Syllabus

Frontiers in Macroeconomics

**Goal:** This course serves as an introduction into the methods and techniques used in modern macroeconomics. We will begin with basic growth theory models, move onto models of business cycles and conclude with models currently used in monetary policy. Along the way, we will develop some useful modeling tools: namely, dynamic programming, discrete state Markov processes, and solution methods for linear rational expectations business cycle models.

**Professor:** Kevin D. Salyer

**Text:** *Advanced Macroeconomics*, David Romer. This works as a reasonable introduction but lacks depth. It is currently in its second edition, but if you can find a cheaper first edition, that will do. We will supplement this text with journal articles.

**Suggested Texts:** If you are interested in growth theory, then a good, comprehensive treatment can be found in *Economic Growth* by R. Barro and X. Sala-i-Martin. For international economics, the standard text is by M. Obstfeld and K. Rogoff, *Foundations of International Macroeconomics*. Both of these books cover growth theory in more detail than Romer. For monetary policy, I highly recommend the texts by Carl Walsh, *Monetary Theory and Policy* (the second edition is preferred over the first), and Michael Woodford, *Interest and Prices*.

**February 20: Overview of the Course, Growth Theory, the Overlapping Generations Model**

We study the workhorse of modern macroeconomics: the model of growth as first proposed by Solow (and Swan) and then extended by Cass-Koopmans. In addition, we will examine Samuelson’s overlapping generations model, another useful macroeconomic framework.

**Readings:** Chapters 1-3 in Romer.
February 21: Introduction to Stochastic Dynamic Economies

Today we begin our study of modern business cycle models. These are typically discrete time versions of the optimal growth model studied on Monday with one critical addition: uncertainty. To build up the tools necessary to look at models with production, we first study an exchange setting with uncertainty and introduce the dynamic optimization method of dynamic programming. We use this method to examine the behavior of asset prices within the context of the consumption-based capital asset pricing model. We will also discuss the concepts of a recursive competitive equilibrium, testing models through calibration, and the celebrated equity premium puzzle.

Readings: Romer, Chapter 7.
6. Handout on dynamic programming.
7. Salyer, Handout on Markov Processes.
9. Lucas, R.E., Jr., Asset Prices in an Exchange Economy (first three sections only).
February 22&23: Consumption Theory and Real Business Cycle Models

After a quick review of the permanent income hypothesis, we begin in earnest our study of modern business cycle theory. The basic model is the stochastic growth model with stochastic shocks to production – this is known as the real business cycle (RBC) model. Since this model has no analytic solution, we must use numerical methods to compute the equilibrium. An overview of the simplest method, linearizing around the steady-state, will be presented. We will discuss some empirical features of business cycles and use these to assess the performance of the RBC model. Our last topic in this section will be a discussion of economies that are driven by self-fulfilling belief shocks.

Readings: Romer, Chapter 4.
15. Cooley, Frontiers of Business Cycle Research, Chapter 1.

February 24: Monetary Models

We conclude the course with an introduction to general equilibrium monetary models. We look at two extensions of the optimal growth model that include a demand for money: (1) A model by M. Sidrauski in which real balances enter the utility function and (2) A model by A. Stockman in which agents face (in addition to the normal budget constraint) a cash-in-advance constraint which states that purchases must be financed out of money holdings. Time permitting, we will then discuss the New Keynesian framework which has become the standard approach in discussing monetary policy.

Readings:
25. Sidrauski, Rational Choice and Patterns of Growth in a Monetary Economy.