Duke University, Economics 612 — Fall 2019
Time Series Econometrics — Craig Burnside
MW 830a-945a, SocSci 311 — craig.burnside@duke.edu

This course is designed to introduce graduate-level time series analysis to Economics Master's students who have experience with econometrics at the undergraduate level. Some topics to be covered in the course include ARMA models, vector autoregressions (VARs), unit roots, conditional volatility, spectral analysis, and various methods for model estimation and evaluation. By the end of the course students should have a good understanding of graduate level material. Students should also be able to work with data and solve some real world problems using Matlab. A non-trivial amount of programming will be expected, but I believe no previous knowledge is needed.

Administrative Information

The course is supported by two TAs, Zhao Liu and Haolin Wu.

Office hours: F 930-1030 (Soc Sci 213G). For the first half of the course, it would be best to address questions to me during my office hours, not at the end of class, because I wil be teaching Econ 702 immediately after Econ 612 each morning until the midterm break.

Course website: sakai.duke.edu (any course materials will appear in the Resources folder)

Schedule

I will not lecture on Sep 2, Oct 28, Oct 30 and Nov 25 (so the last lecture will be on Nov 20). *Tentatively*, the midterm exam will be held Oct 9 during class, while the final exam will be Dec 12 at 7pm.

Grading

Assignments 40%, Midterm Exam 20%, Final Exam 40%.

Required Text

Hamilton, James D. *Time Series Analysis*. Princeton University Press, 1994.

Other texts, such as Stock and Watson's undergraduate text, Greene, or Judge, may be helpful for general econometrics background and as references.

Syllabus

1. Review of basic econometrics
2. Basic time series and ARMA models (H, Chs. 1–3).
3. Estimation (H, Ch. 5).
4. Spectral analysis (H, Ch. 6)
5. Asymptotic theory (H, Ch. 7)
6. Linear regression models (H, Ch. 8)
7. Vector Processes and VARs (H, Chs. 10 & 11)
8. The Kalman Filter (H, Ch. 13)
9. Generalized Method of Moments (H, Ch. 14)
10. Nonstationarity and Unit Roots (H, Chs. 15, 17)
11. Cointegration (H, Ch. 19)
12. Conditional Volatility