Department of Economics and Finance
College of Management and Economics
University of Guelph

ECON*6170: Topics in Econometrics—Fall 2012
Instructor: Professor Yiguo Sun
Office : 709 MacKinnon
E-Mail and Phone: yisun@uoguelph.ca; Ext. 58948

Lectures : Tuesday and Thursday, 10:00am-11:20am at Crop Science Building 101.
Office hour : Friday after 3:40 pm or email me any time or take an after-class discussion

It is your responsibility as a student to be aware of and to abide by the University's policies regarding academic misconduct, e-mail communication, maintaining copies of out-of class assignments, what to do when you cannot meet a course requirement and the drop date for this semester. To better understand these policies, visit:

http://www.uoguelph.ca/economics/node/1115

COURSE OUTLINE

The course is open for Ph.D. students whose major research field is Econometrics and who are interested in applying nonparametric/semiparametric techniques to their Ph.D. thesis. M.A. students with strong statistics and/or mathematics background are also acceptable for this course. At the end of this semester, students are expected to understand general ideas of non-/semi- parametric method and each student is required to independently finish his/her own project using the nonparametric techniques learned in class.

Topics to be covered:

(1) Kernel estimate of an unknown density function and its derivatives
(2) Nonparametric curve estimation
(3) Quantile regression models
(4) Nonparametric Hypothesis tests
(5) Semiparametric regression models
(6) Non-/semi-parametric panel data models

Preliminary requirements:

(1) *Statistics and mathematics background:* Students are required to be familiar with the basic statistic concepts and calculations such as expectation, variance, derivatives, convergence in probabilities, and so on. Understand why the laws of large number (LLN) and central limit

theorems (CLT) are important to the econometric/statistic theories in general. The first class will be allotted to review basic statistic concepts. Students can then decide whether the difficulty of this course is acceptable and whether they should take this course or not. If he/she has the impression that this course will be tough, but he/she is confident in overcoming it, then you are sitting at the right class.

(2) *Computer programming:* Among C++, Fortran, Gauss, Matlab, R (an open-source equivalence of Splus), or SAS, you may choose to learn any one of them. I will provide codes written in R. Even though you know nothing about R/Splus before, as long as you have some experiences in writing program codes, you should be O.K. All the assignments require programming, so make sure that you can learn one of the software quickly. (I am willing to help you to finish the **first** assignment.)

(3) There is no teaching assistant for this course. I encourage students to ask any questions related to my lecture material in class, and to make understanding at least 70% of my lecture in class as your goal.

Grading: There will be five assignments worth 40%, two-in-class presentation worth 30%, and a project for 30%. The project is due at the end of the semester.

Textbook:

(1) Li, Q. and J. Racine (2007). Nonparametric Econometrics. Princeton University Press.

Reference books:

(2) Fan, J. and I. Gijbels (2003). Local Polynomial Modelling and Its Applications. Monographs on Statics and Applied Probability 66.
(3) Härdel, Wolfgang, 1990. *Applied Nonparametric Regression*. Cambridge University Press.
(4) Härdel, W., M. Muller, S. Sperlich, and A. Werwatz, 2004. *Nonparametric and Semiparametric Models.* Springer Press. (An easy one to read with no mathematical proofs.)
(5) Koenker, R. 2005. Quantile Regression. Cambridge University Press.
(6) Nelsen, R.B. (1999). An Itroduction to Coplulas. Lecture Notes in Statistics 139.
(7) Pagan, Adrian and Aman Ullah (1999). *Nonparametric Econometrics* (* first five chapters).
(8) White, H. (2001). Asymptotic Theory for Econometricians. Second edition. Academic Press.

The Term Project and Presentations:

A. In October, I will distribute a list of articles from which you will choose a topic of your interest. You are going to give two presentations in class: one is to present your selected papers, and the other is to present your idea and working progress of your project, which can be an empirical application of your selected theories or Monte Carlo simulations of several selected estimation methods or tests. A 1% bonus is given to each student to commute with me about this project and the dates of her/her presentation.

B. The final written paper is due on **December 10, 2012** before midnight**,** with around 6 to 15 pages. It is preferable that the paper has a 1.5-sentence space to balance between easy reading and paper saving.

C. A general format of the term paper is given as follows, which can be slightly changed with personal discretion:

- A title followed by your name and the date of submission
- Abstract: to summarize the paper
- Introduction: to motivate and explain what the paper is about
- Data: to give the source of the data and basic summary statistics of the data
- Model and estimation results: to explain which econometric model is used to analyze the data and what are your empirical findings.
- Conclusion: to conclude the main results of the paper and summarize the potential pitfalls of the econometric methods used in the paper.
- Tables and Figures: you can choose to either list all the tables and figures at the end of the paper or insert them in the context where they are required.
- References: to list relevant articles cited in the paper.
- Program Code: to insert your computer programming code used to produce all the tables and figures reported in the paper. **No grad is given without your submission of the programming code and data** as I need to check the accuracy of your results and the correctness of your code.

Please email your data and program code to yisun@uoguelph.ca when submitting your term paper. If the data file itself is not clear enough to explain what the data are, please also write a **Readme.txt** file to describe the data. I hope that you should consciously develop a healthy and efficient research working habit via writing this term paper.

NOTES:

A. I will distribute **some** course notes and reading materials in class. Up to now, you should know how to find scholarly published articles via Google and ISI Web of Knowledge. For the latter, please open my homepage at http://www.uoguelph.ca/~yisun/, then click 'Paper Search' on the left hand panel, and click 'ISI' in the table at the bottom of a newly opened web page.

B. You will be asked to complete an evaluation of this course at sometime during the last two weeks of the semester. The Department of Economics policy regarding the conduct and use of these evaluations will be found at:

http://www.uoguelph.ca/economics/academics/courses/course-evaluation