Econ 3100–01 - Quantitative Methods and Applications

Autumn 2019

Instructor:	Ziran (Josh) Ding	**Time:**	MWF 7:45am –9:10am
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Introduction and Overview

- **Course Description** ECON 3100 provides an introduction to econometrics–the statistical methods economists use to evaluate empirical relationships and test economic theory. This course builds on the concepts and analytical techniques taught in ECON 2100 to develop more advanced statistical and quantitative methods. Because this is an applied course, our emphasis will be on (a) developing the econometric skills necessary to read and understand empirical papers in economics and (b) the application of econometrics to real-world data using modern statistical software. A wide range of statistical techniques will be covered, but our primary focus will be the extent to which statistical models can be used to conduct causal inference.

- **Learning Goals** I hope this course can help you to:

  –Discuss the properties of an ordinary least squares (OLS) estimator for a linear regression model

  –Test theories about the true model using formal hypothesis tests

  –State the assumptions underpinning OLS, recognize violations of these assumptions, discuss the consequences of such violations, and – where possible – suggest alter- native statistical approaches that are more appropriate given the circumstances

  –Evaluate the extent to which econometric methods can be used to determine whether a statistical association represents a causal relationship

  –Use statistical software to apply these statistical techniques to analyze the relation- ship between real-world economic variables

  –Read and interpret results from applied economics journal articles that employ these statistical techniques

- **Textbooks** The required textbook is *Introduction to Econometrics, 3rd edition by James H. Stock and Mark W. Watson*. The textbook is a reference tool and a supplement to lectures, which are the primary learning tool in this class. Even though we will cover technical material in class, the subject matter is extremely useful for understanding real world economic issues. I will try to develop real world applications in class whenever possible.

- **Course Page:** https://seattleu.instructure.com/courses/1587270 All course material and problem sets will be on Canvas. Make sure you check it frequently and complete the problem sets before the due date.

- **Tentative Course Outline:**

  Please refer to the last page of this syllabus

Policies and Procedures
Here you will find information about attending (or not attending) lectures, about assignments and due dates, what to do if you are confused, about the exams you will take, about your grades and how they are curved, about make-ups, late work, extra credit—in short, you will find everything you need to succeed in this class. Please read this section carefully, and return to it often.

- **Attending Lectures** I strongly recommend that you attend lectures. In my experience, students who regularly miss lectures do poorly on exams, and exams make up the majority of your grade. If you do miss class, you're responsible for the material you miss and should make every effort to get notes from a fellow student.
- **Reading the Textbook** Students typically only retain 30% - 40% of ideas presented in lectures, so it is important that you reinforce the material covered in class by reading the textbook. Read each chapter before it's discussed in class if you can, but don't worry too much if you can't.
- **Office Hours** Online office hours (My skype ID is **ziran.ding**) are available by **appointment**. I will also be available questions after each class. My hope is that you'll have studied the reading and lecture notes before scheduling for an appointment. You can also write me an email.
- **Email** Email is a blessing and a curse. It is an efficient way for requesting a meeting, but it can tempt you to avoid taking responsibility for ordinary course management. I will reply to emails that request a meeting, or a simple clarification of a course topic, but a detailed explanations of course material are best reserved for a face-to-face conversation. If you email me before noon I will do my best to respond the same day, otherwise you will receive a response the next business day. Do not expect a response over the weekends or over holidays. Finally, do not use Canvas to contact me.
- **Work Load** Typically, 1 credit represents a total student time commitment of 3 hours each week in a 10-week quarter. This course has 5 credits, so expect to spend about 3×5 hours per week on this course, including time spent in class, on reading or other study, on problem solving, writing, or other class-related activities.
- **Homework** We will have up to five homework assignments throughout the quarter. These will be graded on a 10 point scale **based primarily on how completely the questions have been attempted. I will randomly choose to grade 1-2 questions in each homework based on correctness**. These will be posted on canvas and you will get 1-2 week to work on them. Your performance on the homework accounts for **30 percent** of your total grade. **I do not accept late submission of homework**.
- **Exams** There will be **two exams (10/28, 12/6)** and together they will account for **60** percent of your overall score, so each exam will constitute **30 percent** of your overall grade. All exams are closed-book tests, but you are allowed to **1 piece of (can be double-sided, 8.5×11 inches) formula sheet**. You can either type it or write it out. **There will be no makeup midterms**. Problems on the midterm are generally similar to those assigned on problem sets and in-class problems.
- **Grading** Course grades will be assigned at the end of the quarter based on your performance in class using the following percentages:

