UNIVERSITY OF COLORADO BOULDER

Department of Economics

# ECON7040: MACROECONOMIC THEORY II

Spring 2024


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|---|---|
| Instructor: | Alessandro Peri |
| Time: | TTH 11:00-12:15PM |
| Location: | Econ 5 |
| Class Zoom link: | https://cuboulder.zoom.us/j/91761043063 |
| Phone: | (+1)3034927727 |
| Email: | alessandro.peri@colorado.edu |
| O ce Hours: | ECON 112, Tuesday, 12:15-1:45pm |
| TA: | Boyang Yu, Tyler Anderson |


## COURSE DESCRIPTION

This course introduces the students to the study of modern macroeconomics theory. The course focuses on both the theoretical and numerical analysis of general equilibrium dynamic model, with a particular focus on the neoclassical growth model.

The course starts with the study of dynamic programming. This part of the course focuses on the theoretical features of dynamic models. In this context, we study in great details the rst ve chapters of *Recursive Methods in Economic Dynamics*, by Stokey, Lucas and Prescott. Over the course, we use dynamic programming to study the neoclassical growth model. When possible (not very often), we will learn how to nd a solution by hand. When not possible, we will rely on numerical methods.

The second section of the course, introduces frictions in a standard Rythea standardtr98283(.)(Ov)mSedescN4d,des

## EVALUATION

Your final grade is determined as a weighted average among Midterm I (30%) and Final Exam (70%). Midterm and final exam are closed notes and books. No make-up tests will be given. Problem sets will be regularly assigned to cover the class material or explore other topics. You are required to work in group to complete the assignments. The group consists of 3/4 people that are formed in the first week of classes. Problem sets are submitted, one version per group as indicated in the Chronogram (see section below). Late assignments will not be accepted.

| Assessment | Date | % |
|---|---|---|
| Midterm I | 3/21/24 | 30% |
| Final Exam | Wednesday, May 8, 4:30-7pm | 70% |

## TEXTBOOK AND LECTURE NOTES

Textbooks

- Lagrangian Approach for Solving In nite Horizon Problems
- Code: Computation of discrete one-sector growth model (Matlab)

Readings: NG Ch 5

## DYNAMIC PROGRAMMING UNDER UNCERTAINTY

Mathematical Preliminaries:

- { Markov chains and Transition functions
- { Convergence

Markets

- { Arrow-Debreu Economy
- { Sequential Trading
- { Recursive Competitive Equilibrium

Application:

- { Stochastic version of one-sector growth model
- { Asset Pricing

Code: Implementation of Tauchen Method in Matlab and C.

Readings: LS Ch 2,12

Mehra, R. and Prescott, E.C. *The Equity Premium: A puzzle*, Journal of Monetary Economics, 15, 145-161.

## HETEROGENOUS AGENTS' MODEL AND AGGREGATION

The Melitz (2003) Model

CES Preferences

Readings:

Melitz, M.J. (2003) *The Impact of Trade on Intra-Industry Reallocations and Aggregate Industry Productivity*. Econometrica, 71, 1695-1725.

## THE REAL BUSINESS CYCLE MODEL

The Real Business Cycle Model

Method of undetermined coe cients

Calibration

Code: Solution of an RBC model in Dynare

Readings:

King, R. and S. Rebelo (2000), *Resuscitating Real Business Cycles*, in Taylor and Woodford, Handbook of Macroeconomics, 1B, 931-42

Rebelo, S. (2005), *Real business cycle models: Past, present, and future?*, Scandinavian Journal of Economics, 107(2), 217-238

Stock, J. and M. Watson (2000), *Business Cycle Fluctuations in U.S. Macroeconomic Time Series*, in J. Taylor and M. Woodford eds., Handbook of Macroeconomics, 1A, 3-64

Chari, V., Kehoe, P. McGrattan, E. (2007), *Business cycle accounting* Econometrica, 3(5)

Kydland, F. and E.C. Prescott (1990), *Business Cycles: Real Facts and a Monetary Myth*, Quartely Review, Federal Reserve Bank of Minneapolis

### MONEY, NOMINAL FRICTIONS AND MONETARY POLICY

The New Keynesian (NK) Model

Code: Solution of an NK Model in Dynare

Readings:

Gali, J. (2008), *Monetary Policy, In ation and the Business Cycle*, Princeton University Press, Chapters 2, 3 and 4.

