

**AREC335/ECON335**  
**Introduction to Econometrics**  
**Section 4: Spring 2016**

**Class Meeting:**

3:30-4:45 Tue, Thu (Clark A 206)

**Instructor:** Dr. Marco Costanigro  
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**Teaching Assistant:**

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Office hours: TBD

**Course Description**

The purpose of this course is to provide students with an introduction to econometrics and basic competence in applying statistical methods as a scientific tool in the analysis of practical economic problems. The course will begin with a brief preview of how econometrics can be used to answer applied, real-world question. A brief review of basic statistics and data analysis will follow, before moving into the core material, which is the linear regression model. Students will learn to specify and estimate econometric models, interpret results, and uncover and correct for common statistical problems. The lectures will balance theory and mathematical derivations on the one hand and applications to real-world and simulated data sets on the other. The training received in this course can shape attractive job candidates, and the computer work will provide skills that can be taken directly into the workplace.

**Specific Class objectives**

1. Starting from a research question, identify data needs, the relevant economic and econometric model, estimate the model.
2. Understand and interpret ALL output from a regression in Excel
3. Use estimated model to predict outcomes and test hypotheses
4. Be aware of potential pitfalls in estimating models via OLS

**Course Readings:**

- Class note, posted on Canvas
- Optional: R.Carter Hill, William E. Griffiths, Guay C. Lim. Principle of Econometrics, 4<sup>d</sup> Edition, 2011 Wiley & Sons. ISBN: 978-0-471-72360-8  
Book website: <http://www.principlesofeconometrics.com>

**Course Prerequisites:** ECON 204; MATH 141 or MATH 155 or MATH 160; STAT 201 or STAT 204 or STAT 301 or STAT 307

**Computer Software:** We will use Microsoft Excel for data analysis and econometric estimation. You can find the instructions on how to do it here: <https://support.office.com/en-us/article/Load-the-Analysis-ToolPak-6a63e598-cd6d-42e3-9317-6b40ba1a66b4>. It is assumed that you either have working knowledge of Excel or that you are capable of learning it on your own or with basic guidance. There is a very useful tutorial available from the book website (Excel 2007), which I have uploaded in the class website. If you are already proficient using a specialized econometrics software, it is acceptable to use it for your homework. You will also be required to use word-processing software homework assignments and the final project.

**Warning for the Unwary:** This is an upper-division course that *assumes* a mature understanding of basic mathematics and calculus, statistics, and economics, as well as good study habits. If you do not keep up with the material you will suffer and possibly fail the course. However, if you work diligently, you are very likely to do well, come away with highly useful skills and most importantly enjoy this course.

**Course Evaluation**

As a default, the grades are as assigned as follows: A =  $\geq 90\%$ ; B = 80-89%; C = 70-79%; D = 60-69%; F =  $< 60\%$ . **No curving scheme will be used.** Individual student course grade will be automatically determined by the highest score yielded by the following two weighting methods:

**Method A:**

Group Homework Exercises	15%
Group Project	10%
Midterm Exam 1	20%
Midterm Exam 2	20%
Final Exam (comprehensive)	35%

**Method B:**

Group Homework Exercises	15%
Group Project	10%
Final Exam (comprehensive)	75%

## Important Notes:

1. The **midterm exams** and the **final exam** are in-class, closed-book. You may use a calculator and a back-to-back 8 ½ by 11-inch *cheat-sheet*. In each exam, there will be an extra credit question with variable score (based on the performance of the class). **No other grade-curving scheme will be adopted.**
2. **Method A** means that if you have done well along the way, you will not be unduly penalized for a sub-par performance on the final exam. **Method B** means that if you do well on the final, you will not be penalized for relatively poor performance on the midterm exams. **Missed midterm exams** are assigned a zero, implying that your course score will be determined by method B. No excuse is needed as to why a midterm exam is missed. Please contact the instructor for university-sanctioned events.
3. Homework exercises will be handed one week before the due date. You can expect 7-8 of them. When **applying formulas, be always explicit** (i.e. reproduce the formula and properly label your variables; when testing hypotheses, always clearly state your null and alternative hypothesis). **Answers containing only numbers will not be graded** (and receive a zero score).
  - a. **Group homework exercises** are assigned throughout the semester, 1 week prior to the due date. The homework with the lowest score will be dropped from your final grade. You may work in groups of *up to 3 people*. If you choose to work in a group, which is highly encouraged, please submit only one copy of each assignment with the names of the participants on the front.
  - b. There will be one **group project**. You may work in groups of *up to 3 people*. The project will be assigned after the core of the course material has been covered. This assignment will involve writing a formal, business style report from an econometric analysis. In addition to the econometric content, you will be graded for the style and presentation of your findings.