  The grade schedule is:

  A range: 90-100% of total points - Superior performance

  B range: 80-89% of total points - Good performance

  C range: 70-79% of total points - Adequate performance

  D range: 60-69% of total points - Poor performance

  F range: less than 59% of total points - Failing

- **Course Evaluations** You will have the opportunity to evaluate this course toward the end of term, and I encourage you to give me your feedback. I will use your feedback improve my teaching and the design of the course. The evaluations are anonymous, and they only takes five or ten minutes to complete.

- **Electronic Devices** The use of laptops, netbooks, tablets, etc, in class to take classnotes, view slides or work on class projects is allowed. You need to ask permission to use laptops, netbooks, tablets, cellphones, etc, in class for any non-class related activity (including instant messaging, web-browsing, looking at cat videos, etc.).

- **Disabilities** If you have, or think you may have, a disability (including an invisible disability such as a learning disability, a chronic health problem, or a mental health condition) that interferes with your performance as a student in this class, I encourage you to arrange support services and/or accommodations through Disabilities Services staff in the Learning Center, Loyloa 100, (206) 296-5740. Disability-based adjustments to course expectations can be arranges only through this process.

- **University Holidays** We don't have class on the following university holidays: Nov 11, Veteran's Day, Nov 27-30, Thanksgiving. If you have a religious observance that overlaps with scheduled classes or exams, please contact me in the first week of class.

- **Misconduct and Academic Honesty** Seattle University asserts that academic honesty and integrity are important values in the educational process. Academic dishonesty in any form is a serious offense against the academic community. Acts of academic dishonesty or fraud will be addressed according to the Academic Integrity Policy. You can find details here. Lack of knowledge of the academic honesty policy is not a reasonable explanation for a violation. Be sure that you understand the following university academic policies: `https://www.seattleu.edu/registrar/academics/performance/`.

Tentative Course Outline:
The weekly coverage might change as it depends on the progress of the class. However, it is highly recommended that you keep up with the reading schedule.

Weeks	***Reading Schedule***
Week 1 (9/25, 9/27)	Welcome and Introduction: *Chapter 1,2*
Week 2 (9/30, 10/2, 10/4)	Review of Probability and Statistics: *Chapter 2,3*
Week 3 (10/7, 10/9, 10/11)	Linear Regression with One Regressor: *Chapter 4*
Week 4 (10/14, 10/16, 10/18)	Regression with a Single Regressor: HT & CI: *Chapter 5*
Week 5 (10/21, 10/23, 10/25)	Exam 1 Review: *Chapter 1-5*
Week 6 (10/28(**Exam 1**), 10/30, 11/1)	Linear Regression with Multiple Regressors: *Chapter 6*
Week 7 (11/4, 11/6, 11/8)	Linear Regression with Multiple Regressors: *Chapter 6, 7*
Week 8 (11/13, 11/15)	HT & CI in Multiple Regression: *Chapter 7*
Week 9 (11/18, 11/20, 11/22)	Nonlinear Regression Functions: *Chapter 8*
Week 10 (11/25)	Assessing Studies Based on Multiple Regression: *Chapter 9*
Week 11 (12/2, 12/4, 12/6(**Exam 2**))	Exam 2 Review: *Chapter 6-9*