ECONOMICS 117: ECONOMIC GROWTH

The subject of this course is the modern theory of economic growth: the tradeoff between current and future consumption, the stability of capitalist economies, the effects of technological progress and monetary policy on economic growth, and the consequences of sustained, or alternatively, of zero economic growth. This course does *not* cover environmental economics – that is the focus of Econ 131: "Economics of the Environment."

DATE	TOPIC
Jan. 7	The Mathematics of Growth I
Jan. 9	The Mathematics of Growth II
Jan. 14	Consumption vs. Growth with a Fixed Population: Robinson Crusoe's Problem
Jan. 16	Consumption vs. Growth with a Growing Population: The Blue Lagoon Problem
Jan. 21	Is Capitalism Doomed? The Harrod-Domar Growth Model I
Jan. 23	Is Capitalism Doomed? The Harrod-Domar Growth Model II
Jan. 28	**(Tuesday) 1st Midterm Exam**
Jan. 30	The Stabilizing Effect of Substitutability: The Neoclassical Growth Model I
Feb. 4	The Stabilizing Effect of Substitutability: The Neoclassical Growth Model II
Feb. 6	Extensions of the Neoclassical Growth Model I
Feb. 11	Extensions of the Neoclassical Growth Model II
Feb. 13	Technological Progress and Economic Growth I
Feb. 18	Technological Progress and Economic Growth II
Feb. 20	**(Thursday) 2nd Midterm Exam**
Feb. 25	Optimal Growth: The "Golden Rule"
Feb. 27	Money and Economic Growth
Mar. 4	Human Capital and Endogenous Economic Growth
Mar. 6	Measuring the Rates and Determinants of Economic Growth
Mar. 11	Alternative Theories of Growth and Distribution
Mar. 13	Growth in a Finite World: The "Limits to Growth" Debate
Mar. 20	**(Thursday) FINAL EXAM 11:30am-2:30pm (location TBA)**

(Review Sessions will be scheduled prior to each exam.)

READINGS: A list of readings for the course is attached, and all readings are included in the Soft Reserve Package. Additional handouts will be passed out in class.

LECTURES AND SECTIONS: You are responsible for all the material in the lectures. If you miss one, borrow someone's notes.

EXAMS: Grades are determined on the basis of two Midterm Exams and a Final Exam.

PRACTICE QUESTIONS: The Soft Reserve Package also contains a set of old Econ 117 exam questions. I will go over some of these questions in office hours and review sessions, but the best way to prepare for the exams is to form groups and practice doing them together.

http://econ.ucsd.edu/~mmachina/courses/ECON_117/ECON_117.html

ECONOMICS 117 COURSE OUTLINE

I. THE MATHEMATICS OF GROWTH
   a. Stocks vs. Flows and the Dimensions of Economic Variables
   b. Absolute, Proportional & Percentage Changes in Variables
   c. Elasticity (Quick Review)
   d. Discrete Time versus Continuous Time
   e. Growth of Discrete Time Variables
       Constant Proportional Growth and Compounding
   f. Growth of Continuous Time Variables
       Instantaneous Proportional Growth Rate at a Given Moment
       Constant Proportional Growth (i.e. Exponential Growth)
   g. Products and Ratios of Growing Variables
   h. Functions of Growing Variables
   i. Notion of a "Steady State"
   j. Examples of Differential Systems

II. CONSUMPTION VERSUS GROWTH WITH A FIXED POPULATION:
   ROBINSON CRUSOE'S PROBLEM
   a. The Tradeoff Between Current and Long Run Consumption Levels
   b. Maximizing Steady State Consumption

III. CONSUMPTION VERSUS GROWTH WITH A GROWING POPULATION:
   THE BLUE LAGOON PROBLEM
   a. The Effect of Population Growth on the Robinson Crusoe Problem
   b. Increasing Steady State Per Capita Consumption

IV. IS CAPITALISM DOOMED? THE HARROD-DOMAR MODEL
   a. The Leontief or "Fixed Proportions" Production Function
   b. The "Natural" Rate of Growth
   c. The "Warranted" Rate of Growth
   d. The Instability of the Economy

V. STABILIZING EFFECT OF SUBSTITUTABILITY: THE NEOCLASSICAL MODEL
   a. Constant Returns to Scale (CRS) Production Functions
           Definition of Constant Returns to Scale (and Scale Invariance)
           Examples: Linear, Leontief, Cobb-Douglas, CES
           Some Strange & Wonderful Properties of CRS Production Functions
               Marginal and Average Products are All Scale Invariant
               Euler's Theorem
               Input Elasticities Sum to Unity
   b. Factor Substitutability and "Smooth" Production Functions
   c. The Automatic Stabilizing Effect of Factor Substitution
   d. Comparative Statics of the Steady State
   e. Factor Prices and the Distribution of Income

ECONOMICS 117 READINGS IN SOFT RESERVE PACKAGE

Winter 2014   **Professor Mark Machina**

Domar, E., "Expansion and Employment," *American Economic Review* 37 (1947), 34-55.

Solow, R., "A Contribution to the Theory of Economic Growth," *Quarterly Journal of Economics* 70 (1956), 65-94.

Solow, R., "Technical Change and the Aggregate Production Function," *Review of Economics and Statistics* 39 (1957), 312-320.

Phelps, E.S., "The Golden Rule of Accumulation: A Fable for Growthmen," *American Economic Review* 51 (1961), 638-643.

Johnson, H., "The Neo-Classical One-Sector Growth Model: A Geometrical Exposition and Extension to a Monetary Economy," *Economica* 33 (1966), 265-287.

Romer, P. "Increasing Returns and Long-Run Growth," *Journal of Political Economy* 94 (1986), 1002-1037.

Mankiw, G., D. Romer and D. Weil. "A Contribution to the Empirics of Economic Growth," *Quarterly Journal of Economics* 107 (1992), 407-437.

Kaldor, N., "Alternative Theories of Distribution," *Review of Economic Studies* 23 (1955-56), 83-100.