ECO 7415: Statistical Methods in Economics
Syllabus

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Fall 2022
Course Time: T/Th 11:45 — 13:40 (Periods 5 & 6)
Course Location: MAT 119

Course Description

ECO 7415 introduces students to the concepts of probability and statistics required for graduate-level study of econometrics. The course will rely on a high level of mathematics in order to understand the building blocks of econometrics. Proofs, calculus, and matrix algebra will be used to explore statistical concepts. Even for those students who go on to research more applied topics, the statistical and econometric theory we examine in this course will lead to intuition that could not be grasped otherwise. Further, understanding the assumptions that are necessary for even the most basic econometric techniques (e.g., ordinary least squares) gives intuition for when an assumption holds in practice and the consequences if an assumption is broken.

Texbook and Readings

The textbook for this course is Hogg, McKean, and Craig, *Introduction to Mathematical statistics* (eighth edition). You will also be responsible for material from class that is not covered in the textbook.
A separate textbook which is not required, but covers much of the same material, is Casella and Berger, *Statistical Inference* (second edition). If a topic is confusing in lecture, and it is not cleared up by Hogg, McKean, and Craig, consider reading the corresponding section in Casella and Berger.

Software and Programming

There will be several problem sets, some of which will require the use of a statistical software for giving students a different approach to grasping a theoretical concept (e.g., the Law of Large Numbers). R is the statistical software for this course. You will likely find RStudio (http://www.rstudio.org) to be a more user-friendly way of using R. R and RStudio are already installed on many computers around campus (e.g., Marston Science Library). You can also install R on your personal computer—R is free (open source) and available for Windows, Mac, and Linux. To download R, go to: https://www.r-project.org/. You are encouraged to work with other students on the problem sets, but each student must write up his or her answers separately.

Office Hours (OH)

I will have OH Wednesdays 14:30—16:30 on Zoom. The meeting URL is here: `https://ufl.zoom.us/j/95984155529?pwd=cTVjQm5vb3d3UVdVZlVoT1VIb0NDQT09`. If you plan to arrive after 14:40, please email me in advance so I know to wait.

Exams

There will be a midterm and a concluding exam. The location of all exams is the same location as where we normally meet for class. The tentative dates are the following:

Exam 1: Thursday, 6 October
Exam 2: Tuesday, 6 December

Other Important Dates

Tuesday, 22 November: no class (I will be at a conference)

Grades

Your final grade will be calculated as follows:

Assignments	10%
Midterm	40%
Concluding exam	50%
Total	100%

Your final letter grade distribution will be determined as follows:

93–100	A
90–92	A-
87–89	B+
83–86	B
80–82	B-
77–79	C+
73–76	C
70–72	C-
67–69	D+
60–66	D
0–59	E

Attendance Policy and Behavior

Irregular attendance or inattentiveness will most likely result in a substantial reduction in course performance. Econometrics requires participation and attention. Please shut off or put away laptops, tablets, ipods, phones and other electronic devices or toys during class, unless asked otherwise. Also notify me if you will be absent from class. I adhere to the UF attendance policy, described in detail at `https://catalog.ufl.edu/ugrad/1718/regulations/info/attendance.aspx`.

Student Responsibility

Enrollment in this course constitutes acknowledgement of the following:

1. I understand that the University of Florida expects its students to be honest in all of their academic work. I agree to adhere to this commitment to academic honesty and understand that my failure to comply with this commitment may result in disciplinary action, up to and including expulsion from the University.

2. I will adhere to university copyright policies as found at http://guides.uflib.ufl.edu/copyright/.

3. Students requesting classroom accommodation must first register with the Dean of Students Office. The Dean of Students Office will provide documentation to the student who must then provide this documentation to the Instructor when requesting accommodation.

Course Outline (tentative and will likely change)

HMC = Hogg, McKean, and Craig
CB = Casella and Berger

1. **Probability Concepts** (about 3 lectures)
   HMC 1.1–1.4
   CB 1.1–1.3

2. **Random Variables**
   HMC 1.5–1.9 (about 3 lectures)
   CB 1.4–1.6, 2

3. **Multivariate Random Variables** (a few lectures)
   HMC 2
   CB 4

4. **Selected Distributions** (a few lectures)
   HMC 3
   CB 3.1-3.5

5. **Some Important Inequalities** (one lecture)
   HMC 1.10
   CB 3.6

6. **Large Sample Theory** (a few lectures)
   HMC 5.1–5.4
   CB 5

7. **Hypothesis Testing** (a few lectures)
   HMC 4.1, 4.2, 4.5, 4.6
   CB 8

Changelog

Here I will list any important changes that I make to the syllabus since the beginning of the semester.