

Andres Aradillas-Lopez
Department of Economics
Fall, 2010.

ECON 310: Statistics: Measurement in Economics.

Lecture: Tuesday and Thursday, 1:00PM–2:15PM, Social Science Building 6104.

Course Description: This course is an introduction to the analysis of economic data. We will study the techniques of descriptive statistics and statistical inference (hypothesis testing and estimation) as directed toward application in economic research.

Professor: Andres Aradillas-Lopez (aaradill@ssc.wisc.edu)
website: <http://www.ssc.wisc.edu/~aaradill>

Office Hours: Wednesday 2:00-3:30pm. Office: Social Science Building 6458.

Teaching Assistants: Shenjie Hong (hong9@wisc.edu)
Irina Merkurieva (merkurieva@wisc.edu)

TA Office Hours: TBA

Prerequisites: One introductory economics course and Math 211 or 221.

Textbook: “*Introduction to the Practice of Statistics*”, by David Moore, George McCabe and Bruce Craig, sixth edition (Freeman). Please note that the textbook problems assigned for homework will refer to the *sixth* edition, not previous ones.

Grading:

- Homework (20%)
- One midterm exam (35%)
- Cumulative final exam (45%)

Homework: There will be 10 problem sets. Each one will be due before lecture on the specified dates. Late assignments will not be accepted. However, the *lowest problem set grade will be dropped* and will not count towards your final grade. The course has a strong empirical emphasis and consequently

a number of problem sets will involve computational data analysis. All such problems can be solved using Excel, or a number of other statistical packages, and you are free to use the program of your preference. Excel is installed in all 16 general-access computer labs. For precise information, go to <http://www.doit.wisc.edu/computerlabs/> . Software information for each lab can be found at <http://www.doit.wisc.edu/computerlabs/software.asp> . Students are encouraged to work with others in the class on homework, but each student must write up his/her own solutions.

Midterm Exam: There will be *one* in-class midterm exam on October 28. There will be no make-up dates.

Final Exam: The final exam will be cumulative. It is scheduled for December 22, from 5:05PM-7:05PM. Room TBA.

Course Outline:

The following is the tentative outline of topics for the course with the corresponding textbook chapters. We will supplement a number of topics with additional class notes to be posted at:

<http://www.ssc.wisc.edu/~aaradill/econ310f09.html>

Weeks 1 and 2 (Sept. 2,7,9)

- Graphic description of data (Chapter 1.1)
- Numerical description of data (Chapter 1.2)

Week 3 (Sept. 14, 16)

- The Normal distribution (Chapter 1.3)
- Standardization of the Normal distribution I (Chapter 1.3)

Week 4 (Sept. 21, 23)

- Standardization of the Normal distribution II (Chapter 1.3)
- Scatterplots and correlation (Chapters 2.1, 2.2)

Week 5 (Sept. 28, 30)

- Least-squares regression (Chapter 2.3)

Week 6 (Oct. 5, 7)

- Correlation and causation (Chapters 2.4, 2.6)
- Data collection and sample designs (Chapters 3.1, 3.2)

Week 7 (Oct. 12, 14)

- Sampling distributions (Chapter 3.3)
- Randomness and probability models I (Chapters 4.1, 4.2)

Week 8 (Oct. 19, 21)

- Randomness and probability models II (Chapters 4.1, 4.2)
- Random variables, expectation and variance I (Chapters 4.3, 4.4, 4.5)

Week 9 (Oct. 26, 28)

- Random variables, expectation and variance II (Chapters 4.3, 4.4, 4.5)
- **Midterm Exam (Oct. 28)**

Week 10 (Nov. 2, 4)

- Law of Large Numbers (Chapter 4.4)
- Sampling distributions for counts and proportions (Chapter 5.1)

Week 11 (Nov. 9, 11)

- Sampling distributions for sample means (Chapters 5.1, 5.2)
- Central Limit Theorem (Chapter 5.2)

Week 12 (Nov. 16, 18)

- Confidence intervals (Chapter 6.1)
- Hypothesis Tests I (Chapter 6.2)

Week 13 (Nov. 23, 25)

- Hypothesis Tests II (Chapter 6.2)
- Inference for the mean (Chapter 7.1)

Week 14 (Nov. 30, Dec. 2)

- Comparing the means of two populations (Chapter 7.2)
- Inference for proportions (Chapters 8.1, 8.2)

Week 15 (Dec. 7, 9)

- Inference in a simple linear regression I (Chapter 10.1)

Week 16 (Dec. 14)

- Inference in a simple linear regression I (Chapter 10.1)