ECONS 500: PhD Macroeconomic Theory (I)
Washington State University
Fall 2016
(Syllabus, Last Update: 08/22/2016)

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Teaching Assistant: Modhurima Dey Amin, Hulbert 205D, modhurima.amin@wsu.edu.

Time and Location: TU, TH, 12:00pm – 1:15pm (3 Credit), Hulbert 27.

Instructor Office Hours: TU, 2:00pm – 4:00pm, or by appointment, Hulbert 111G.

TA Office Hours: M, W, 11:00am – 12:00pm, or by appointment, Hulbert 205D.

TA Recitation Section: TBD as needed.

Recommended Preparation: Intermediate Microeconomics and Macroeconomics.

Course Description:

The goal of the course is to introduce students to the most widely-used dynamic equilibrium models in modern macroeconomic research. The course will teach students the key aspects of dynamic programming and the formulation and solution of *Sequential Competitive Equilibrium* and *Recursive Competitive Equilibrium*. We will apply these techniques and equilibrium concepts to a variety of topics, including growth, business cycles, labor market, asset pricing, wealth distribution, fiscal policy and monetary policy.

We will emphasize basic computational methods of dynamic programming and competitive equilibrium. Some assignments will involve using standard programming languages (e.g., MATLAB or Python) to compute solutions to dynamic programming problems and the recursive competitive equilibrium.

After completing the course, a successful student should be able to understand the basic language of modern dynamic macroeconomics.

References

I will post necessary lecture notes and useful materials on the course website. The following books are standard first-year macroeconomic textbooks and are strongly recommended for additional reference.

(a. LS) Ljungqvist, L., Sargent, T., 2012. *Recursive Macroeconomic Theory*, Third Edition, MIT Press. The solution to the problems in the *LS* book is freely available on the internet (http://pages.stern.nyu.edu/˜svnieuwe/pdfs/masterex.pdf). The MATLAB programs for selected models in the *LS* book is freely available at the following link (ftp://zia.stanford.edu/pub/sargent/webdocs/mitbook)

(b. SLP) Stokey, N., Lucas, R.E., Jr., with E. Prescott, 1989. *Recursive Methods in Economic Dynamics*, Harvard University Press.

(c.) Acemoglu, Daron, 2008. Introduction to Modern Economic Growth. Princeton University Press.

This is an excellent (in my opinion the best) website to learn how to use Python and/or Julia in quantitative economic research: http://quant-econ.net/index.html

Course Website: WSU Blackboard (learn.wsu.edu) and log in with your university netid. I will post class announcement, lecture notes, slides, problem sets, answers to problem sets, and additional readings to the website.

Class Attendance: You are not explicitly evaluated on attendance. Nevertheless, students are expected to attend all scheduled class times, as attendance and participation contribute significantly to learning in this course. If you miss a class, it is your responsibility to make up the missed materials.

Grading and Exams: Homework assignments, two in-class midterm exams and a final exam jointly determine the final grade as follows.

	Total Numerical Grade (100 Points)			
Item	Assignments	Midterm I	Midterm II	Final
Points	20	20	20	40

I plan to use the following scale to map your numerical grade into the letter grade:

Letter Grade	A	A-	B+	B	B- or below
Points	80-100	75-79.9	70-74.9	60-69.9	≤ 59.9

I will maintain some flexibility to these guidelines, especially for difficult exams.

There will be around 3 to 5 assignments for the course. You must type up your answers, preferably using LaTeX. The assignments are due in class before the lecture at the announced date. Homework assignments will be graded according to the following scale: 4, 3, 2, 1, 0. Late problem sets will receive a grade of **0**. To allow for the possibility of unexpected emergency, I will drop one lowest homework score in calculating your final grade.

Group discussion in solving the homework assignments is strongly encouraged, but each student is expected to write his/her own answers and in his/her own words. If you encounter any difficulty, you can get help from other students, your TA, and/or me, in that order.

The first in-class midterm exam is currently scheduled to be on **Thursday, Sep 29th**, and the second on **Thursday, Nov 17th**. According to the current schedule of the registrar's office, the final exam will take place at the following time: **8am-10am, Monday, Dec 12th, 2016**.

