

# ECON422 Econometrics I

## Course Syllabus

Department of Economics  
University of Maryland, College Park

Spring 2016

Class: TuTh 11am - 12:15pm, SQH 1105

Course website: [elms.umd.edu](http://elms.umd.edu)

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Office: Tydings 4118L  
Office Hour: 10-11am TuTh, or by appointment

### Course Description

Economics 422 introduces you the regression methods for analyzing data in economics. This course emphasizes both the theoretical and the practical aspects of statistical analysis, focusing on techniques for estimating econometric models of various kinds and for conducting tests of hypotheses of interest to economists. The goal is to help you develop a solid theoretical background in introductory level econometrics, the ability to implement the techniques and to critique empirical studies in economics.

### Prerequisite

1 course with a minimum grade of C- from (ECON325, ECON326); and 1 course with a minimum grade of C- from (STAT400, ECON321).

Restriction: Must be in a major within the BSOS-Economics department.

### Textbook

Required Textbook:

- [W] Jeffrey M. Wooldridge, “*Introductory Econometrics: A Modern Approach*”, 5th edition, South-Western College Pub.
  - This textbook contains required exercises/readings. Earlier editions are acceptable, while page numbers may differ.

Other references:

- [SW] James H. Stock and Mark W. Watson, “*Introduction to Econometrics*”, 3rd edition, Prentice Hall.
  - Lectures in time series part will follow more closely on this textbook.

### Evaluation

Grades for the course will be based on:

- Homework (6 problem sets): 30%
- Midterm: 30%
- Final: 40%
- Class participation/quizzes: 5% (bonus)

## Homework

There will be six problem sets in total. Each problem set worth 5 points. Homework will be graded mainly by effort. I will assign one among high effort, medium effort, and low effort to each of your problem sets. A high effort work will receive full credit. You must 1) try and show your effort for every questions, 2) your answer must be relevant. The best way to show your effort is to list the steps you tried for the questions. A medium effort work will receive 4 points. A work with some skipped questions, or with some answers completely irrelevant will be determined as a medium effort work. Low effort work are the ones with many questions incomplete, and they will receive 2 points. NO LATE problem sets will be accepted.

You may work in groups, but each member of a group should submit her own write-up. In the case of group collaboration, you are required to write down the names of your group members. The group size should not exceed 3 persons.

## Exams

There will be one midterm exam and one cumulative final exam. All exams are closed-book, closed-notes. You are allowed to bring in a simple/scientific calculator. No graphical calculators that can store formulas are allowed.

The final exam will take place on **Thursday, May 12 at 8:00am - 10:00am**. Location is TBA. The midterm will be **in class on Thursday, March 10**.

There will be no make-up for exams unless you have a valid excuse per University policy (e.g. medical emergency). In these cases you must notify the instructor and present a formal documentation.

## Class participation/quizzes

Actively engaging in class is an essential part in your learning process. There are 5 points as a bonus to encourage your class participation. Your grades for this part will be determined on the basis of your class attendance rate and your contribution to class discussion. Throughout the semester, I may give unannounced in class quiz to check your attendance. Taking these quizzes are necessary, although may not be sufficient, to receive full bonus points.

## Classroom Courtesy

Coming late to class or/and leaving the classroom during the lecture will inevitably create an unnecessary disturbance for all your fellow classmates. Being late once or twice due to unforeseen reasons is understandable, but if this happens constantly, there will be actions. If your class schedule prevents you from fulfilling these requirements, you may consider enrolling in a different session.

I count on your judgement and discipline regarding the uses of electronic devices in the classroom. Exercise your discipline and respect other students and the instructor.

## Communication

Our primary means of communication outside the classroom is email. I will be using ELMS to post course materials and announcements. Do login regularly. And I welcome your emails whenever you have any questions. If you run into any problems or difficulties, it is always better to talk to me sooner than later. Please try not to send me messages via ELMS, as I may get them with a delay.

## Statistical Software

This course will use STATA as our main statistical software. The latest version is STATA 13, but any version later than STATA 6 suffices for the purpose of this course. To use STATA for practice, you can visit the BSOS computer labs in the basement of LeFrak Hall during their office hours (<http://www.oacs.umd.edu/ComputerLabServices.asp>). Purchasing STATA is not necessary. It is expensive.

## Computer Lab

We will have two sessions to be lectured in the computer lab. The computer labs are located in the basement of LeFrak Hall. On the day of a lab session, go to the computer lab directly. Please refer to the tentative course outline for the date of lab sessions. The exact lab room number is TBA.

## Academic Integrity

The University has approved a Code of Academic Integrity available on the web at <http://www.president.umd.edu/policies/iii100a.html>. The Code prohibits students from cheating on exams, plagiarizing, submitting the same paper for credit in two courses without authorization, buying papers, submitting fraudulent documents, and forging signatures. For more information on the Code of Academic Integrity or the Student Honor Council, please visit [www.shc.umd.edu](http://www.shc.umd.edu).

