

# Applied Statistics and Econometrics – September 2017

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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 you will be required to do a fair amount of hands-on work.

## 2. Course website

The course website is <http://saullach.weebly.com/teaching-at-luiss.html>. Please be sure to visit the course webpage regularly. The presentation slides and problem sets are posted there as well as their updates (when necessary) and occasional messages and announcements.

## 3. Textbooks

The recommended textbook is Stock and Watson's Introduction to Econometrics (3rd edition but older editions are also OK):

James H. Stock and Mark W. Watson "Introduction to Econometrics", Update 3rd edition Global edition, Pearson Education Limited 2015.

## 4. Problem Sets

There will be a problem set almost every week. 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. Problem sets will not be graded. You are expected to submit them every week and check your answers with the detailed answer sheet that will be made available after the deadline to submit the problem set has passed. If you have any question on the problem sets, come to see me or the TA during our office hours. The problem sets contribute to the final grade as explained in the next section below.

Problem set answers are to be submitted **on time**. You can hand in the homework **after** the class specified in the problem set itself. Please do not submit your problem set while the TA or myself are lecturing. Late solutions will not be accepted!

## 5. Examination and grading policies

Students take two written examinations, a midterm during the break in November and a comprehensive final in the first two dates after the class ends. All exams are closed-book, closed-notes, written exams. 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 grade in the midterm (M) and the final (F), where the midterm has weight 0.35 and the final has weight 0.65; and (b) the grade on the final.

In addition, submission of the weekly problem sets helps your grade with bonus points (B) assigned in the following way:

- Students who turn in less than 75% of the assigned problem sets will not receive any extra point
- Students who turn in more than 75% but less 100% of the assigned problem sets will receive one extra point in their final grade
- Students who turn in all the assigned problem sets will receive two extra points in their final grade

Mathematically, your final grade (S) in the course will be given by the following formula:

$$S = \max \{0.35M + 0.65F, F\} + B$$

**Important:**

- (a) The problem sets bonus points can only be redeemed by students whose grade before any bonus point is added is at least 18/30 (i.e.,  $\max \{0.35M + 0.65F, F\} \geq 18$ )
- (b) The midterm score and problem set bonus are only valid for the first two exam dates. In later dates, the final grade will be based solely on the written exam.

**6. TA sessions**

Chiara Felli is the teaching assistant assigned to this course. She will lead a weekly session — held in the computer lab. During these sessions, the TA 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.

**The TA session is on TBA.**

**7. Learning outcomes you are expected to achieve**

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

- (a) understand the statistical assumptions underlying regression analysis, and when they are appropriate;
- (b) be able to understand, interpret and evaluate data analysis performed by others;
- (c) be able to construct basic forecasting models;
- (d) become familiar with a statistical software.

**8. 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 you to catch up on your own.

## 9. Computer Software

The econometric software used in the course is Stata. You can access it at the computer lab, and you can also purchase it at a very attractive student price from <https://www.stata.com/order/new/edu/gradplans/student-pricing/>.

## 10. Syllabus

- (a) Introduction and review of statistics
- (b) Bivariate regression
- (c) Multivariate regression
- (d) Nonlinear regression models
- (e) Assessing regression studies
- (f) Binary dependent variables
- (g) Panel data
- (h) Instrumental variables
- (i) Applications