Learning Goals:

- Understand two basic models widely used in macroeconomics
  - The neo classical growth model
  - The overlapping generations model
- Mathematical and Numeric methods for analyzing and solving these models
  - Dynamic Programming
  - Matlab and Dynare
- Learn applications of these models
  - Long Run Growth
  - Business Cycle Fluctuations
  - Monetary and Fiscal Policy

Assessment and Assessment Goals:

1. Weekly homework (10 percent of your grade)
   a. Demonstrate ability to set up variations of the basic models and solve them.
   b. Demonstrate ability to formulate computer programs in Matlab to solve basic models
   c. Marshall data and organize it to construct empirical evidence to evaluate the basic growth and business cycle model.
2. Mid-term and Final exams (90 percent of your grade)
   a. Evaluate ability to set up economic problems in a mathematical framework
   b. Evaluate your ability to solve models and draw implications for policy

Labs:

A lab for this class will be held every Monday 11.45 a.m. to 1.45 p.m in Room C196-02. Mathematical preliminaries necessary for the class, programming in Matlab and answers to problem sets will be discussed in these labs. In addition, some topics briefly sketched out in class will be covered in greater detail.

Course Materials:

I will not follow any single text book. However my lectures will be based on many of the books listed below.
Textbooks:

Other books you may find useful:

Syllabus (tentative)
1. Introduction to the neo-classical growth model
   a. The Social Planner’s problem and Optimal Growth
   b. Solution techniques
      i. Dynamic Programming
      ii. Euler equation and transversality condition methods
   c. Competitive Equilibrium
2. Balanced Growth
   a. Long run growth “facts”
   b. Growth Accounting
   c. The balanced growth model
3. Uncertainty in the growth model
   a. Markov chains and Solution Methods
   b. Competitive Equilibrium
4. Business Cycles
   a. Business Cycle Facts
   b. The real business cycle model and basic extensions.
   c. Calibration and evaluation of real business cycle models
5. Overlapping Generations Models
   a. Endowment economies
      i. No trade equilibria
      ii. Introduction of money. Multiple steady states and indeterminacy
      iii. Welfare properties
      iv. Monetary and fiscal policy
   b. Economies with Capital
      i. Competitive equilibria. Steady states and equilibrium dynamics
      iii. Money, monetary and fiscal policy.