ECONOMICS 100B: MICROECONOMICS

Winter 2011	**Tuesday, Thursday 9:30-10:50am**	**Solis 104**
Professor Mark Machina	**Office: 217 Econ Bldg.**	**Office Hours: Wed 8-noon**
TA: Tim Keller	140 Sequoyah Hall	Th 2:00-4:00pm
Section 1	Thursday 7:00-7:50pm	WLH 2005
Section 2	Thursday 8:00-8:50pm	WLH 2005

DATE	TOPIC	CHAPTER IN TEXT
Jan. 4	Introduction & Mathematics of Comparative Statics	Math Handout Sects. F, G, H
Jan. 6	Theory of Production	Ch. 6
Jan. 11	Theory of Production (continued)	Ch. 6
Jan. 13	Theory of Production (continued)	Ch. 6
Jan. 18	Theory of Cost	Ch. 7
Jan. 20	Theory of Cost (continued)	Ch. 7
Jan. 25	**(Tuesday) 1st Midterm Exam**	
Jan. 27	Theory of Cost (continued)	Ch. 7
Feb. 1	Profit Maximization and Supply under Perfect Competition	Ch. 8
Feb. 3	Profit Maximization and Supply under Perfect Competition (continued)	Ch. 8
Feb. 8	Profit Maximization and Supply under Perfect Competition (continued)	Ch. 8
Feb. 10	Demand for Factors of Production	Ch. 15
Feb. 15	Demand for Factors of Production (continued)	Ch. 15
Feb. 17	Equilibrium, Dynamics & Comparative Statics of Perf. Comp. Markets	Ch. 2
Feb. 22	**(Tuesday) 2nd Midterm Exam**	
Feb. 24	Equilibrium, Dynamics & Comparative Statics of Perf. Comp. Markets (cont.)	Ch. 9
Mar. 1	Efficiency of a Perfectly Competitive Market	Ch. 10
Mar. 3	General Equilibrium	Ch. 10
Mar. 8	Efficiency of Perfectly Competitive Market System	Ch. 10
Mar. 10	Conclusion & Overview	
Mar. 15	**(Tuesday) FINAL EXAM 8:00-11:00am (location TBA)**	

TEXT & READINGS: *Microeconomics: Theory and Applications with Calculus* by Jeffrey Perloff (Custom UCSD Edition). 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:

http://econ.ucsd.edu/~mmachina/courses/ECON_100B/ECON_100B.html

ECON 100B COURSE OUTLINE

I. MATHEMATICS OF COMPARATIVE STATICS

a. Comparative Statics of Equilibria (Math Handout, Section F)

b. Comparative Statics of Solution Functions (Math Handout, Section G)

c. Comparative Statics of Optimal Value Functions (Math Handout, Section H)

II. THEORY OF PRODUCTION

a. Production Functions

Types of Factors and Their Income
Examples: Linear, Leontief, Cobb-Douglas
Total Product Curves

b. Marginal Products and the Law of (Eventually) Diminishing Marginal Product

Definition of Marginal Product and Algebraic Examples
Marginal Poduct Curves (Linear, Leontief, Cobb-Douglas)
Hypothesis of Diminishing Marginal Product of a Factor

c. Average Products and the Average-Marginal Relationship

Definition of Average Product
Average Product Curves (Linear, Leontief, Cobb-Douglas)
Average-Marginal Relationship ("Grade Point Average Theorem")

d. Isoquants and Marginal Rate of Technical Transformation (MRTS)

Definition and General Properties of Isoquants
  Examples: Linear, Leontief, Cobb-Douglas
Definition of MRTS
  Expressing MRTS in Terms of Marginal Products
  Examples: Linear, Leontief, Cobb-Douglas
Hypothesis of Diminishing MRTS

e. Returns to Scale

f. Technical Progress

III. THEORY OF COST:

a. The Nature of Cost

Accounting vs. Opportunity Cost of Owned Factors
Cost of Entrepreneurial Ability and Definition of "Economic Profits"
Short Run vs. Long Run Planning

b. Short Run Cost Functions

Expansion Path in Short Run
Graphical Derivation of Short Run Total Cost Curve
Algebraic Derivation of Short Run Total Cost Function (Linear, Leontief, Cobb-Douglas)
Short Run Variable, Short Run Fixed and Short Run Marginal Cost Functions
Short Run Average Variable, Short Run Average Fixed and Short Run Average Total Cost Functions
Relation of Short Run Marginal Cost to Marginal Product of Input and Input Price

c. Long Run Cost Minimization

Isocost Lines
Graphical Illustration of Long Run Cost Minimization
First Order Conditions for Long Run Cost Minimization
Second Order Conditions (Hypothesis of Dimishing MRTS)
Output Constrained Factor Demands

d. Long Run Cost Functions

Expansion Path in Long Run
Algebraic Derivation of Long Run Total Cost Function (Linear, Leontief, Cobb-Douglas)
Long Run Average Cost and Long Run Marginal Cost Functions
Relation of Long Run Marginal Cost to Marginal Product of Inputs and Input Prices

e. Relationship between Long Run and Short Run Cost Curves

Long Run and Short Run Total Cost Curves
Long Run and Short Run Average Cost Curves
Long Run and Short Run Marginal Cost Curves

IV. PROFIT MAXIMIZATION AND SUPPLY UNDER PERFECT COMPETITION

a. Short Run Profit Maximization and Supply under Perfect Competition

Short Run Profit Maximization and the Shut-Down Decision
Short Run Supply Curve of the Firm
Short Run Supply Function of the Firm (Examples: Cobb Douglas, Cubic)
Properties of Short Run Supply Functions
Short Run Market Supply

b. Long Run Profit Maximization and Supply under Perfect Competition

Graphical Illustration and Algebraic Formulation of Long Run Profit Maximization
Properties of Long Run Profit Functions
Graphical Illustration and Algebraic Formulation of Long Run Supply Curve
Examples: Cobb Douglas, Cubic
Properties of Long Run Supply Functions
Long Run Market Supply

c. Transactions Costs and Internal Production

V. DEMAND FOR FACTORS OF PRODUCTION

a. Maximizing Profits by Choosing Optimal Input Levels

b. Short Run Factor Demand

c. Long Run Factor Demand

d. Incentive Aspects of Alternative Compensation Schemes.

VI. EQUILIBRIUM, DYNAMICS AND COMPARATIVE STATICS OF PERFECTLY COMPETITIVE MARKETS

a. Assumptions of Perfect Competition and "Law of One Price"

b. Equilibrium in Perfectly Competitive Markets

c. Dynamics of Market Adjustment

d. Comparative Statics of Perfectly Competitive Markets

VII. GENERAL EQUILIBRIUM

VIII. EFFICIENCY OF A PERFECTLY COMPETITIVE MARKET SYSTEM

a. Pareto Efficiency

b. Edgeworth Boxes

c. Efficiency of Perfectly Competitive Equilibrium

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	$U(x_1,...,x_n) = \bar{u}$ desired utility level	$x_1,...,x_n$ commodity levels	$p_1,...,p_n, \bar{u}$ prices and utility level	$h_i(p_1,...,p_n, \bar{u})$ compensated demand functions	$e(p_1,...,p_n, \bar{u})$ 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