Syllabus for Economics 702 Part I
Spring 2019 Dirk Krueger

Organization

Time of Class:	Mon. and Wed. 9:00-12:00 in PCPE 101
TA Sessions	Fri. 10-12 in PCPE 101
Instructor:	Dirk Krueger
Office:	520 PCPE
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Email:	dkrueger@upenn.edu
Office Hours:	Mon. 3:30-4:30, Tues. 11:00-Noon and by appointment
Web Page:	Canvas: https://canvas.upenn.edu/
TA:	Sara Casella
Office Hours:	Thurs. 3-5pm in PCPE 500

Textbooks

For most of the course I will provide detailed lecture notes and slides on the Canvas course website. These notes should be read first, before turning to the other references. In addition, the following textbooks are useful sources of additional information, with the Ljungqvist and Sargent book being one every student should possess as reference for the entire first year macro sequence.

1. Lars Ljungqvist and Thomas J. Sargent, *Recursive Macroeconomic Theory 4th edition*, The MIT Press (2018)

2. Nancy L. Stokey and Robert E. Lucas, with Edward C. Prescott, *Recursive Methods in Economic Dynamics*, Harvard University Press (1989)

3. Daron Acemoglu, *Introduction to Modern Economic Growth*, Princeton University Press (2009)

4. Thomas Cooley, *Frontiers of Business Cycle Research,* Princeton University Press (1995)

Goal of the Course

This course is an introduction to dynamic macroeconomic theory. It is based on general equilibrium theory and recursive methods and language. It consists of several self-contained modules. In each module we will combine the learning of techniques with a specific substantive topic. This hopefully will motivate you to learn the techniques, and also makes it possible to use the techniques in applications to macroeconomics, finance and public finance. I will assign both theoretical exercises and computational assignments, recognizing that for some of you this is the first time you write computer code to solve economic models. After the course everybody will be able to speak the Arrow-Debreu and recursive language, write simple code in MATLAB, GAUSS or Fortran (or some other programming language of your choice), and apply these techniques to hopefully interesting questions in Macro, Public Finance, Money, Labor, Growth and Development or other areas. The remainder of Economics 702 and 704 will use these techniques for further applications in the areas mentioned above.

Grading Policy

There will be three home works and a final. Home works count for a total of 30%, with each homework counting 10% and the final exam counts 70% of your grade. To obtain a passing grade all home works have to be handed in on time and the exam has to be taken.

Students are encouraged to cooperate on home works. Every student, however, has to hand in her/his uniquely written assignment and **acknowledge cooperation**, if any, on the first page of each homework. In light of the exam and the Prelims in June the strategy of just copying another student's assignment (or the solution of a related homework from the past) will prove counter-productive.

We will provide suggested solutions to the home works on-line. In order to reduce the grading burden on the TA, assignments will be graded randomly, that is, for each home work one question will be graded based on content, and the rest graded simply based on completion. It is therefore highly recommended that you compare your own solutions with those posted by us, in order to understand the mistakes you have made (and detect the mistakes we might have made).

Topics of the Course

The following list may prove too ambitious for 12 lectures and 3 TA sessions, so it is possible that we will not be able to cover all the topics. A general rule is that I will not compromise on rigor. I rather cover less topics, but cover these carefully, than too many topics superficially. The references are meant to be additional reading, in addition to the lecture notes. For each topic, they are ordered in decreasing degree of proximity (and thus relevance) to what I teach in class.

1. Arrow-Debreu Equilibria, Sequential Markets Equilibria and Pareto Optimality in Simple Dynamic Economies

   - Kehoe, T. (1989): "Intertemporal General Equilibrium Models," in F. Hahn (ed.) *The Economics of Missing Markets, Information and Games,* Clarendon Press
   - Ljungqvist and Sargent, Chapter 8.
   - Negishi, T. (1960): "Welfare Economics and Existence of an Equilibrium for a Competitive Economy," *Metroeconomica*, 12, 92-97.

2. The Neoclassical Growth Model, Calibration and Dynamic Programming

   - Stokey et al., Chapter 2-4.
   - Ljungqvist and Sargent, Chapters 3-5 and 12.
   - Prescott, E. and R. Mehra (1980): "Recursive Competitive Equilibrium: the Case of Homogeneous Households," *Econometrica*, 48, 1356-1379.

3. Models with Risk, Asset Pricing and the Real Business Cycle Model

   - Ljungqvist and Sargent, chapters 2, 13 and 14.
   - Cooley (ed.), chapter 1 and 2.
   - Stokey et al., chapter 8 and 9.
   - Weil, P. (1989): "The Equity Premium Puzzle and the Risk-Free Rate Puzzle," *Journal of Monetary Economics*, 24, 401-421.
   - McGrattan, E. and E. Prescott (2012): "The Labor Productivity Puzzle," *Minneapolis FED Working Paper* 694

Tentative Calendar

This schedule below is tentative and subject to change. The exam date is set in stone, though, since on Wednesday following the exam Jesus Fernandez-Villaverde will take over the course. Also recall that January 21 is Martin Luther King day and the university is closed that day (and therefore I am not permitted to teach).

Date	Topic	Lecture Notes	Assignments
Jan 16	A Simple Dynamic Model: Model and Equilibrium	Chapter 2.1-2.2.2	
Jan 16	A Simple Dynamic Model: Equilibrium and Efficiency	Chapter 2.2.3-2.2.4	
Jan 18	TA Session: Matlab Review		
Jan 21	Martin Luther King Day		No Class
Jan 23	Sequential Markets	Chapter 2.2.5	
Jan 23	Utility Theory	Chapter 2, Appendix	
Jan 25	TA Session Math Review for Dynamic Programming	Chapter 4.1-2	
Jan 28	Neoclassical Growth Model: Setup and Recursive Formulation	Chapter 3.1-3.2.1-3	HW 1 due
Jan 28	Neoclassical Growth Model: Dynamics, Steady States	Chapter 3.2.4-3.2.6	
Jan 30	Competitive Equilibrium and Calibration	Chapter 3.3-3.4	
Jan 30	Theory of Dynamic Programming I	Chapter 4.3	
Feb 1	TA Session: Math Review for Markov Processes	Chapter 6.3	
Feb 4	Theory of Dynamic Programming II	Chapter 5.1-5.2	HW 2 due
Feb 4	Models with Risk: Equilibrium and Optimality	Chapter 6.1-6.2.4	
Feb 6	Models with Risk: Asset Pricing	Chapter 6.2.5	
Feb 6	Stochastic Neoclassical Growth and Real Business Cycle Model	Chapter 6.4	
Feb 8	TA Review for Final		HW 3 due
Feb 11	Final		
Feb 11	Reviewing the Final and Prelim Preparation		