## Course Policies and Exceptions

1. **Homework exercises** are due on the stated due date. Beyond that, no assignments will be accepted.
2. **Attendance** is not required, but highly encouraged. If you arrive late or expect to leave early, please sit near the exit to avoid disrupting the lecture. Attendance will not be considered to determine the final grade.
3. The general rule is that **make-up exams** will NOT be administered. At the instructor's discretion, however, exceptions can be made for specific CSU-sponsored activities or DIRE circumstances, provided appropriate documentation is presented.

4. You have one week after receiving a graded homework assignment or exam to provide the instructor with a written **grade appeal**. The appeal should identify which question is believed to be incorrectly scored. Note that the instructor/teaching assistant reserves the right to re-grade the entire work, potentially resulting in a lower overall grade.
5. If you have a **documented disability** that requires special arrangements, please let the instructor know immediately at the beginning of the course.
6. **Academic integrity** is expected. No cheating will be accepted, period. This course will adhere to the CSU Academic Integrity Policy as found on the Student' Responsibilities page of the [CSU General Catalog](#) and in the [Student Conduct Code](#). At a minimum, violations will result in a grading penalty in this course and a report to the Office of Conflict Resolution and Student Conduct Services.
7. Always show appropriate **respect** for your instructor and fellow students. This means, among other things, that **cell phones** should be turned off or on mute prior to class.
8. If you are finding that you have difficulties in this course, **ask for help** as soon as possible. The instructor and teaching assistant want you to do well and meet your academic goals. The sooner you ask for help, the sooner we can get you back on track. *Your learning and well-being is of highest priority.*

### Tentative Course Outline (Modifications are likely and at the instructor's discretion)

Week	Date	Class	Topic	Notes	Homework assigned	other
1	1/19/16	1	The simple linear regression model	Lecture 1	HW1	
1	1/21/16	2	The simple linear regression model	Lecture 1		
2	1/26/16	3	Data Scaling, deriving the OLS	Lecture 1	HW2	
2	1/28/16	4	Deriving the OLS	Lecture 1 bis		
3	2/2/16	5	Stats Review	Lecture 2		
3	2/4/16	6	Stats Review	Lecture 2		
4	2/9/16	7	Stats Review	Lecture 2		
4	2/11/16	8	Stats Review	Lecture 2	HW3	
5	2/16/16	9	GM-theorem and Sampling distribution of OLS	Lecture 3		
5	2/18/16	10	<b>Exam 1</b>	-		Group Project is assigned
6	2/23/16	11	GM-theorem and Sampling distribution of OLS	Lecture 3		
6	2/25/16	12	Model specification and functional form	Lecture 4		
7	3/1/16	13	Model specification and functional form	Lecture 4		
7	3/3/16	14	Model specification and functional form	Lecture 4	HW4	
8	3/8/16	15	Comparing models: R-sq	Lecture 5		
8	3/10/16	16	Comparing models: R-sq	Lecture 5	HW5	
9	3/15/16	-	<b>Spring Break</b>			
9	3/17/16	-	<b>Spring Break</b>			3/21: Course withdrawal ends
10	3/22/16	17	Comparing models: R-sq	Lecture 5		
10	3/24/16	18	Interval estimation and forecasting	Lecture 6	HW6	
11	3/29/16	19	Interval estimation and forecasting	Lecture 6		
11	3/31/16	20	Hypothesis testing	Lecture 7	HW7	
12	4/5/16	21	Hypothesis testing	Lecture 7		
12	4/7/16	22	Hypothesis testing	Lecture 7		
13	4/12/16	23	Hypothesis testing	Lecture 7		
13	4/14/16	24	<b>Exam 2</b>	Lecture 8		
14	4/19/16	25	Violation of assumptions: misspecification, omitted variable	Lecture 8		
14	4/21/16	26	Violation of assumptions: misspecification, Irrelevant variables	Lecture 8		
15	4/26/16	27	Violation of assumptions: misspecification, functional form	Lecture 8		
15	4/28/16	28	Violation of assumptions: multicollinearity	Lecture 9		
16	5/3/2016	29	Violation of assumptions: multicollinearity	Lecture 9		
16	5/5/16	30	Violation of Assumptions: heteroskedasticity (if time allows)	Class notes		
	5/12/16	-	<b>Final exam: 2:00 to 4:00 pm</b>			