**Course Syllabus**

**ECON 4050: Introduction to Econometrics – Fall 2024**

**Instructor**: Dr. Adam Soliman

**E-mail:** adamsoliman@gmail.com   
**Office:** Powers Hall

**Teaching Assistants:**

**Lecture Schedule and Location**

ECON 4050-

**Lab Schedule and Location**

ECON 4051-

**Office Hours**

Dr. Soliman: Wednesdays from 3pm to 5pm on Zoom

**Course Description**

ECON 4050 introduces students to the study of modern econometric techniques as employed in economics and policy analysis. Throughout the course we will discuss how these techniques can be used to evaluate data and conduct policy analysis including the potential problems and pitfalls with doing so. The course will cover both theoretical and practical issues. Problem sets will contain applications to real data and require the use of statistical software.

There are two overarching objectives for the course. First, by the end of the course you should be comfortable applying linear regressions in many conventional settings. Second, you will be able to use relevant statistical software to conduct econometric evaluations.

While the material covered in ECON 4050 is typically considered to be challenging, the usefulness is incredible. You will be able to estimate the relationship between any two variables, such as years of education and wages, exercise and blood pressure, studying and grades, campaign spending and election results, and so on. You will be able to estimate these relationships after controlling for many other confounding variables, such as intelligence, family history, gender, race, occupation, obesity, cholesterol, and so on. You will be able to evaluate the effect of government policies, such as minimum wage, retirement ages, subsidies, minimum sentencing legislation, additional police, immigration reform, access to health insurance, and so on. Furthermore, these tools are readily applicable to typical business applications such as the effect of marketing campaigns, employee productivity, predicting future profits, predicting future stock prices, effectiveness of training programs, effectiveness of wage bonuses, and so on.

**Course Materials (primarily lecture slides and readings)**

All relevant materials can be found on the following Github course website: <https://github.com/adamsoliman/IntroEconometrics>

**Communication**

We will **exclusively** use Slack for our interactions. Please do not contact me by email unless there's a legitimate reason to. I will be checking Slack sparingly so please help one another if you see something you can answer.

**Pre-requisites**

ECON2110 and 2120 Principle of Microeconomics and Macroeconomics

MATH1080 Calculus One  
STAT3090/MATH3090 Introduction to Statistics

**Co-requisites:**

ECON4051/6051 Introduction to Econometrics Laboratory Course Overview

**Course Grading**

Grades will be based on quizzes, lab assignments, a midterm exam, and a final project that includes a presentation. The following weights will be applied to determine your final grade:

|  |  |
| --- | --- |
| Quizzes/Attendance | 10% |
| Lab Assignments | 25% |
| Midterm Exam | 25% |
| Final Project Presentation | 10% |
| Final Project | 30% |

**Quizzes/Attendance**

There will be a quiz once or twice a week on the content of the previous week. It will be only a few questions at the beginning of the class, and you will not be graded on the content of your answer. However, I will be randomly selecting names from the course list to respond to a given question to check attendance and to ensure everyone is on the same page in terms of understanding of the material.

**Laboratory Work**

There will be 9 computer labs. The labs are meant to teach you the basics of R and how to apply the material that is taught in class. In each laboratory session there will be an assignment that will be completed during the session. Your grade for all of these sessions will count for 25% of your final grade.

**Exam**

There will be one exam, which is on October 17th and will be held in class during regular class time. The exam will count for 25% of your final grade. The exams will be closed-book, closed-notes, but you are permitted to use a cheat sheet (one-sided 8.5x11” piece of paper). There will not be any makeup exam.

**Final Project and Presentation**

Instead of a final exam, you will have a final project and a presentation. They will be graded separately. I will send out information regarding the two soon.

**Grading Policies**

Myself and the TA’s will attempt to complete grading of each assignment within one week of the due date. Afterwards you will have one additional week to review the grading and appeal any errors that you think have been made. To appeal a grade, you will e-mail the person that graded the assignment and provide a detailed explanation for why you believe there is an error.

NOTE: any regrading may either increase, decrease, or not change your grade.

**Course Topics**

1. Simple Linear Regression
2. Introduction to Causality
3. Multiple Linear Regression
4. Linear Regression Extensions
5. Sampling
6. Confidence Intervals and Hypothesis Testing
7. Regression Inference
8. Instrumental Variables
9. Difference-in-Differences
10. Panel Data

**Important Dates**

* October 3rd: No Class
* October 15th: No Class (Fall Break)
* October 17th: Midterm Exam
* November 5th: No Class (Election Day)
* November 28th: No Class (Thanksgiving Break)
* *Final Project Presentations (Tentatively): November 26th, December 3rd, and December 5th*