regression analysis	16-18
6 (5 classes)	Applications of multiple regression	16-18, papers to be assigned
7 (3 classes)	Lying with statistics	handouts
8 (6 classes)	CAPM	to be assigned

This list is preliminary. I will maintain an updated schedule on my website, jasandford.com, which will list the actual topic on each class day, as well as any additional required readings.