ECON 423: Econometrics I

Course Name: Econometrics I  
Course Number: Econ 423  
Course Credits: 4  
Meeting Times Per Week: Twice a week for two hours per class  
Prerequisites: Econ 229 or equivalent

Course Outline

1. Probability. Chapter 2, all sections.  
   • Outcome set, events and probability  
   • Independence of Events and conditional probability  
   • Baye’s Rule

2. Discrete Random Variables. Chapter 3 sections 3.1-3.4, 3.9, 3.11.  
   • Probability distribution and expected values  
   • Moments and Moment Generating Functions  
   • Chebyshev’s Inequality

   • Probability distribution and expected values  
   • Moments  
   • The Gaussian Distribution  
   • Chebyshev’s Inequality

   • Multivariate Distributions  
   • marginal and Conditional Distributions  
   • Independent Random Variables and Covariances  
   • Conditional Expectations

   • Distributions of Functions of Random Variables
• Multivariate Transformations using Jacobians

   • Sampling Distributions Related to the Gaussian
   • The Central Limit Theorem and its Proof

   • Bias and Mean Squared Error
   • Comparing Estimators
   • Confidence Intervals
   • An Introduction to Asymptotic Theory

   • Consistency
   • Relative Efficiency
   • The Blackwell-Rao Theorem and Maximum Likelihood Estimation

   • What is a Statistical Test?
   • Type I and Type II Errors.
   • The Likelihood Ratio Test.

Student Learning Outcomes: Per university policy, we now specify student learning outcomes for all courses. According to the Office of Academic Programs, student learning outcomes are specific statements indicating an understanding, knowledge, or skill-set that a successful student will have obtained upon the completion of a course.

1. Explain the relationship between dependence and conditioning

2. Compute conditional moments given joint density functions

3. Conduct hypothesis tests

Evaluation of Student Performance: Homework will be assigned weekly and worth 20% of your grade. There will be one midterm, worth 35% of your grade; the final exam will be worth 45% of your grade. There are no make-up exams in this course. If you have a documented, legitimate excuse and you miss the midterm exam, the final exam will be given extra weight. In compliance with university policy, if you miss the final without approval, you will receive a score of zero on the final.
Learning Resources:


Disabilities: Accommodations are collaborative efforts between students, faculty and Services for Students with Disabilities (SSD). Students with accommodations approved through SSD are responsible for contacting the faculty member in charge of the course prior to or during the first week of the term to discuss accommodations. Students who believe they are eligible for accommodations but who have not yet obtained approval through SSD should contact SSD immediately at 737-4098.

Academic Dishonesty: Plagiarism, fabrication, cheating, and facilitating the academic dishonesty of others are serious offenses and may be punished by failure on the exam or paper, failure in the course, and/or expulsion from the university. Refer to http://oregonstate.edu/admin/stucon/achon.htm for more information.