# ECONOMICS 100A: MICROECONOMICS

**Fall 2003** | **Tu, Th 12:30-1:50pm** | **HSS 2250**
**W 7:00-8:20pm** | **Center Hall 119**

Prof: Mark Machina | Office: Economics Bldg. 217 | Hours: Wed, 10am-2pm

TA's: Phil Babcock | Economics Bldg. 120 | Fri, 9-11am
Maria Damon | Economics Bldg. 125 | Mon, 2-4pm

| DATE | TOPIC | TEXTBOOK / MATH HANDOUT |
|---|---|---|
| Sep. 25 | Introduction & Mathematical Review #1 | Chs. 1,2 / Sect. A |
| Sep. 30 | Mathematical Review #1 (continued) | B,C |
| Oct. 1 | Consumer Preferences: Utility Functions and Indifference Curves I | 3 |
| Oct. 2 | Consumer Preferences: Utility Functions and Indifference Curves II | 3 |
| Oct. 7 | Mathematical Review #2 | D |
| Oct. 8 | Mathematical Review #2 (continued) | E |
| Oct. 9 | Utility Maximization and Demand Functions I | 4 |
| Oct. 14 | Utility Maximization and Demand Functions II | 4 |
| Oct. 15 | Comparative Statics of Demand I | 5 |
| Oct. 16 | Comparative Statics of Demand II | 6 |
| **Oct. 21** | **(Tuesday) 1st Midterm Exam Mandeville Auditorium 12:30-1:50pm** | |
| Oct. 22 | Comparative Statics of Demand III | 7 |
| Oct. 23 | Supply of Factors of Production I | 22 |
| Oct. 28 | Supply of Factors of Production II | 23 |
| Oct. 29 | Theory of Production I | 11 |
| Oct. 30 | Theory of Production II | 11 |
| Nov. 4 | Theory of Cost I | 12 |
| Nov. 5 | Theory of Cost II | 12 |
| Nov. 6 | Theory of Cost III | 12 |
| Nov.12 | Mathematical Review #3 | F |
| Nov.13 | Profit Maximization and Supply Under Perfect Competition I | 13 |
| Nov.18 | Profit Maximization and Supply Under Perfect Competition II | 13 |
| Nov.19 | Profit Maximization and Supply Under Perfect Competition III | 13 |
| **Nov.20** | **(Thursday) 2nd Midterm Exam Mandeville Auditorium 12:30-1:50pm** | |
| Nov.25 | Equilibrium and Dynamics of Perfectly Competitive Markets I | 14 |
| Nov.26 | Equilibrium and Dynamics of Perfectly Competitive Markets II | 14 |
| Dec. 2 | Equilibrium and Dynamics of Perfectly Competitive Markets III | 15 |
| Dec. 3 | Demand for Factors of Production I | 21 |
| Dec. 4 | Demand for Factors of Production II | 21 |
| **Dec. 11** | **(Thursday) FINAL EXAM 11:30am-2:30pm (location to be announced)** | |

**TEXT & READINGS**: *Microeconomic Theory: Basic Principles & Extensions,* 8th ed., Walter Nicholson, Southwestern Thomson Learning, 2003. You are responsible for all the material in the assigned chapters. There is also a Soft Reserve package, with a Mathematical Handout that contains required material for the course.

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

**PRACTICE PROBLEMS**: A large set of old exam problems is included in the Soft Reserve package. You are urged to practice on them, in preparation for the actual exams.

Web Page (including e-mail links): http://weber.ucsd.edu/~mmachina/courses/100A/100A.html

# ECON 100A FAMOUS OPTIMIZATION PROBLEMS

| 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 (J.'s 'allowance') | $U(x_1,...,x_n) = u_0$ desired utility level | $x_1,...,x_n$ commodity levels | $p_1,...,p_n, u_0$ prices and utility level | $h_i(p_1,...,p_n, \overline{u})$ compensated demand functions | $e(p_1,...,p_n, u_0)$ 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 |