## Students with Disability

Students with disabilities are required to inform the instructor of their needs at the beginning of the semester. The Disabilities Support Service (301-314-7682) will be consulted to determine what the appropriate academic accommodations will be.

## Important dates

*Tuesday Feb. 9, Problem set 1 due*  
*Tuesday Feb. 23, Problem set 2 due*  
*Tuesday Mar. 8, Problem set 3 due*  
*Thursday Mar. 10, Midterm Exam*  
*Thursday Apr. 7, Problem set 4 due*  
*Thursday Apr. 21, Problem set 5 due*  
*Thursday May 3, Problem set 6 due*  
*Thursday May 12, Final Exam*

## Tentative Course Outline

Note the following course outline is tentative and therefore subject to change during the process.

No.	Dates	Topic	Reading
1	1/26 Tu	Introduction - <i>course outline and logistics</i> Review of Probability and Statistics	[W] Ch. 1 [W] Append. B&C
2	1/28 Th	Review of Probability and Statistics	[W] Append. B&C
3	2/2 Tu	Simple Linear Regression Model (1) - <i>Deriving OLS estimator</i>	[W] Ch. 2
4	2/4 Th	Simple Linear Regression Model (2) - <i>Properties of OLS</i> - <i>Units of measurement and functional form</i>	[W] Ch. 2
5	2/9 Tu	Simple Linear Regression Model (3) - <i>Gauss-Markov Assumptions</i> <i>(Problem Set 1 due)</i>	[W] Ch. 2
6	2/11 Th	Simple Linear Regression Model (4) - <i>Statistical properties of OLS</i> - <i>Hypothesis testing with OLS</i>	[W] Ch. 2
7	2/16 Tu	STATA Lab 1	
8	2/18 Th	Multiple Regression Analysis: Estimation (1) - <i>Interpretations of OLS estimates</i>	[W] Ch. 3
9	2/23 Tu	Multiple Regression Analysis: Estimation (2) - <i>Gauss-Markov Theorem</i> <i>(Problem Set 2 Due)</i>	[W] Ch. 3
10	2/25 Th	Multiple Regression Analysis: Estimation (3) - <i>Specification issues</i>	[W] Ch. 3
11	3/1 Tu	Multiple Regression Analysis: Inference (1) - <i>Testing a single population parameter</i>	[W] Ch. 4
12	3/3 Th	Multiple Regression Analysis: Inference (2) - <i>Testing multiple linear restrictions</i>	[W] Ch. 4
13	3/8 Tu	Catch up and Review Session <i>(Problem Set 3 Due)</i>	
14	<b>3/10</b> <b>Th</b>	<b>Midterm Exam</b>	
15	3/15 Tu	(Spring Break)	
16	3/17 Th		
17	3/22 Tu	Multiple Regression Analysis: Further Issues (1) - <i>Data scaling</i> - <i>Goodness-of-fit and selection of regressors</i>	[W] Ch. 6

18	3/24 Th	Multiple Regression Analysis: Further Issues (2) - <i>Functional forms</i> - <i>Interaction terms</i>	[W] Ch. 6
19	3/29 Tu	Multiple Regression Analysis with Dummy Variables (1) - <i>Binary variables</i> - <i>Multiple categories</i>	[W] Ch. 7
20	3/31 Th	Multiple Regression Analysis with Dummy Variables (2) - <i>Interactions among dummy variables</i> - <i>Linear probability model</i>	[W] Ch. 7
21	4/5 Tu	STATA Lab 2	
22	4/7 Th	Heteroskedasticity (1) - <i>Test for heteroskedasticity</i> <i>(Problem Set 4 Due)</i>	[W] Ch. 8
23	4/12 Tu	Heteroskedasticity (2) - <i>Correct for heteroskedasticity</i>	[W] Ch. 8
24	4/14 Th	Asymptotic theory (1) - <i>Consistency</i>	[W] Ch. 5
25	4/19 Tu	Asymptotic theory (2) - <i>OLS asymptotics</i>	[W] Ch. 5
26	4/21 Th	Time Series Analysis (1) - <i>covariance stationary</i> <i>(Problem Set 5 Due)</i>	Lecture Notes [SW] Ch. 14
27	4/26 Tu	Time Series Analysis - <i>AR processes</i> - <i>MA processes</i>	Lecture Notes [SW] Ch. 14
28	4/28 Th	Time Series Analysis - <i>ARMA</i> - <i>Model selection</i>	Lecture Notes [SW] Ch. 14
29	5/3 Tu	Catching up... <i>(Problem Set 6 Due)</i>	
30	5/5 Th	Review	
	5/12 Th	<b>Final Exam</b>	