

ECO 7415 Statistical Methods

Semester:	Fall 2024	Office Hours:	TBD
Instructor:	Douglas Turner	Office:	MAT 337
Email:	douglasturner@ufl.edu	Class Hours:	M,W (4:05 PM - 6:00 PM)
Classroom:	MAT 0115		

Course Description

ECO 7415 introduces students to probability and statistics concepts required for graduate-level econometrics. Specifically, the course will provide a calculus-based treatment of probability theory (including multivariate random variables), point estimation (including MLE), interval estimation, hypothesis testing and asymptotic theory. 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 probability and statistics concepts. Even for those students who go on to research more applied topics, an understanding of the statistical and econometric theory we examine in this course is a crucial pre-requisite for the proper application of modern empirical methods.

Course Materials

The primary (and required) textbook for this course is Casella and Berger, *Statistical Inference* (second edition). An alternative (and excellent) non-required textbook is Hogg, McKean, and Craig, *Introduction to Mathematical Statistics* (eighth edition).

Exams

There will be three exams which are tentatively scheduled for 9/25, 10/28 and 12/4. Exams are not cumulative and will be completed in class. More information on the structure and length of exams will be given at the exam reviews (the class immediately before the exam). Exams are closed book and closed notes.

Problem Sets

- There will be problem sets assigned periodically throughout the semester (approximately 2 problem sets per exam/module). These assignments are weighted equally. No late assignments are permitted.
- Solutions to these assignments should be written in LaTeX and submitted as a PDF. LaTeX is a software system for professionally typesetting documents and mathematical equations. If you have not used LaTeX before, I recommend beginning with LyX. LyX is a free, easy to use application for creating documents using LaTeX. See <https://www.lyx.org> for more information on LyX and <https://www.lyx.org/Download> to download LyX.
- Some problem sets will require the use of a statistical software statistical estimation and illustrating theoretical concepts (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.

Grading

- Any curving will be at the discretion of the instructor. The grading scheme is

Grading Scheme		Final Grading Scale			
		A	92-100	C	72-76.99
Assignments	25%	A-	90-91.99	C-	70-71.99
Exam 1	25%	B+	87-89.99	D+	67-69.99
Exam 2	25%	B	82-86.99	D	60-66.99
Exam 3	25%	B-	80-81.99	E	0-59.99
		C+	77-79.99		

Course Schedule

MONDAY	WEDNESDAY
8/26 Syllabus and Intro to Probability CB 1.4-1.6	8/28 Intro to Probability CB 1.4-1.6
9/2 No Class (Labor Day)	9/4 Transformations and Expectations CB 2.1-2.3
9/9 Transformations and Expectations CB 2.1-2.3	9/11 Common Distribution Families CB 3.1-3.3
9/16 Multiple Random Variables CB 4.1-4.3, 4.5-4.6	9/18 Multiple Random Variables CB 4.1-4.3, 4.5-4.6
9/23 Exam #1 Review	9/25 Exam #1
9/30 Intro to Statistics CB 5.1-5.3 and 5.5	10/2 Intro to Statistics CB 5.1-5.3 and 5.5
10/7 Point Estimation CB 7.1-7.3	10/9 Point Estimation CB 7.1-7.3
10/14 Point Estimation CB 7.1-7.3	10/16 Hypothesis Testing CB 8.1-8.3
10/21 Hypothesis Testing CB 8.1-8.3	10/23 Exam #2 Review
10/28 Exam #2	10/30 Finish Hypothesis Testing CB 8.1-8.3

MONDAY	WEDNESDAY
11/4 Interval Estimation CB 9.1	11/6 Interval Estimation CB 9.1
11/11 No Class (Veteran's Day)	11/13 Asymptotics: CB 10.1
11/18 Asymptotics CB 10.1	11/20 Additional Topics
11/25 No Class (Holiday)	11/27 No Class (Holiday)
12/2 Exam #3 Review	12/4 Exam #3

Academic Honesty

Students are expected to comply with the University of Florida's rules for academic honesty. Failure to comply with this commitment will result in disciplinary action.

Students are bound to not cheat or plagiarize, and are bound by The Honor Pledge which states, "We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code. On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: 'On my honor, I have neither given nor received unauthorized aid in doing this assignment.'"

You should familiarize yourself with the UF Student Honor Code. Cheating and plagiarism are not the only violations of this policy. Importantly, ignorance of a policy is not a valid reason for violating it.

Accommodations for Students with Disabilities

Students with disabilities requesting classroom accommodation must first register with the Disability Resource Center. The Disability Resource Center will provide documentation to the student who must then provide this documentation to the instructor when requesting accommodation. Students with disabilities should follow this procedure as early as possible in the semester.

Online Course Evaluations

Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at <https://gatorevals.aa.ufl.edu/students/>. Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via <https://ufl.bluera.com/ufl/>. Summaries of course evaluation results are available to students at <https://gatorevals.aa.ufl.edu/public-results/>.

UF Teaching Center

The UF Teaching Center offers guidance on study skills and tutoring services. You can find more information at: <https://umatter.ufl.edu/office/teaching-center/>.

Generative Artificial Intelligence

The Department of Economics faculty assume that all work that is submitted for grading is written by the student whose name it bears, and that it represents their ideas and work. Accordingly, students are not permitted to use generative AI when completing assignments, quizzes, exams, or other graded work unless their instructor has expressly granted that permission. Unauthorized use of generative AI may constitute cheating and/or plagiarism. Such violations of the UF Student Honor Code will be reported to the UF Dean of Students Office and will be subject to severe sanctions.

Class Attendance and Make-Up Exams

Requirements for class attendance and make-up exams, assignments, and other work in this course are consistent with university policies. [Click here](#) to read the university attendance policies.

Make-up assignments and exams will be arranged only for absences that are explicitly covered by the UF Attendance Policy. Whenever possible, you should reach out at least five business days in advance to arrange a make-up assignment or exam. Of course, this will not always be possible. Unforeseen absences and emergencies occur and can be excused without such advance notice. In most cases, you will be asked to provide evidence or documentation of an absence that is explicitly excused by the UF Attendance Policy. Absences related to religious holidays and worship do not require this documentation.

Resources

- **U Matter, We Care:** If you or a friend is in distress, please contact umatter@ufl.edu or 352 392-1575 so that a team member can reach out to the student.
- **Counseling and Wellness Center:** <http://www.counseling.ufl.edu/cwc>, and 392-1575; and the University Police Department: 392-1111 or 9-1-1 for emergencies.
- **Sexual Assault Recovery Services (SARS):** Student Health Care Center, 392-1161.
- **University Police Department** at 392-1111 (or 9-1-1 for emergencies), or <http://www.police.ufl.edu/>.