

# Syllabus for Economics 702/704, Part I Spring 2018 Dirk Krueger

## Organization

<b>Time of Class:</b>	Mon. and Wed. 9:00-Noon (MCNB 309)
<b>TA Sessions</b>	Fri. 9:00-Noon (MCNB 286-7)
<b>Instructor:</b>	Dirk Krueger
<b>Office:</b>	511 McNeil Building
<b>Phone:</b>	(215) 573 1414
<b>Email:</b>	dkrueger@econ.upenn.edu
<b>Office Hours:</b>	Mon. 12:00-1:00, Wed. 12:00-1:00 and by appointment
<b>Web Page:</b>	Canvas: <a href="https://canvas.upenn.edu/">https://canvas.upenn.edu/</a>
<b>TA:</b>	Pedro Brandao Solti
<b>Office Hours:</b>	Mon. 2:30-4.30 (MCNB 549)

## 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, these textbooks are useful sources of additional information, with the Ljungqvist and Sargent book being one every student should possess. I think it is the closest thing to the MasColell, Whinston and Green book, but for macroeconomics.

1. Lars Ljungqvist and Thomas J. Sargent, *Recursive Macroeconomic Theory 3rd edition*, The MIT Press (2012)
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 is a first course in dynamic macroeconomic theory. It is based on general equilibrium theory and consists of several self-contained modules. In each module we will combine the learning of techniques with a particular topic. This should motivate to learn the techniques, and makes it possible to apply the techniques in assignments. There will be both theoretical exercises and numerical assignments. 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 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 applications in the areas mentioned above.

## Grading Policy

There will be three homeworks and a final. Homeworks 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 homeworks have to be handed in on time and the exam has to be taken.

Students are encouraged to cooperate on homeworks. 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 exams and the Prelim the strategy of just copying another student's assignment (or the solution of a related homework from past versions of this course) will prove fatal.

## Topics of the Course

The following list may prove too ambitious for 13 lectures, so it is possible that I 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 these carefully, than too many topics superficially. The references are meant to be additional reading, next to the lecture notes. For each topic, they are ordered in decreasing degree of proximity 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. Also recall that January 15 is Martin Luther King day and the university is closed that day.

Date	Topic	Lecture Notes	Assignments
Jan 10	A Simple Dynamic Model: Model and Equilibrium	Chapter 2.1-2.2.2	
Jan 10	A Simple Dynamic Model: Equilibrium and Efficiency	Chapter 2.2.3-2.2.4	
Jan 12	Sequential Markets	Chapter 2.2.5	
Jan 12	Utility Theory	Chapter 2, Appendix	
Jan 15	Martin Luther King Day		No Class
Jan 17	TA Session: Matlab Review		
Jan 19	TA Session Math Review for Dynamic Programming	Chapter 4.1-2	
Jan 22	Neoclassical Growth Model: Setup and Recursive Formulation	Chapter 3.1-3.2.1-3	HW 1 due
Jan 22	Neoclassical Growth Model: Dynamics, Steady States	Chapter 3.2.4-3.2.6	
Jan 24	Competitive Equilibrium and Calibration	Chapter 3.3-3.4	
Jan 24	Theory of Dynamic Programming I	Chapter 4.3	
Jan 26	TA Session: Math Review for Markov Processes	Chapter 6.3	
Jan 29	Theory of Dynamic Programming II	Chapter 5.1-5.2	HW 2 due
Jan 29	Models with Risk: Equilibrium and Optimality	Chapter 6.1-6.2.4	
Jan 31	Models with Risk: Asset Pricing	Chapter 6.2.5	
Jan 31	Stochastic Neoclassical Growth and Real Business Cycle Model	Chapter 6.4	
Feb 2	TA Review for Final		HW 3 due
Feb 5	Final		
Feb 5	Reviewing the Final and Prelim Preparation		