

## Advanced Time-Series Econometrics

**Instructor :** Frank Schorfheide

Email: *schorf@ssc.upenn.edu*

Office Hours: just send me an email

**Scheduled Class Time and Organization:** Econ 8320 is a half-semester (0.5 CU) course that officially runs from March 2 to April 26, 2023. We will meet twice a week, Tuesdays and Thursdays from 10:15a - 11:45pm in room PCPE 225.

Our first meeting will be on the first Tuesday after Spring Break on March 14. The first meeting will be virtual on Zoom (Meeting ID: 984 8274 2521), all subsequent meetings are in person. Further information is provided on CANVAS.

**Course Description:**

The course is designed as a sequel to Economics 706 (now 7310). Broadly speaking, we will study econometric models and methods that are useful to conduct substantive empirical research in macroeconomics. It focuses on Bayesian analysis of dynamic stochastic general equilibrium (DSGE) models and vector autoregressions (VARs).

**Prerequisites:** Economics 705 (now 7300) and 706 (now 7310) or equivalent graduate level econometrics.

**Courseware:** You can access the course materials via CANVAS. You can log-in from *http://canvas.upenn.edu/*. For those interested in auditing the course, please send me an email so that you can obtain access to CANVAS.

### Course Requirements:

This is a research course! The goal is to lead students toward the current frontier in macroeconometrics and time series analysis.

- **Class Participation and Problem Sets:** There will be a sequence of problem sets, assigned during the (half) semester. Moreover, you are expected to carefully study the assigned readings and participate in classroom discussions and presentations.
- **Research Paper:** with strong econometric component (theoretical or empirical), related to one of the topics covered in class. A two page outline is due on Monday, May 15. The completed paper is due on Monday on August 28. NO EXCEPTIONS!

The paper does not have to constitute an original piece of research. For instance, it could be a replication of an existing empirical or Monte Carlo study; it could deviate from an existing study by using a different data set, e.g., data from a different country; it could be a Monte Carlo study that compares existing estimators or test procedures that have not been compared previously or it assesses these procedures under certain forms of misspecification (robustness analysis). The paper could also cover a topic in the area of theoretical econometrics.

- **Econometrics Workshop:** In general, you are also expected to attend the econometrics lunches and workshop, which take place on Mondays at noon and 4:30pm (see departmental calendar for details).

Students who participate in class and submit decent solutions to all problem sets will receive a B- or a B at the end of the course. To convert the B grade into an A grade, students must submit a research paper by August 26.

**Course Readings:** the following references are highly recommended:

Herbst, E. and F. Schorfheide (2015): *Bayesian Estimation of DSGE Models*, Princeton University Press.

Geweke, J., G. Koop, and H. van Dijk (2011, eds.): *Oxford Handbook of Bayesian Econometrics*, Oxford University Press.

Fernandez-Villaverde, J., J. Rubio-Ramirez, and F. Schorfheide (2016): “Solution and Estimation Methods for DSGE Models” in *Handbook of Macroeconomics*, Vol 2, Chapter 9.

In addition I will provide lecture notes and refer to a long list of published articles and working papers in our lectures.

**Course Outline:** a detailed course outline is provided on CANVAS.