Course description: This course deals with empirical research in macroeconomics and international finance. The aim of the course is to provide the student with a series of tools for the empirical analysis of time-series, and to give the student a taste of the current empirical research in macroeconomics and international finance. One of the aims of the course is to give the student a chance to pursue a small project and conduct simple empirical research, and we will use the econometrics package “E-views” for that purpose.

Pre-requisites: Econ 139, Econ 51, Linear Algebra

Books: Stock and Watson, Econometrics, Addison-Wesley, 2002 (required)  
Diebold, Elements of Forecasting, South-Western 1998 (recommended)

Package: Eviews (available at the U-store)

Requirements: The grade will be based on course assignments (20%), a midterm exam (30%) and a final assignment (50%).

My contact information:
Office: 204, Social Science Building
E-mail: brossi@econ.duke.edu
Office hours: Mon-Wed, 5:15-6:30 PM
Topics

1. Review of basic econometrics (Stock and Watson, chapters 4 and 5).
   - The linear regression model (univariate): Assumptions, theorems (LLN, CLT), test statistics (t-tests and F-tests).
   - Multivariate regressions
   - White heteroskedasticity robust standard errors
2. Introduction to Time Series Econometrics
   - Autocorrelation
   - Autoregressions and ADL models
   - Granger causality
5. Serial correlation: problems and solutions. HAC robust estimation.
6. Dynamic multipliers.
7. ARMA stationary models: mean, variance, autocorrelation calculations and impulse-response functions (Hamilton, Time Series Analysis, chapter 1)
8. VARs
   a. Theoretical and estimation issues (Stock and Watson, chp. 14)
   b. Impulse-responses and variance decompositions
   c. Multi-period forecasting
9. Cointegration and VECM
   a. Theoretical issues: tests for cointegration, estimation of cointegrating vectors (Stock and Watson, chp. 14)
   b. ECM representation (notes)
11. ARCH and GARCH
    a. Theory
    b. Empirical applications: Analysis of Financial Markets
12. Introduction to Monte Carlo simulations (in a problem set)
13. GMM estimation and relationship with Instrumental Variables and OLS (optional, together with a primer on Matlab).
Empirical Applications and References:

**Unit roots and cointegration**

**VAR estimation and Impulse-Response Functions:**

**ARMA models**

**Forecasting:**

**ARCH-GARCH**

**GMM**