

ECON 307 Principles and Methods of Statistics

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Course meetings: 123 Tyler Hall, MWF 9:00 AM - 9:50 AM
Office hours: MWF 10:00 AM - 11:00 AM

1. Course overview

Quantitative evidence has become increasingly important for informing solutions to challenging policy problems. Possessing the ability to create, interpret, and present quantitative evidence is essential for anyone beginning a career in economics, business and public policy.

ECON 307 – Principles and Methods of Statistics is an introduction to the methods and techniques of statistical analysis with emphasis on economic and public policy applications. Topics include: descriptive statistics; probability; sampling; survey design; hypothesis testing; correlation; regression; and introduction to multiple regression. This course includes training in the responsible and ethical conduct of research, including discussions of the proper use of data and reporting of results in order to avoid fabrication, falsification, and plagiarism.

This class serves four important purposes. First, it provides an introduction to applied statistical methods. Second, it prepares students for more advanced statistics courses. Third, it emphasizes writing about and communicating statistical results to readers who may lack statistical training. Finally, it will help you develop the habits of mind that will make you careful users of data and statistical computing. To serve those ends, in this class you will develop quantitative skills by actually practicing them.

2. Course materials

2.1. Textbook

We will use the following text in Econ 307.

- Open Intro Statistics. Third Edition
<https://www.openintro.org/stat/textbook.php>

These great supplemental references are free.

- Online Statistics: An Interactive Multimedia Course of Study.
<http://onlinestatbook.com/index.html>.
- StatSoft. The Electronic Statistics Textbook.
<http://www.statsoft.com/textbook/stathome.html>.
- UCLA Institute for Digital Research and Education (IDRE). Resources to help you learn and use Stata. <http://www.ats.ucla.edu/STAT/stata/>.

2.2. Software

We will use Stata in Econ 307, Econ 308 as well as in Econ 407. I strongly recommend that you purchase Stata. A small version of Stata, suitable for the classroom setting, is available for \$38 for a six-month licences, \$54 for an annual licence and \$89 for a perpetual licence.

<http://www.stata.com/order/new/edu/gradplans/student-pricing/>

3. Assignments and grading

3.1. Grading

I will calculate course grades based on the following items. You need to complete all items to receive course credit. Students not completing all items will receive an Incomplete.

| Percent | Item |
|---------|----------------------|
| 25 | Homework assignments |
| 25 | Test 1 |
| 25 | Test 2 |
| 25 | Test 3 |

In general, I will base grades on the following percentage scale with partial-percents typically rounded to the nearest full percent: A=93-100; A-=90-92; B+=88-89; B=83-87; B-=80-82; C+=78-79; C=73-77; C-=70-72; D+=68-69; D=63-67; D-=60-62; F<60.

In a class such as this, any grade below a “C” on any assignment, exam, or paper suggests that a student is having trouble grasping basic course ideas, which are essential building blocks for future courses and the work world. Please talk with me if you find yourself having difficulty.

Finally, because errors sometimes creep into grade calculations (and on rare occasions assignments are misplaced after they have been handed in) please keep a copy of all work submitted for this course until final grades have been processed.

3.2. Homework assignments

These assignments will focus on real life policy questions. It is crucial that you complete these assignments on time. Grading will stress two things: (1) the degree to which you have made a strong effort to complete all parts of each assignment; and (2) the extent to which your work, especially the statistical computing component and the writing component, is polished and professionally done.

3.3. Exams

We will have three exams. Both will ask you to perform calculations and will emphasize interpreting results.

4. Other important notes

4.1. Daily class operation

You will develop professional habits of mind and get the most out of class by doing these things.

The night before class:

- Do the readings. Even skimming the relevant pages for 15 minutes will be worth it. Do not expect to understand the material after only one read.
- Check Blackboard for files to download for class. Download handouts, data sets, and Stata .do files and save to your personal H:\ drive. *I strongly encourage you to print out the .pdf handouts that I post to Blackboard, or have the ability to annotate them electronically.*
- Charge your laptop battery. Unfortunately, outlet power is not always conveniently located in our classroom, so don't rely on plugging in your machine during class.

At the beginning of each class before lecture begins:

- Arrive on time and quietly take your seat if you are late.
- When appropriate, have Stata or excel running on your laptop computer or be sitting next to someone who does.
- Close your email and Internet entertainment and disable all other electronic distractions.

During class:

- Ask questions when you do not understand something.
- Do not attend to email, the Internet, or other electronic distractions, including phones.

4.2. Appropriate use of computers in class

As section 4.1 suggests, your laptops will be powerful educational tools for this class. However, do not let them or other electronic devices distract you, your fellow classmates, or me from our in-class work. Students who use electronic devices in class inappropriately suggest that they possess neither the intellectual focus nor the respect for others needed to do real professional work. Those students end up developing reputations that make it difficult for faculty members to give them strong recommendations to other professors and future employers.

4.3. Academic misconduct

I begin each semester by assuming that academic misconduct will not be an issue, but as a policy matter I mention this on every syllabus. For any questions about policies regarding cheating, plagiarism, or other types of misconduct, please refer to the web site of the William & Mary Honor Council and the relevant pages about the Honor Code from the Student Handbook. If I discover a student violating the Honor Code I will initiate an Honor Council proceeding and, at a minimum, recommend to the Council that the student receive an "F" for the course. I take this issue extremely seriously, and hope you do, too.

5. Schedule

We will adjust this schedule as needed. Any changes to assignment or exam due dates will provide you with more time, not less time, to complete the work. You'll notice that the reading assignments repeat for some days. That is intentional because re-reading certain pages in a new context will help to deepen your understanding of prior concepts while establishing new ones.

Course Topics

- 1) Introduction**
- 2) Data Management**
- 3) Data Description**
 - a) Graphs**
 - b) Summary Statistics and Tables**
- 4) Hypothesis Testing**
- 5) Linear Regression Analysis**

Important Dates:

| | |
|----------------------------------|-------------------|
| Friday, February 24, 2017 | Test 1 |
| Friday, April 7, 2017 | Test 2 |
| Wednesday, May 10, 2017 | Final Exam |