AECO 701 Spring 2026
TTh: 10:30 - 11:50am
Social Science 117

Ph.D. Macro II

Professor Benjamin S. Griffy
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1 Overview and Objectives

This course is focused on building foundational tools to approach macroeconomic modeling. The goal of this course is to extend the analytical approach to modeling the macroeconomy that was begun in the fall semester course (Economics 601, taught by Professor Masters).

2 Contact Information

- Name: Ben Griffy
- I can be reached via email: bgriffy@albany.edu
- I will be holding office hours on Thursday from 1:30-2:30pm. I don't anticipate a need to change to virtual, but I will let you know if that happens.
- More generally, feel free to stop by my office if I am in. I may not be able to meet at that moment, but if I'm not busy I will try to help.
- Teaching Assistant: Wonjin Yoo
- He can be reached via email: wyoo2@albany.edu
- He will be holding office hours Monday from 2:40-3:40pm.

2.1 Online Viewing

In the event of moving the course online, I will post a Zoom link on Brightspace. I will rarely use Brightspace, but feel more comfortable distributing the Zoom link there than on my website.

3 Course Requirements

3.1 Course Materials

- There are two textbooks that we will use in this class:
  - N.L. Stokey, R.E. Lucas, and E.C. Prescott. *Recursive Methods in Economic Dynamics*. Harvard University Press, 1989. ISBN 9780674750968. URL `https://books.google.com/books?id=v-W6AAAAIAAJ`
  - L. Ljungqvist and T.J. Sargent. *Recursive Macroeconomic Theory*. The MIT Press. MIT Press, 2018. ISBN 9780262348737. URL `https://books.google.com/books?id=Jm1qDwAAQBAJ`

  Note: These texts are NOT required, but may occasionally provide useful references:
  - T.F. Cooley. *Frontiers of Business Cycle Research*. Princeton University Press, 1995. ISBN 9780691043234. URL `https://books.google.com/books?id=hfTf0u4JuRsC`
  - C.P. Simon and L. Blume. *Mathematics for Economists*. Norton, 1994. ISBN 9780393117523. URL `https://books.google.com/books?id=cxSaQgAACAAJ`
  - Sargent and Stachurski Quant-Econ
  - I will update this list as needed in the class.

For programming languages, you may choose whatever works best for you. I would suggest Matlab, Julia, or Python, because I have experience with dynamic programming in these languages and may be able to help. For programming languages, it **DOES** matter what version you install, and what repository you install from. I suggest the following (in rough order of usefulness for macro):

- Matlab: Whatever is current.
- Julia: Current version.
- Python: Anaconda.
- R: RStudio.
- Stata: MP (this is more expensive, so trade-offs)

You will be required to turn in all (non-LaTeX) code used to produce assignments, and required to turn in all assignments in LaTeX. To assist with learning LaTeX, I will publish all documents I produce in the course both as PDFs and in LaTeX.

My intent is for all homework to be turned in on shared storage on the campus cluster. I'm working on getting everyone access to the class directory, but look at the handout on how to use ssh and access the campus cluster.

3.2 Course Prerequisites

- Have finished AECO 601.

4 Grading

- Homework and Discussion: 30%. Homework must be turned in using LaTeX
- Midterm: 30%
- Final: 40%

5 Tentative Course Outline

Preliminaries

Date	Description
Week 1 (Jan. 19th):	
• Topics:	• Intro to Macro Data
	• Old Keynesian Model
	• Graphical intuition
• Readings:	• None.
• Assignments:	• Install programming languages and LaTeX
	• HW1.
Week 2 (Jan. 26th - Jan. 30th):	
• Topics:	• Two-period consumption-savings model
	• Graphical intuition
• Readings:	• None.
• Assignments:	• Install programming languages and LaTeX
	• HW1.
Week 3 (Feb. 2nd - Feb. 6th):	
• Topics:	• Stochastic processes
• Readings:	• Ljungqvist and Sargent [2018], Ch. 2
• Assignments:	• HW2.
Week 4 (Feb. 9th - Feb. 13th):	
• Topics:	• Linear difference equations
	• Lucas critique
• Readings:	• Ljungqvist and Sargent [2018], Ch. 5
	• Stokey et al. [1989], Ch. 7
• Assignments:	• TBD.

Dynamic Programming

Date	Description
Week 5 (Feb. 16th - Feb 20th):	
• Topics:	• Dynamic programming • Permanent income hypothesis • Consumption smoothing
• Readings:	• Ljungqvist and Sargent [2018], Chs. 3, 4, 5
• Assignments:	• TBD.
Week 6 (Feb. 23rd - Feb. 27th):	
• Topics:	• Asset pricing • Lucas Tree Model
• Readings:	• Ljungqvist and Sargent [2018], Ch. 8
• Assignments:	• TBD.
• Notes:	• I am out of town this week. Will discuss make-up lectures in class.
Week 7 (Mar. 2nd - Mar. 6th):	
• Topics:	• Complete markets • Stochastic neoclassical growth model
• Readings:	• Ljungqvist and Sargent [2018], Ch. 8
• Assignments:	• TBD.
Week 8 (Mar. 9th - Mar. 13th):	
• Topics:	• Solution method: guess and verify
• Readings:	• Ljungqvist and Sargent [2018], Ch. 4
• Assignments:	• TBD.
• Notes:	• Midterm on Thursday!

