ECONOMICS 100A: MICROECONOMICS

Fall 2011, Section A **Tues, Thur 8:00-9:20am** **Solis Hall 107**
Fall 2011, Section B **Tues, Thur 9:30-10:50am** **Solis Hall 107**

Professor Mark Machina **Office: Econ Bldg 217** **Office Hours: Wed 8-noon**

(See other side for Sections, TA's, Office Hours and Final Exam Dates/Times)

DATE	TOPIC	TEXT CH. / MATH HANDOUT SECT.
Sep. 22	Introduction & Mathematical Review #1	Ch. 1 / Sects. A, B
Sep. 27	Mathematical Review #1 (cont.)	Sect. C
Sep. 29	Consumer Preferences: Utility Functions and Indifference Curves	Chs. 4, 5
Oct. 4	Consumer Preferences: Utility Functions and Indifference Curves (cont.)	Chs. 4, 5
Oct. 6	Mathematical Review #2	Sects. D, E
Oct. 11	Mathematical Review #2 (continued)	Sects. D, E
Oct. 13	Utility Maximization and Demand Functions	Chs. 2, 6, 10.B1
Oct. 18	(Tuesday) 1st Midterm Exam (drop date is Oct 21)	
Oct. 20	Utility Maximization and Demand Functions (cont.)	Chs. 2, 6, 10.B1
Oct. 25	Utility Maximization and Demand Functions (cont.)	Chs. 2, 6, 10.B1
Oct. 27	Comparative Statics of Demand	Chs. 9(A1,B1), 7
Nov. 1	Comparative Statics of Demand (cont.)	Chs. 9(A1,B1), 7
Nov. 3	Comparative Statics of Demand (cont.)	Chs. 9(A1,B1), 7
Nov. 8	Comparative Statics of Demand (cont.)	Chs. 9(A1,B1), 7
Nov. 10	(Thursday) 2nd Midterm Exam	
Nov. 15	Supply of Labor: The Labor-Leisure Decision	Chs. 3(A1,B1), 9(A2,B2), 8(A2,B2)
Nov. 17	Supply of Capital: Consumption-Saving Decision	Chs.3(A2,3,B2,3), 9(A3,B3), 8(A3,B3)
Nov. 22	Supply of Capital: Consumption-Saving (cont.)	Chs. 3(A2,3,B2,3), 9(A3,B3), 8(A3,B3)
Nov. 29	Decision Making under Risk and Uncertainty (cont.)	Ch. 17
Dec. 1	Decision Making under Risk and Uncertainty (cont.)	Ch. 17
Dec. 6/8	FINAL EXAM (see other side for dates/times)	(location TBA)

TEXT & READINGS: *Microeconomics: An Intuitive Approach with Calculus,* Thomas Nechyba, South-Western, Cengage Learning, 2011 (Custom edition for UC San Diego, available at UCSD Bookstore). There is also a Soft Reserve Package which contains the Math Handout, practice problems, and old exam questions. You are responsible for all the material in the assigned portions of the text and the Math Handout.

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

COURSE WEB PAGE: The course web page is at:

www.econ.ucsd.edu/~mmachina/courses/ECON_100A/ECON_100A.html

ECON 100A FALL 2011 SECTION TIMES, TA'S AND FINAL EXAMS

SECTION A	Day, Time	Room	Professor/TA	Office, Office Hours
A00-LE	**TuTh, 8:00 - 9:20 am**	**Solis 107**	**Mark Machina**	**Wed 8-noon**
A01-DI	Fri, 11:00 - 11:50am	Center 222	Brady, Richard	Economics Bldg 124, W 4-6
A02-DI	Wed, 4:00 - 4:50pm	Peterson 103	Brayak, Travis	Sequoyah Hall 224, Th 11-1
A03-DI	Mon, 8:00 - 8:50am	Center 222	Keller, Timothy	Sequoyah Hall 140, M 10-12
A04-DI	Wed, 6:00 - 6:50pm	Peterson 104	Huang, Zheng Wagner, Rebecca	Economics Bldg 127, M 1-2 Sequoyah Hall 139, Th 2-3
Final Exam	*Tuesday* 12/6, 8-11am	TBA		

SECTION B	Day, Time	Room	Professor/TA	Office, Office Hours
B00-LE	**TuTh, 9:30 - 10:50am**	**Solis 107**	**Mark Machina**	**Wed 8:00-noon**
B01-DI	Mon, 3:00 - 3:50pm	Peterson 103	Kutyavina, Marina	Sequoyah Hall 238, M 4-6
B02-DI	Wed, 8:00 - 8:50am	Center 222	Futch, Michael	Sequoyah 140, Tu 11-1
B03-DI	Fri, 4:00 - 4:50pm	Peterson 102	Giffin, Erin Globus-Harris, Isla	Economics Bldg 117, F 11-12 Economics Bldg 113, F 3-4
B04-DI	Thu, 7:00 - 7:50pm	WLH 2111	Wong, Boris Farmer, Leland	Sequoyah Hall 232, T 3:30-4:30 Economics Bldg 128, Th 3:30-4:30
Final Exam	*Thursday* 12/8, 8-11am	TBA		

Students must take the Final Exam on the date/time for the section in which they are enrolled.

