

ECON 503: Econometrics for Applied Economics I

Probability and Mathematical Statistics

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Lectures: Mon and Wed, 11:30AM-1:00PM, 130 DENN

Office Hours: Friday, 3PM-5PM

ECON 503 is an introduction to probability theory and statistical inference. Statistics offers a set of tools for the rigorous analysis and interpretation of numerical data obtained through random samples. The purpose of the course is to provide students with a deep theoretical understanding of the foundations of statistical inference. Topics include probability theory, experimental and theoretical derivation of sampling distributions, hypothesis testing, and properties of estimators including maximum likelihood and method of moments. The course is primarily intended to prepare students for the graduate econometrics class ECON 504. No prior knowledge in probability and statistics is required, but familiarity with algebra and calculus is assumed.

Required Textbook:

Larsen, Richard J. and Marx, Morris L. “*An Introduction to Mathematical Statistics and Its Applications.*” Pearson Prentice Hall, 4th Edition, 2006. ISBN: 0131867938.

Recommended Readings:

Casella and Berger, “*Statistical Inference,*” Duxbury Press, 2nd Edition, 2002.

Wackerly, Mendenhall and Scheaffer. “*Mathematical Statistics with Applications,*” Thomson, 7th Edition, 2008, ISBN: 978-0-495-11081-1

Hogg and Tanis, “*Probability and Statistical Inference,*” Pearson Prentice Hall, 8th Edition, ISBN: 0321584759

Grading

Problem Sets (20%)

Midterms (40%)

Exams

There are two midterm exams. The first midterm will be administered on **Wednesday, October 19**. The second midterm exam is scheduled for **Monday, December 12**. All exams will be given in 130 Denn. Exams are closed-book. However, a formula sheet may be used during the exams. The formula sheet must be no larger than 8.5 inches by 11 inches, the standard size of a piece of American printer sheet, i.e. no European sized paper. Only one side may be used for formulas, notes, etc. The sheet will be checked at each exam. A basic non-graphing calculator is allowed in the exams. Programmable calculators, cell phone calculators or calculators that perform functions beyond basic math will not be allowed. Please note that there will be no make-up exams unless you have a documented proof of special circumstances (i.e. illness).¹

Re-grade Policy

Within one week of receiving your exam, you can submit a neatly written or typed note explaining your questions. I will re-grade your exam by taking your concerns into consideration. Note that you are not guaranteed a higher grade with re-grading; in fact, it is possible for your grade to be lowered through the re-grading process.

Homework

There will be weekly assignments. Homework assignments are due on Wednesdays by the end of class. To ensure prompt grading, late assignments will not be graded. In order to allow for illness, personal and family issues, overwork due to other classes, or any other reason, the lowest assignment grade will not be counted. You are encouraged to work on groups but each student has to turn in his/her own copy. Identical assignments will not be accepted.

Special Accommodations

If you feel you need an accommodation based on the impact of a disability, contact the instructor privately to discuss your specific needs. Students with disabilities should also contact the Office of Services with Disabilities to determine appropriate accommodations.

¹ There may be exceptions to be this rule. Please contact me immediately to request an accommodation.

Class Schedule (Tentative)

Lectures	Subject
1-4	Probability
5-6	Discrete Random Variables
7	Continuous Random Variables
8-10	Mean, Variance, Independence
11-12	Review and Exam
13	Conditional Densities
14-15	Special Distributions
16-19	Estimation
20-22	Hypothesis Testing
23-24	Statistical Inference with two population
25	TBA
26-27	Review and Exam