Overview

This is a second-semester course in macroeconomic theory. It will be taught as a techniques course, with emphasis on dynamic optimization theory, computational methods for dynamic optimization and the application of these techniques to models in open-economy macroeconomics. The course has three objectives. First, the course is intended to solidify the mathematical foundations of the discipline by covering calculus of variations, optimal control and dynamic programming at a level needed for conducting graduate level research. Second, the course will introduce students to numerical methods for dynamic optimization, including the acquisition of some facility with programming in GAMS and MATLAB. Third, the course will consider applications of these techniques to models arising in open-economies.

Conduct of the Course

Students must attend and participate in classes. Readings must be completed prior to associated lectures. The course will follow a traditional lecture format during the first half of the term. There will be regular reading assignments and problem sets. Class meetings during the second half of the term will devote time to student presentations of term papers and discussions of assigned journal articles. Communication skills, both written and oral, are an important part of how students will be assessed.

Requirements

Three in-class tests.

One term paper with four components: (i) initial abstract and outline, (ii) revised abstract and outline, (iii) first draft, (iv) final draft.

Final examination: two hours at time/date scheduled by the university.

Auditing

Auditing students are welcome, provided that they complete all homework assignments on time and write all tests. Graduate students must take the course for credit if they wish to do thesis work using these methods.

Books and Materials
Dynamic Optimization by Kamien and Schwartz

The GAMS User's Guide

Foundations of International Macroeconomics by Obstfeld and Rogoff

Several journal articles and working papers will be distributed through the course of the term.

Student version of GAMS software are provided without charge to enrolled students.

Students should be well acquainted with a fully-functioned text editor. The links on the GAMS Tools Page