

# Applied Statistics and Econometrics – February 2017 - May 2017

*Last updated: February 13, 2017*

## **Instructor:**

Giuseppe Ragusa

[gragusa at luiss dot it](mailto:gragusa@luiss.it)

**Office hours:** T, 11:30-13:00

## **Teaching Assistants:**

Siria Angino

([sangino at luiss.it](mailto:sangino@luiss.it))

**OH:** W, 16:00-17:00

*Giuseppe Brandi*

([gbrandi at luiss dot it](mailto:gbrandi@luiss.it))

**OH:** M, 9:30-10:30

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**web page:** <http://gragusa.org/ase/>

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## 1 Course description

The aim of *Applied Statistics and Econometrics* is to provide an introduction to the practice of econometrics. While both theoretical and practical aspects are covered, emphasis will be on intuitive understanding and concepts will be illustrated with real-world applications. Throughout, we will focus on both understanding and doing. The understanding will come from lectures, class discussions, and problem solving. The doing will come from extensive statistical software use. This course requires a quarter-long commitment. Econometrics is best learned by doing, and I will require you to do a fair amount of hands-on work.

## 2 Class website

The class website is <http://gragusa.org/ase/>. Please, be sure to visit the course web page regularly, as all materials for the class, occasional messages and any changes in the schedule will be posted there.

## 3 Textbooks

The textbook we'll be using is Stock and Watson's *Introduction to Econometrics* (3rd edition)

- Stock, James H. and Mark W. Watson, *Introduction to Econometrics*, Addison Wesley; 3rd edition, ISBN: 1408264331

Stock and Watson's *Introduction to Econometrics* is nicely organized and easy to read. However, no book is a perfect fit for everyone, and there are many other books you can look at for reference. A good example is Jeffrey Wooldridge's *Introduction to Econometrics*

- Jeffrey Wooldridge, *Introductory Econometrics*, South Western, fourth edition, 4th edition, ISBN: 0324788908

## 4 Problem sets

There will be a weekly problem set. The assignments will involve both theoretical and empirical work. Group study and free discussion are encouraged. But you should submit your own answers. You will probably find the class very hard to follow if you fail to spend sufficient time on all of the problem sets. The problem sets are part of the final grade as explained in the next section below.

If you have any question on the problem sets, please ask me or TA's during our office hours. Our office hours are for you. I prefer to talk to you in person. I feel that Email is not a very efficient way to ask econometric questions.

Problem set answers are to be turned in on time. You can hand in the homework **AFTER** class specified in the problem set itself. Please do not come and hand it in to me whilst I or the TAs are lecturing. Do not email assignments. Late solution will not be accepted!

## 5 Examination and grading policies

Students take two written examinations, a *midterm* on March, 28 and a *comprehensive final* in the first two dates after the class ends. 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 grade is the maximum between (a) the weighted average of the problem sets, midterm, and final and (b) the grade on the final. Students who:

- **receive a sufficient score on all the problem sets ( $\geq 18/30$ )**
- **score at least 18/30 on the midterm**

will receive additional two points.

Mathematically, the final score (S) is a function of the final (F) and the midterm (M), and the problem sets grades ( $P_1, P_2, \dots, P_N$ ) and their average  $\bar{P} = \sum_{i=1}^N P_i$ ,

$$S = \max\{0.6F + 0.25M + 0.15\bar{P}, F\} + 2 \times \left[ 1\{M \geq 18\} \times \prod_{i=1}^N 1\{P_i \geq 18\} \right],$$

where  $1\{A\}$  denote the indicator function

$$1\{A\} = \begin{cases} 1 & \text{if } A \text{ is true} \\ 0 & \text{otherwise} \end{cases}.$$

**The midterm and the problem sets scores are only valid for the first two exam dates (June/July). From September, the final grade will be solely based on the written exam.**

For instance, let suppose a student earned a 26/30 on the midterm and she has more than 18 on all the problem set and  $\bar{P} = 26$ . Then, if she gets 22/30 on the final, her final grade is

$$F = 0.6 \times 22 + 0.25 \times 26 + 0.15 \times 26 + 2 = 25.6.$$

If instead she scores 28/30 in the final, then her final grade will be 30.

	Midterm Option			Standard Option		
	Midterm M (Written)	Final F (Written)	PS	Final (Written)	Oral Exam	PS
Dates	28/03/2017					

**No student will be allowed to take the exam on two subsequent exam dates (this also holds for June/July exam dates). No exceptions will be made. “Taking the exam” means sitting and looking at the exam.**

## 6 Computer software

The software that will be used in this course is **R**. No prior knowledge of this software package is assumed. This package will be introduced in the TA Sessions. R is installed on all computers in A306. Since **R** is Open Source you can install it on your laptop or desktop. **R** is available for all major computing platforms: Windows, Mac OSX, and Linux. Platform specific installation help can be found at [\[here\]](#).

## 7 TA sessions

We have two teaching assistants assigned to this course: Siria Angino and Giuseppe Brandi. They will lead a weekly session --- held in the computer lab (A306, ). During these sessions, the TAs will review concepts covered in the lectures from an applied perspective. As such, they are an integral part of the course and regular attendance is strongly advised.

Below is TA sessions schedule:

TA	Where	When	Who
Students whose name starts with the letter			
Siria Angino	A301	WED <i>14:00-15:30</i>	<b>H-Z</b>
Giuseppe Brandi	A306	WED <i>18:30-20:00</i>	<b>A-F</b>

## 8 Learning outcomes you are expected to achieve

By the end of the course, students are expected to:

1. understand the statistical assumptions underlying regression analysis, and when they are appropriate;
2. be able to understand, interpret and evaluate data analysis performed by others;
3. be able to construct basic forecasting models;
4. become familiar with R.

## 9 Attendance

It is expected that all students attend the lectures and the TA sessions, be up to date with their readings and be prepared to participate fully in class. If you have problems mastering the material presented in class, please ask questions in class or during office hours. If you miss a class, I expect that you will catch up the missed notes from another student. I will not be giving out my notes to any student.

## 10 Cheating and other forms of dishonesty

I have no tolerance for cheating. I regard academic dishonesty as a very serious offense. Students caught cheating during exams will fail the class and will be reported to the appropriate officer of the college.

## **11 Cell phone policy**

The use of cell phones during class will be regarded as a sign of disrespect and it will be treated accordingly. Usage of cell phones during exams is strictly banned.