ECON 100A COURSE OUTLINE – Fall 2011

I. INTRODUCTION

- **a. Domain of Microeconomic Analysis**
- **b. Circular Flow Diagram**
- **c. Stocks vs. Flows and the Dimensions of Economic Variables**

II. MATHEMATICAL REVIEW #1

- **a. Calculus Review (Math Handout, Section A)**
  - Derivatives, Partial Derivatives and the Chain Rule
  - Approximation Formulas for Small Changes in Functions (Total Differentials)
- **b. Elasticity (Math Handout, Section B)**
  - Absolute, Proportionate and Percentage Changes in Variables
  - Definition of Elasticity
  - Constant Elasticity Functions
- **c. Level Curves of Functions (Math Handout, Section C)**
  - Definition and Graphical Illustration
  - Algebraic Formula for a Level Curve
  - Formula for the Slope of a Level Curve

III. CONSUMER PREFERENCES: UTILITY FUNCTIONS & INDIFFERENCE CURVES

- **a. Commodities, Commodity Bundles and Preferences**
  - Commodities are Typically *Flows*, not *Stocks*
  - Issue of Divisibility
  - The Relevant Time Period
- **b. Preference Relations and Utility Functions**
  - Preferences are defined over Commodity Bundles, *not* Individual Commodities
  - Weak Preference, Strict Preference and Indifference
  - Utility Functions and Total Utility Curves
    - Important Examples: Linear, Cobb-Douglas, Leontief
  - Marginal Utility and Marginal Utility Curves
    - Hypothesis of Diminishing Marginal Utility
  - Monotonic Transformations of Utility Functions
- **c. Indifference Curves and the Marginal Rate of Substitution**
  - Deriving a Consumer's Indifference Curves from Their Utility Function
  - General Properties of Indifference Curves:
    - One Through Every Commodity Bundle
    - Downward Sloping and Can't Cross
  - Marginal Rate of Substitution (MRS)
    - Graphical Interpretation: Slope of the Indifference Curve
    - Algebraic Formula: Ratio of Marginal Utilities
    - Hypothesis of Diminishing Marginal Rate of Substitution

IV. MATHEMATICAL REVIEW #2

- **a. Scale Properties of Functions (Math Handout, Section D)**
- **b. Solving Optimization Problems (Math Handout, Section E)**
  - General Structure of Optimization Problems
  - First and Second Order Conditions for Unconstrained Optimization Problems
  - First Order Conditions for Constrained Optimization Problems
- **c. Inequality Constraints and Corner Solutions**

V. UTILITY MAXIMIZATION AND DEMAND FUNCTIONS

a. Utility Maximization Subject to a Budget Constraint

- Graphical Illustration
- First Order Conditions for Utility Maximization
  - Two Interpretations of the First Order Conditions
- Second Order Conditions (Hypothesis of Diminishing MRS)
- Corner Solutions: Graphical Illustration and Algebraic Condition
- Indirect Utility Functions and their Properties

b. Regular ("Marshallian") Demand Curves and Demand Functions

- Plotting Regular Demand Curves
- Regular Demand Functions
- General Properties of Demand Functions:
  - Walras' Law
  - Scale Invariant in Prices and Income
  - Relationship between Price Elasticities & Income Elasticity for a Good
- Examples: Cobb-Douglas, Leontief, Linear
- Market Demand Functions

