**New York University Department of Economics Spring 2016**

**APPLIED STATISTICS & ECONOMETRICS II: ECON-GA 1102-01 2596**

# Dr. George Lentzas Thursdays 6:20-8:20 PM

**Email:** [**george.lentzas@nyu.edu**](mailto:george.lentzas@nyu.edu) **Room: 194 Mercer/203 Office Hours:** TBD

**Teaching Assistant:** Cristian Fuenzalida

# TA’s Email: [cristian.fuenzalida@nyu.edu](mailto:cristian.fuenzalida@nyu.edu)

**Course Structure:** The course consists of a two-hour lecture, followed by a two-hour lab session. The lab session is an opportunity to review material discussed in the lectures and discuss the applications at the end of each chapter in the text. Attendance in both class and lab is compulsory.

**Lab:** As part of this course, you need to be registered for ECON-GA 1102 - 02 - 2597 Applied Statistics & Econometrics II LAB. The labs are led by Cristian Fuenzalida, the teaching assistant for the course.

**Course Objective:** This course is the second in a two-semester sequence designed to study applied statistics and econometric techniques for quantitative research and analysis. During the first half of the semester, the course will cover models for panel data analysis and modern, non-regression based estimation frameworks, including maximum likelihood estimation, simulation techniques, classification and bayesian estimation and inference. During second half of the semester, the course will cover selected topics in modern micro, macro and financial econometrics. The course will be based on class notes and will follow closely the textbook Econometric Analysis (7th Edition) by William H. Greene.

**Required Text:** The required textbook for both of sections of the course Applied Statistics and Econometrics I and II is *Econometric Analysis, 7/E by William H. Greene*, published by Prentice Hall (Pearson) with the copyright date of 2012 and ISBN-10: 0131395386 and ISBN-13: 9780131395381. Professor Greene maintains a webpage for the textbook at [http://people.stern.nyu.edu/wgreene/Text/econometricanalysis.htm.](http://people.stern.nyu.edu/wgreene/Text/econometricanalysis.htm) Recommended reading also includes *An Introduction to Statistical Learning with applications in R (ISLR)* by *G. James, D. Witten, T. Hastie and R. Tibshirani* [*(ht*](http://www-bcf.usc.edu/%7Egareth/ISL/))*t*[*p://www-bcf.usc.edu/~gareth/ISL/)*.](http://www-bcf.usc.edu/%7Egareth/ISL/))

**Computer Requirement:** The software we will use for both semesters will be R. Software related issues and questions should be resolved in the lab sessions. Students who prefer to use an alternative econometric package or language should consult with me first.

**Grade:** Your course grade will be made up of the following components: Midterm: 20%

Final: 25%

Project: 35%

Problem Sets: 20%

**Exams** The Midterm will cover the material in the lectures 1 to 6. The Final will be based on the material from the beginning of the semester and will be given during Finals week.

**The Project** is an applied econometric research project that relates to the material covered in the course. You will work on the project in groups of 2 to 3 students and present the findings of your research to the class at the final lecture of the semester. Further information regarding the project will be provided in the first two lectures.

**Problem Sets**: There will be 5 problem sets during the semester and each problem set will be worth 4% of your grade. Problem sets are due promptly at 2:00pm on the due day.

**NYU Classes** is a major tool for this course. Folders for each topic listed on the schedule with slides and readings will be posted as well as announcements and any supplementary reading. You are expected to login to NYU Classes between classes.

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| **Week** | **Date** | **Subject** | **Reading\*** |
| 1 | Jan 28 | Estimation Frameworks in Econometrics  Maximum Likelihood Estimation & Simulation Estimation  **(No Lab, Class will run through Lab hours too)** | Chapter 12  Chapter 14.1-14.7 14.9.1,  14.9.2, 14.9.4, 15.1-15.5 |
| 2 | Feb 4 | **Lab will run through both class and Lab hours** | N/A |
| 3 | Feb 11 | Generalized Method of Moments | Chapter 13 |
| 4 | Feb 18 | Bayesian Estimation & Inference  **Problem Set 1 due** | Chapter 16 |
| 5 | Feb 25 | Panel Data | Chapter 11.1-11.5 |
| 6 | Mar 3 | Discrete Choice & Classification (Topics in Micro-Econometrics I)  **Problem Set 2 due** | Chapter 17.1, 17.2, 17.3  up to (but not) 17.3.5 . ISLR Chapter 4 |
| 7 | Mar 10 | **MIDTERM** |  |
| 8 | Mar 24 | Limited Dependent Variables (Topics in Micro-Econometrics II) | Chapter 19 |
| 9 | Mar 31 | Serial Correlation & Auto-regressions (Topics in Macro-Econometrics I)  **Problem Set 3 due** | Chapter 20.1-20.9 |
| 10 | Apr 7 | Non-Stationarity (Topics in Macro-Econometrics II) | Chapter 21 |
| 13 | Apr 14 | State Space Model (Topics in Macro-Econometrics III)  **Problem Set 4 due** | Notes |
| 11 | Apr 21 | Cointegration (Topics in Macro-Econometrics III) | Chapter 21 |
| 12 | Apr 28 | Conditional Heteroskedasticity (Topics in Financial-Econometrics I) | Chapter 20.10 & Lecture Notes |
| 14 | May 5 | **Paper Presentation in Class Problem Set 5 due** |  |
| **15** | **May 12** | **Paper submitted via NYU Classes by 4:00pm FINAL** |  |