ECONOMICS 100B: MICROECONOMICS

Winter 2012 **Tuesday, Thursday 12:30-1:50pm** **Ledden Auditorium**

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

TA's:	Travis Brayak	232 Sequoyah Hall	Thu 9:30-11:30
	David Stowitts	224 Sequoyah Hall	Tue 10:30-12:30

Section 1	Wednesday 7:00-7:50pm	WLH 2005
Section 2	Wednesday 8:00-8:50pm	WLH 2005

DATE	TOPIC	READING
Jan. 10	Introduction & Mathematics of Comparative Statics	Math Handout Sects. F,G,H
Jan. 12	Mathematics of Comparative Statics (cont.)	
Jan. 17	Theory of Production	Nechyba Sects. 11A1,B1, 12A2,B1
Jan. 19	Theory of Production (cont.)	
Jan. 24	Theory of Production (cont.)	
Jan. 26	Theory of Cost	11A5,B5, 12A3,B3
Jan. 31	**(Tuesday) 1st Midterm Exam**	
Feb. 2	Theory of Cost (cont.)	
Feb. 7	Theory of Cost (cont.)	
Feb. 9	Profit Max. & Supply under Perf. Comp.	11A2,3,4, B2,3,4, 12B3,4, 13A1,2, B1,2
Feb. 14	Profit Maximization & Supply under Perfect Competition (cont.)	
Feb. 16	Profit Maximization & Supply under Perfect Competition (cont.)	
Feb. 21	Demand for Factors of Production	
Feb. 23	**(Thursday) 2nd Midterm Exam**	
Feb. 28	Demand for Factors of Production (cont.)	11A4, 13A3,B3, 14A1.2, A2.3
Mar. 1	Equilibrium, Dynamics & Comparative Statics of Perfectly Competitive Markets	15
Mar. 6	Equilibrium, Dynamics & Comparative Statics of Perf. Comp. Markets (cont.)	
Mar. 8	Efficiency of Perfectly Competitive Markets	16
Mar. 13	General Equilibrium	16
Mar. 15	Conclusion & Overview	
Mar. 20	**(Tuesday) FINAL EXAM 11:30am-2:30pm (location TBA)**	

TEXT & READINGS: *Microeconomics: An Intuitive Approach with Calculus*, Thomas Nechyba, South-Western, Engage 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. Although we will go over these questions in office hours, sections and review sessions, the best way to prepare for the exam is to form study groups and practice doing them together.

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 a Market Equilibrium (Math Handout, Section F)

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

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

II. THEORY OF PRODUCTION (NECHYBA CHS. 11 (A1, B1), 12 (A2, B1))

a. Production Functions
- Types of Factors
- Example Technologies: Linear, Leontief, Cobb-Douglas
- Total Product Curves

b. Marginal Products and the Law of (Eventually) Diminishing Marginal Product
- Definition of Marginal Product and Examples
- Marginal Product Curves
- Hypothesis of Diminishing Marginal Product

c. Average Products and the Average-Marginal Relationship
- Definition of Average Product and Examples
- Average Product Curves
- Average-Marginal Relationship ("Grade Point Average Theorem")

d. Isoquants and Marginal Rate of Technical Substitution (MRTS)
- Definition and General Properties of Isoquants
- Definition of MRTS
- Expressing MRTS in Terms of Marginal Products
- Hypothesis of Diminishing MRTS

e. Returns to Scale

III. THEORY OF COST (CHS. 11 (A5, B5), 12 (A3, B3))

a. The Nature of Cost
- Accounting Cost vs. Opportunity Cost of Owned Factors
- Cost of Entrepreneurial Ability and the Definition of "Economic Profits"
- Short Run vs. Long Run Planning
- Relationship between Price of Capital, Rental Rate of Capital, and Interest Rate

b. Long Run Cost Minimization
- Isocost Lines
- Graphical Illustration of Long Run Cost Minimization
- Algebraic Formulation of Long Run Cost Minimization (First & Second Order Conditions)

c. Long Run Cost Functions
- Long Run Expansion Path
- Long Run Total Cost Function (Examples: Linear, Leontief, Cobb-Douglas)
- Long Run Average Cost and Long Run Marginal Cost Functions
- Average-Marginal Relationship between Long Run Average and Long Run Marginal Cost
- Relation of Long Run Marginal Cost to Marginal Products of Inputs and Input Prices

d. Short Run Cost Functions
- Graphical Derivation of Short Run Total Cost Curve
- Short Run Total Cost Function (Cobb-Douglas Example)
- Short Run Variable, Short Run Fixed, and Short Run Marginal Cost (Curves & Functions)
- Short Run Average Total, Average Variable, and Average Fixed Cost (Curves & Functions)

e. Relationship between Long Run Run and Short Run Costs

IV. PROFIT MAXIMIZATION AND SUPPLY UNDER PERFECT COMPETITION (CHS. 11 (A2,3,4, B2,3,4) 12 (B3,4) 13 (A1,2, B1,2))

a. Long Run Profit Maximization and Supply under Perfect Competition
- Long Run Profit Maximization and the Long Run Shut-Down Decision
- Long Run Supply Functions and Long Run Supply Curves
- The Long Run Profit Function
- Long Run Market Supply

b. Short Run Profit Maximization and Supply under Perfect Competition
- Short Run Profit Maximization and the Short Run Shut-Down Decision
- Short Run Supply Functions and Short Run Supply Curves
- The Short Run Profit Function
- Short Run Market Supply

V. DEMAND FOR FACTORS OF PRODUCTION (CHS. 11 (A4), 13 (A.3, B.3), 14 (A1.2, A2.3))

a. Short Run Factor Demand
- Short Run Demand for Labor Curve and Short Run Demand for Labor Function
- Relation of Short Run Labor Demand to Short Run Supply Function

b. Long Run Factor Demand
- Long Run Labor and Capital Demand Functions
- Relation to Long Run Supply, Short Run Supply and Long Run Profit Function

c. Factor Shares and the Distribution of Income
- Product Exhaustion Theorem

VI. EQUILIBRIUM, DYNAMICS AND COMPARATIVE STATICS OF PERFECTLY COMPETITIVE MARKETS (CH. 15)

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

b. Equilibrium in Perfectly Competitive Markets
- Very Short Run Equilibrium
- Short Run Equilibrium
- Long Run Equilibrium and the Zero Profit Condition

c. Comparative Statics of Perfectly Competitive Markets
- Comparative Statics of Equilibrium Prices and Quantities
- Role of Supply and Demand Elasticites in Price and Quantity Changes
- Taxes and Subsidies in a Perfectly Competitive Market

d. Dynamics of Market Adjustment
- Convergence to Equilibrium from Excess Demand or Supply
- Very Short Run, Short Run, and Long Run Response to Demand Shocks

VII. EFFICIENCY OF PERFECTLY COMPETITIVE MARKETS (CH. 16)

a. Pareto Efficiency
- Definition of Pareto Efficiency
- Necessary and Sufficient Conditions for Pareto Efficiency

b. Edgeworth Boxes

c. Efficiency of a Perfectly Competitive Market

VIII. GENERAL EQUILIBRIUM (CH. 16)

a. Existence of Perfectly Competitive Equilibrium

b. 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