Christiano, L., M. Eichenbaum, and C. Evans (1998), *Monetary Policy Shocks: What Have We Learned and to What End?*, in J.B. Taylor, and M. Woodford eds., Handbook of Macroeconomics, 1A, 65-148.

Clarida, R., J. Gali and M. Gertler (1999) *The Science of Monetary Policy: A New-Keynesian Perspective*, Journal of Economic Literature, 37, 1661-1707.

McCandless, G. and W. Weber (1995) *Some Monetary Facts*, Federal Reserve Bank of Minneapolis, Quarterly Review.

Smets, F. and R. Wouters (2007) *Shocks and Frictions in US Business Cycles: A Bayesian DSGE Approach*, American Economic Review, 97(3), 586-606.

## CHRONOGRAM

Our rst class will be on Tuesday, Jan 16th from 11:00-12:15PM (see Spring 2024, rst day of classes). Here it is the tentative schedule.

| Tuesday | Thursday |
|---|---|
| Jan 16th 1<br>Introduction to Dynamic Programming | 18th 2<br>Instructions in Homework 0<br>Introduction to Dynamic Programming |
| 23rd 3<br>Introduction to Dynamic Programming | 25th 4<br>Introduction to Dynamic Programming |

| Tuesday | Thursday |
| --- | --- |
| 30th 5<br>Introduction to Dynamic Programming | Feb 1st 6<br>Hand In Homework 1<br>Introduction to Dynamic Programming |
| 6th 7<br>Introduction to Dynamic Programming | 8th 8<br>Introduction to Dynamic Programming |

# UNIVERSITY POLICIES

You should familiarize yourself with the following University of Colorado policies.

## CLASSROOM BEHAVIOR

Students and faculty are responsible for maintaining an appropriate learning environment in all instructional settings, whether in person, remote, or online. Failure to adhere to such behavioral standards may be subject to discipline. Professional courtesy and sensitivity are especially important with respect to individuals and topics dealing with race, color, national origin, sex, pregnancy, age, disability, creed, religion, sexual orientation, gender identity, gender expression, veteran status, political a liation, or political philosophy. For more information, see the classroom behavior policy, the Student Code of Conduct, and the O ce of Institutional Equity and Compliance.

## REQUIREMENTS FOR INFECTIOUS DISEASE

Members of the CU Boulder community and visitors to campus must follow university, department, and

## HONOR CODE

All students enrolled in a University of Colorado Boulder course are responsible for knowing and adhering to the Honor Code. Violations of the Honor Code may include but are not limited to: plagiarism (including use of paper writing services or technology [such as essay bots]), cheating, fabrication, lying, bribery, threat, unauthorized access to academic materials, clicker fraud, submitting the same or similar work in more than one course without permission from all course instructors involved, and aiding academic dishonesty. All incidents of academic misconduct will be reported to Student Conduct & Con ict Resolution: honor@colorado.edu, 303-492-5550. Students found responsible for violating the Honor Code will be assigned resolution outcomes from the Student Conduct & Con ict Resolution as well as be subject to academic sanctions from the faculty member. Visit Honor Code for more information on the academic integrity policy.

## SEXUAL MISCONDUCT, DISCRIMINATION, HARASSMENT AND/OR RELATED RETALIATION

CU Boulder is committed to fostering an inclusive and welcoming learning, working, and living environment. University policy prohibits protected-class discrimination and harassment, sexual misconduct (harassment, exploitation, and assault), intimate partner violence (dating or domestic violence), stalking, and related retaliation by or against members of our community on- and o -campus. These behaviors harm individuals and our community. The O ce of Institutional Equity and Compliance (OIEC) addresses these concerns, and individuals who have been subjected to misconduct can contact OIEC at