

ECO 7415: Statistical Methods in Economics Syllabus

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Course Time: T/R 16:05 — 18:00 (Periods 9 & 10)

Course Location: MAT 103

Office Hours: W 11:45 — 13:40 (Periods 5 & 6)

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.

Textbook and Readings

The textbook for this course is Hogg, McKean, and Craig, *Introduction to Mathematical statistics* (seventh 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. You are not required to have any knowledge of R or other programming experience, but you must be willing to learn. 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.

Exams

There will be a midterm and a concluding exam. I will set the date for each exam at least 2 weeks before it will be given.

Grades

Your final grade will be calculated as follows:

Assignments	10%
Midterm	40%
Concluding exam	50%
<hr/> Total	<hr/> 100%

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.

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://www.uflib.ufl.edu/admin/Copyright.htm>.
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

HMC = Hogg, McKean, and Craig

CB = Casella and Berger

1. **Probability Concepts**
HMC 1.1–1.4
CB 1.1–1.3

2. **Random Variables**
HMC 1.5–1.9, 2
CB 1.4–1.6, 4

3. **Selected Distributions**
HMC 3, 9.1, 9.8, 9.9
CB 3

4. **Some Important Inequalities**
HMC 1.10

5. **Large Sample Theory**
HMC 5.1–5.4
CB 5

6. **Point Estimation**
HMC 6.1, 6.2, 6.4
CB 7

7. **Hypothesis Testing**
HMC 4.2, 4.5, 4.6, 8.1–8.3, 6.3, 6.5
CB 8