All exams will be *closed-book and closed-notes*. The final exam is cumulative.

There will be no makeups for the midterm exams. If you fail to take one or both of them, the corresponding weight will be added to the final exam.

Additional Readings: In addition to readings from the textbook, readings from academic publications will occasionally be posted to the course web site whenever necessary. Because the lectures cover only the key points of each topic, reading and studying the textbook and the assigned papers in a timely fashion is an essential part of the course.

Student Learning Outcomes and Assessment: The following table summarizes targeted learning outcomes and assessment methods.

At the end of this course, students should be able to:	The following will address this outcome:	This outcome will be evaluated primarily by:
Understand and explain the analytical derivations and arguments commonly used in the models of economic growth, the business cycles, and fiscal and monetary policies.	Lectures and assigned readings	Written responses in problem sets, midterms, and final exam
Solve PhD-core-level macroeconomic problems	Problem sets	Problem sets, midterms, and final exam
Formulate the widely used models and know how to apply them in their own research.	Lectures	Written responses in problem sets, midterms, and final exam

Academic dishonesty: Academic integrity will be strongly enforced in this course. Students found responsible for academic integrity violations may receive an F on the particular assignment or exam, as well as an F for the course. Serious and/or repeated offenses may result in referral to the Office of Student Standards and Accountability and expulsion from WSU. Cheating is defined in the Standards for Student Conduct WAC 504-26-010 (3). It is strongly suggested that you read and understand these definitions.

WSU Reasonable Accommodation Policy: Students with Disabilities: Reasonable accommodations are available for students with a documented disability. If you have a disability and need accommodations to fully participate in this class, please either visit or call the Access Center (Washington Building 217; 509-335-3417) to schedule an appointment with an Access Advisor. All accommodations MUST be approved through the Access Center. For more information contact a Disability Specialist on the Pullman campus: 509-335-3417, http://accesscenter.wsu.edu, Access.Center@wsu.edu.

Safety and Emergency Notification: Washington State University is committed to enhancing the safety of the students, faculty, staff, and visitors. It is highly recommended that you review the Campus Safety Plan (http://safetyplan.wsu.edu/) and visit the Office of Emergency Management web site (http://oem.wsu.edu/) for a comprehensive listing of university policies, procedures, statistics, and information related to campus safety, emergency management, and the health and welfare of the campus community.

Course Outline

The lecture is intended to cover selected topics below. Additional topics may be included if time permits. The schedule is tentative and subject to change.

I. Introduction and Reviews

1. An "Econ 102" Review: Measurements of Key Macroeconomic Variables
2. The Solow Model and Facts

II. The Neoclassical Growth Model in Discrete Time

1. A Pure Exchange Economy
2. Optimal Growth
   (a) Sequential Formulation
   (b) Recursive Formulation
   (c) Dynamic Programming
3. Competitive Equilibrium Growth
   (a) Market Structure and Arrow-Debreu Equilibrium
   (b) The Welfare Theorems
   (c) Sequential Markets Equilibrium
   (d) Recursive Competitive Equilibrium

III. Uncertainty and Stochastic Neoclassical Growth Model

1. Common Stochastic Processes
2. Equilibrium with Complete Markets
3. Asset Pricing
4. Stochastic Growth: Social Planner's Problem
5. Stochastic Growth: Competitive Market Equilibrium

IV. Real Business Cycles

1. Stylized Facts
2. A Basic Model and Calibration
3. A "Cookbook" Procedure
4. (Optional) Extensions and Other Business Cycle Theories

V. (Optional) Ramsey Fiscal Policy

VI. Continuous Time Growth Models

1. The Solow Model in Continuous Time
2. Neoclassical Growth Model and Dynamic Programming in Continuous Time
3. (Optional) Endogenous Growth Models

VII. (Optional) Income and Wealth Inequality

1. Models with Idiosyncratic Labor Income Risk: Bewley Economies

VIII. (Optional) Search and Matching

1. Job Search
2. Random Matching