Applied Econometrics

Instructor: Xiaohu(Frank) Wang
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Office Hours: Friday 3:30pm-4:30pm or by appointment

Lectures: Wednesday 8:30am - 11:15am, Wo Ho Man Yuen Building, Room 507.

Course Description: This is a course of graduate level time series econometrics, introducing to students a range of material in stationary and non-stationary time series, including ARMA models, unit root theory, spurious regression, co-integrated system and error correction models. Both finite sample theory and large sample theory will be discussed.

Learning Outcomes: Upon successful completion of this course, students are expected to:

- Acquire advanced knowledge in time series econometrics;

- Develop skills in econometrics modeling and analysis;

- Master basic skills in doing empirical study with time series data, such as model selection skills and the skills in generating forecasts.

Course Web Page: Access through CUSIS.

Course Texts:

The main textbook:

- Hamilton, James (1994): *"Time Series Analysis,"* Princeton University Press.

Other suggested books:

- Fuller, Wayne A. (1996): *"Introduction to Statistical Time Series,"* Second Edition, Wiley-Interscience.

- Diebold, Francis X. (2008): *"Elements of Forecasting,"* Fourth Edition, South Western College Publishing Co.

- Stock, James and Mark Watson (2003): *"Introduction to Econometrics,"* Addison Wesley.

- Fumio, Hayashi. (2000): *"Econometrics,"* Princeton University Press

Course Requirements:

- **Problem Sets [30%]:** There will be three problem sets assigned during the semester. For each, students will have one week to complete. The problem sets are designed to give you the opportunity to review and enhance the material learned in class.

- **No Midterm Exam.**

- **Final Exam [70%]:** It is usually scheduled at some time one week after the final class. All students are expected to take final examination at the same time. If you are sick or have other compelling reasons preventing you from taking the test, a certified medical note or proper documents from a dean or other authorities must be supplied. Then a make-up exam might be scheduled with new questions different with those in the final examination taken by other students.

Honesty in Academic Work: Please visit the following web-site for details of university policy on Honesty in Academic Work: http://www.cuhk.edu.hk/policy/academichonesty/.

Course Outline:

The sessions outlined below include topics which are going to be covered in this course. These are only approximate and more time will be spent on some topics than others.

1. **Review of Linear Regression Model: an Example with Trend and Seasonality**

2. **Characterizing and Modeling Cycles: Stationary ARMA Process**

3. **Large Sample Theory for Stationary Process**

4. **Functional Limit Theory and Unit Root Asymptotics**

5. **Testing for Unit Roots: Dickey- Fuller Tests, PP Tests, ADF Tests and KPSS Tests**

6. **Co-integration and Error Correction: Representation, Estimation, Testing**