Real Business Cycle Model

Date	Description
Week 9 (Mar. 16th - Mar. 20th):	
• Note:	• Spring Break, no classes.
Week 10 (Mar. 23rd - Mar. 27th):	
• Topics:	• The Real Business Cycle Model
	• Solution method: log-linearization
• Readings:	• Ljungqvist and Sargent [2018], Ch. 12
• Assignments:	• TBD.
Week 11 (Mar. 30th - Apr. 3rd):	
• Topics:	• Solution method: value function iteration
	• Calibration
	• RBC Extensions
• Readings:	• Ljungqvist and Sargent [2018], Ch. 4
	• Kydland and Prescott [1996]
• Assignments:	• TBD.

Extensions

Date	Description
Week 12 (Apr. 6th - Apr. 10th):	
• Topics:	• Incomplete markets
	• Permanent and transitory income shocks
	• Huggett-Aiyagari-Bewley-Imrohoroglu Model
	• Solving (stationary) heterogeneous agent models
• Readings:	• Ljungqvist and Sargent [2018], Chs. 16, 17
	• Wang [2003]
	• Bewley [1977]
	• Aiyagari [1994]
• Assignments:	• TBD.
Week 13 (Apr. 13th - Apr. 17th):	
• Topics:	• Incomplete markets
	• Permanent and transitory income shocks
	• Huggett-Aiyagari-Bewley-Imrohoroglu Model
	• Solving (stationary) heterogeneous agent models
• Readings:	• Ljungqvist and Sargent [2018], Chs. 16, 17
	• Wang [2003]
	• Bewley [1977]
	• Aiyagari [1994]
• Assignments:	• TBD.

Extensions

Date	Description
Week 14 (Apr. 20th - Apr. 24th):	
• Topics:	• Aggregate shocks in heterogeneous agent economies: Krussell-Smith • Equilibrium unemployment: the Diamond-Mortensen-Pissarides model
• Readings:	• Rogerson et al. [2005]
• Assignments:	• TBD.
Week 15 (Apr. 27th - May 1st):	
• Topics:	• Efficiency and Directed Search • Labor market fluctuations
• Readings:	• Mortensen and Pissarides [1994]
• Assignments:	• TBD.
• Notes:	• I will be out of town on Thursday. Class is canceled.

Conclusion

Date	Description
Week 16 (May 4th - May 8th):	
• Topics:	• Review for Final
• Readings:	• TBD.
• Assignments:	• TBD.
• Notes:	• No class on Thursday.
Final Exam (5/13):	
Weds., May 13th 10:30am to 12:30pm in the same room as the lecture.	

References

S Rao Aiyagari. Uninsured idiosyncratic risk and aggregate saving. *The Quarterly Journal of Economics*, 109(3):659–684, 1994.

Truman Bewley. The permanent income hypothesis: A theoretical formulation. *Journal of Economic Theory*, 16(2):252–292, 1977.

T.F. Cooley. *Frontiers of Business Cycle Research*. Princeton University Press, 1995. ISBN 9780691043234. URL https://books.google.com/books?id=hfTf0u4JuRsC.

Finn E Kydland and Edward C Prescott. The computational experiment: An econometric tool. *Journal of economic perspectives*, 10(1):69–85, 1996.

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Dale T. Mortensen and Christopher A. Pissarides. Job creation and job destruction in the theory of unemployment. *The Review of Economic Studies*, 61(3):397–415, 1994. ISSN 00346527, 1467937X. URL http://www.jstor.org/stable/2297896.

Richard Rogerson, Robert Shimer, and Randall Wright. Search-theoretic models of the labor market: A survey. *Journal of Economic Literature*, 43(4):959–988, December 2005. doi: 10.1257/002205105775362014. URL http://www.aeaweb.org/articles?id=10.1257/002205105775362014.

C.P. Simon and L. Blume. *Mathematics for Economists*. Norton, 1994. ISBN 9780393117523. URL https://books.google.com/books?id=cxSaQgAACAAJ.

N.L. Stokey, R.E. Lucas, and E.C. Prescott. *Recursive Methods in Economic Dynamics*. Harvard University Press, 1989. ISBN 9780674750968. URL https://books.google.com/books?id=v-W6AAAAIAAJ.

Neng Wang. Caballero meets bewley: The permanent-income hypothesis in general equilibrium. *American Economic Review*, 93(3):927–936, 2003.