University of Pennsylvania **Economics 8320, Spring 2025**

Advanced Time-Series Econometrics

Instructor : Frank Schorfheide

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Office Hours: just send me an email to set up a meeting time

Scheduled Class Time and Organization: Econ 8320 is a half-semester (0.5 CU) course that officially runs from January 16 to March 4, 2025. However, there will be no class on Thursday, Jan 16. We will meet twice a week, Tuesdays and Thursdays from 1:45a - 3:15pm in room PCPE ???.

Course Description:

The course is designed as a sequel to Economics 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 7300 and 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. The format of the presentation will be determined based on the number of enrolled students and their research interests.

- **Replication**: you will select a paper and replicate some of the key findings in the paper. The paper's contents has to be closely related to the course content. Moreover, it should have appeared in print between 2020 and 2024 and you need to verify that you are able to obtain replication files from the journal webpage or the authors' webpages. Your replication report should touch on the following points: (i) provide a concise summary of the paper; (ii) what is the econometric theory underlying the numerical (Monte Carlo or empirical) work in the paper? (iii) a direct comparison of the results reported in the paper and your results (iv) an experiment in which you change the analysis in a dimension of your choice. (v) A discussion of extensions / modifications of the analysis in the paper.

  DEADLINES: You are supposed to submit the paper to be replicated for approval by Monday, March 10: submit the paper that you would like to replicate for approval. Sunday, June 1: the replication report is due. NO EXCEPTIONS!

- **Econometrics Workshop**: In general, you are also expected the 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 replication paper by August 30.

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.