VI. COMPARATIVE STATICS OF DEMAND

a. Income Changes

- Income-Consumption Locus
- Engel Curves: Definition and Graphical Derivation
- Income Elasticity
  - Superior, Normal and Inferior Goods
  - Income Elasticity and Budget Shares
  - Relationship Between Income Elasticities of All Goods
- Algebraic Derivation of the Effect of an Income Change

b. Price Changes

- Price-Consumption Locus
- Graphical Derivation of Marshallian Demand Curves
- Own Price Elasticity
  - Price Elasticity and Expenditures
- Cross Price Elasticity
  - Gross Substitutes and Gross Complements
- Algebraic Derivation of the Effect of a Price Change

c. Compensated Price Changes and Compensated ("Hicksian") Demand Functions

- Graphical Illustration of a Compensated Price Change
- The Expenditure Minimization Problem
- Compensated Demand Functions and their Properties
- Expenditure Functions and their Properties
- Algebraic Derivation of the Effect of a Compensated Price Change

d. The Slutsky Equation

- Expressing Each of the Three Basic Changes in Terms of the Other Two
- Graphical Illustration
- Algebraic Formulation and Informal Proof
- Giffen Goods

e. Consumer Surplus and Welfare Analysis

- Consumer Surplus
- Equivalent and Compensating Variation

VII. SUPPLY OF LABOR: THE LABOR-LEISURE DECISION

Income-Leisure Space and the Labor-Leisure Decision
First Order Conditions for Optimal Supply of Labor
Comparative Statics: Income and Substitution Effects
Backward Bending Supply of Labor Curves
Kinked Budget Lines and the Overtime Decision

VIII. SUPPLY OF CAPITAL: THE CONSUMPTION-SAVINGS DECISION

Intertemporal Income and Consumption Streams
Interest Rates and Discounted Present Value of a Stream
Intertemporal Utility Maximization
    First Order Conditions and Interpretation
Comparative Statics: Income and Substitution Effects

IX. DECISION MAKING UNDER RISK AND UNCERTAINTY

a. Outcomes, Lotteries and Expected Value

Choice over Lotteries
Expected Value
The St. Petersburg Paradox

b. Expected Utility

Two-Stage Lotteries and the Independence Axiom
von Neumann-Morgenstern Utility Functions and Expected Utility

c. Risk Aversion

Properties of Risk Averse Preferences
Arrow-Pratt Measure of Risk Aversion
Risk Aversion and Wealth

d. Measures of Risk Aversion

e. Demand for Insurance

f. Investment in a Risky Asset

FAMOUS OPTIMIZATION PROBLEMS IN ECONOMICS

Optimization Problem	Objective Function	Constraint	Control Variables	Parameters	Solution Functions	Optimal Value Function
Consumer's Problem	$U(x_1,...,x_n)$ utility function	$p_1 \cdot x_1 + ... + p_n \cdot x_n = I$ budget constraint	$x_1,...,x_n$ commodity levels	$p_1,...,p_n, I$ prices and income	$x_i(p_1,...,p_n,I)$ regular demand functions	$V(p_1,...,p_n,I)$ indirect utility function
Expenditure Minimization Problem	$p_1 \cdot x_1 + ... + p_n \cdot x_n$ expenditure level	$U(x_1,...,x_n) = u$ desired utility level	$x_1,...,x_n$ commodity levels	$p_1,...,p_n, u$ prices and utility level	$h_i(p_1,...,p_n, u)$ compensated demand functions	$e(p_1,...,p_n, u)$ expenditure function
Labor/Leisure Decision	$U(H,I)$ utility function	$I = I_0 + w \cdot (168 - H)$ budget constraint	H, I leisure time, disposable inc.	w, I_0 wage rate and nonwage income	$168 - H(w, I_0)$ labor supply function	$V(w, I_0)$ indirect utility function
Consumption/ Savings Decision	$U(c_1,c_2)$ utility function	$c_2 = I_2 + (1+i) \cdot (I_1 - c_1)$ budget constraint	c_1, c_2 consumption levels	I_1, I_2, i income stream and interest rate	$c_1(I_1, I_2, i)$, $c_2(I_1, I_2, i)$ consumption functions	$V(I_1, I_2, i)$ indirect utility function
Long Run Cost Minimization	$w \cdot L + r \cdot K$ total cost	$F(L,K) = Q$ desired output	L, K factor levels	Q, w, r desired output and factor prices	$L(Q,w,r)$, $K(Q,w,r)$ output-constrained factor demand functions	$LTC(Q,w,r)$ long run total cost function
Long Run Profit Maximization (in terms of Q)	$P \cdot Q - LTC(Q,w,r)$ total profit	none	Q output level	P, w, r output price and factor prices	$Q(P,w,r)$ long run supply function	$\pi(P,w,r)$ long run profit function
Long Run Profit Maximization (in terms of L and K)	$P \cdot F(L,K) - w \cdot L - r \cdot K$ total profit	none	L, K factor levels	P, w, r output price and factor prices	$L(P,w,r)$, $K(P,w,r)$ factor demand functions	$\pi(P,w,r)$ long run profit function