

**ECG 752 – Time Series Econometrics – Spring 2009**

**SYLLABUS**

**Class Time: Monday and Wednesday 1:30pm-2:45pm in Cox Hall 209**

**Instructor:** Denis Pelletier

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**Office Hours:** Wednesday 10:30am-12:00pm, or by appointment.

**Prerequisites:** ECG(ST) 751 Econometrics.

**Required textbook:** Wei, William W.S., 2006, *Time Series Analysis – Univariate and Multivariate Methods*, second edition, Pearson. ISBN 0-321-32216-9.

**Additional (non-required) textbooks:**

- Hamilton, James D., 1994, *Time Series Analysis*. Princeton University Press.
- Lütkepohl, Helmut, 1993, *Introduction to Multiple Time Series Analysis*, 2nd edition, Springer-Verlag.
- Brockwell, Peter J. and Richard A. Davis, 1991, *Time Series: Theory and Methods*, 2nd edition, Springer.
- Tsay, Ruey S., 2005, *Analysis of Financial Time Series*, 2nd edition, Wiley.

**Course Description:** This is an advanced graduate course exploring econometric techniques for the analysis of macroeconomic and financial time series data. The course provide a rigorous treatment of the statistical properties of these techniques and also discussion of important practical issues in their implementation.

**Grading:**

First midterm exam (Monday, February 16)	30%
Second midterm exam (Monday, March 30)	30%
Final exam (Friday, May 1st, from 1:00pm to 4:00pm)	40%

The dates for the midterm exams are somewhat tentative and may change slightly according to the needs of the class or the instructor.

The material is divided into three blocks, hence three exams. Only the final exam is cumulative in nature. Exam questions will be taken from material covered in:

- The lecture notes and related classroom discussion,
- The textbook,
- Handouts,
- the homework assignments.

For each block I will distribute practice problem sets – analytical problems and computer questions where you will have to use Matlab. These problem sets will not be graded but it is your responsibility to answer them. It is a very good way, if not the best, to learn the material.

The policy for the exams is that I do not give exams early or late barring special circumstances.

**Outline of the course:**

1. Characteristics of economic and financial time series
2. Introduction to basic time series concepts
3. Univariate time series processes: ARMA models
4. Large sample theory for stationary processes
5. Multivariate time series processes: VARMA models, exogeneity, Granger causality, impulse response
6. Nonlinear dynamic models and Generalized Method of Moments estimation
7. Linear models for nonstationary data: deterministic and stochastic trends, cointegration
8. Modeling volatility of financial time series: ARCH models, Stochastic volatility models
9. Kalman filter
10. Regime switching models