
MACROECONOMIC THEORY IV

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WebCT material: Follow a course link from [InfoWeb](#) or [Virtual Campus](#) page of the University of Ottawa

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1. Overview

This course introduces advanced techniques and topics in macroeconomic theory at a master's level. A special emphasis is given to equilibrium analysis of determinants of economic growth and business cycles.

The main objectives of the course are:

- To develop analytical skills for operating with a range of dynamic equilibrium models. By the end of the course, you should be able to solve standard models using methods of constrained optimization in discrete and continuous time.
- To understand interactions between macroeconomic theory and data. By the end of the course, you should know what insights macroeconomic models give on main facts about growth and business cycles and how economic data can guide economists in designing macro theory.
- To understand why and how intertemporal considerations can fundamentally change methods for policy analysis.

To achieve the course objectives, we will first focus on developing technical tools of constrained optimization in discrete and continuous time, with applications to consumption and investment. Then we will use a variety of general equilibrium models to study growth and business cycle issues. In the last part of the course, we will cover selective topics related to monetary and fiscal policy.

2. Prerequisites

- Economics. You should be comfortable with basic material covered in undergraduate programs in economics. Ideally, your understanding of macroeconomic theory should be at the level of *Macroeconomics* by Stephen D. Williamson.
- Mathematics. I will assume that you know basic calculus. In particular, you should be able to solve *static* unconstrained and constrained optimization problems (i.e. to apply theorems of Lagrange and Kuhn-Tucker). Chiang, *Fundamental Methods of Mathematical Economics* is a standard undergraduate textbook that covers these techniques. Knowledge of *dynamic* optimization would be useful, but this material will be covered in the first part of the course. You should also be familiar with main concepts of introductory statistics, probability theory and time-series econometrics.

3. Textbooks and References

The required textbook for this course is Romer, David [2006] *Advanced Macroeconomics*, 3rd edition. The textbook is available at the University of Ottawa bookstore on campus and at the Agora Bookstore (145 Besserer Street). Both bookstores provide online ordering options at <http://www.bkstr.com> and www.agorabookstore.ca.

In addition, I will use supplementary materials from various journal articles and working papers, occasional lecture notes and chapters from the following textbooks:

- Azariadis, Costas [1993]. *Intertemporal Macroeconomics*. The Blackwell Publishers. Library code: HB 172.5 .A93 2000.
- Adda, Jérôme and Russell Cooper [2003]. *Dynamic Economics: Quantitative Methods and Applications*. Cambridge, Mass. The MIT Press. Library code: HB 135 .A443 2003.
- Barro, Robert and Xavier Sala-i-Martin [2001]. *Economic Growth*. Cambridge, Mass. The MIT Press. Library code: HD 75. B35 2004.
- Blanchard, Olivier J and Stanley Fisher [1996]. *Lectures on Macroeconomics*. Cambridge, Mass. The MIT Press. Library code: HB 172.5 .B5415 1989.
- Rogoff, Kenneth and Maurice Obstfeld [1996]. *Foundations of International Macroeconomics*. The MIT Press. Library code: HF 1359 .O27 1996 .
- Sargent, Thomas J. [1987]. *Macroeconomic Theory*. The Academic Press. Library code: HB 172.5 .S27 1987.
- Ljungqvist, Lars and Sargent, Thomas J. [2004]. *Recursive Macroeconomic Theory*. Cambridge, Mass. The MIT Press, 2nd edition. Available as e-book in the library.

All journal articles and working papers will be available online either through the University of Ottawa's library or through authors' personal websites. The lecture notes will be posted on a WebCT space of the course. I have requested to put the supplementary textbooks on the Library Reserve. You do not need to purchase these books, although you would find them useful in the future if you decide to pursue macroeconomics as a research topic.

4. Organization

The course consists of lectures and tutorials. I expect you to come to lectures and be aware of everything discussed in class. Please make sure to check your University of Ottawa email account, as I will use email for course announcements. The course uses a sequential approach, and each topic builds upon the previous ones. Further, some of the material discussed in class is

not covered thoroughly by the textbook. Tutorial sessions are given by a Teaching Assistant. They are intended to discuss solutions to assignments, provide additional examples and answer questions. Tutorials are optional, but I do strongly advise to attend them.

5. Evaluation

Your final grade will combine results from exams and assignments:

Assignments	25%
Midterm Exam	30%
Final Exam	45%

- *Assignments* will test your ability to work with standard macroeconomic models, understand connections between economic theory and data, and derive policy implications. Assignments will require you to set up and solve macroeconomic models and/or to write a referee report for an academic article. The assignments will be announced in class and made available on WebCT.

Assignments are to be submitted to the main office of the Department of Economics before 15:00 on the date assignments are due. Late assignments will not be accepted. There will be no make-up assignments. If your handwriting is not very good, please plan to type your answers.

- *Exams* will likely consist of problems as well as essay-type questions. No make-up exams will be given unless you are unable to attend for a family or medical emergency. In that case, you must notify me within 24 hours of the exam date. A make-up exam will not necessarily have the same format as the standard exam. The final exam will be cumulative. *A tentative date for the midterm is October 25.*

6. Remarking

Any request for remarking of assignments or exams must be submitted in writing within a week of that assignment/exam being received. The request should contain a detailed explanation for a grade revision. The remarking will be applied to the entire assignment/exam, not just the contentious question. As a result, your grade may increase, decrease or remain the same. Assignments or exams written in pencil will not be re-graded.

7. Access

The University policy provides equal access to all students. Students requiring accommodations are kindly asked to inform me early in the semester so that their learning needs may be appropriately met. It is also recommended that students with disabilities register with Access Service, UC 339, tel. 562-5976, www.sass.uottawa.ca, in order to meet with an Access Service specialist to identify learning needs and supports.

Course Outline

This section outlines the topics that I plan to cover in the course. Required, supplementary and advanced readings will be posted separately on WebCT. The initial list of topics *is subject to*

change, as we find together the right pace for the course. Any changes in the course structure will be announced in class and posted on WebCT. Please consult the course site regularly.

- I. Introduction: What is Macroeconomics?
- II. Dynamic Optimization in Macroeconomics and Applications in Partial Equilibrium
 1. Optimization in Discrete Time
 2. Consumption-Saving Choice Under Certainty
 3. Stochastic Optimization in Discrete Time
 4. Consumption-Saving Choice Under Uncertainty
 5. Optimization in Continuous Time
 6. Investment
- III. Growth Theory
 1. Basic Facts About Economic Growth
 2. Exogenous Growth Models
 - a. The Solow Model with Exogenous Saving
 - b. One Sector Neoclassical Growth Model (the Ramsey Model)
 - c. Overlapping Generations Model (the Diamond Model)
 3. New Growth Theories
 - a. Models with Enhanced Incentives for Capital Accumulation
 - i. The AK Model
 - ii. Extended Solow Model with Human Capital
 - b. Models with Endogenous Technology
 - i. Learning-by-Doing
 - ii. Model with R&D Sector
 - c. The Role of Institutions in Economic Growth (if time permits)
- IV. Business Cycles
 1. Basic Facts Business Cycles
 2. Real Business Cycle Theory
 3. Traditional and New Keynesian Theories of Fluctuations (if time permits)
- V. Monetary and Fiscal Policy Issues