

# ECONOMICS 100B: MICROECONOMICS

Summer I 2018  
MW 11:00-1:50, PCYNH 122

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Office Hours: M, T 2-3 in Econ 111

TA	Session place/time	Office, Office Hours
Yifei Lyu <a href="mailto:yly@ucsd.edu">yly@ucsd.edu</a>	PCYNH 122; Th 10:00-11:50	ECON123; W 3:00-5:00

*Course Objectives:* Econ 100B analyzes the theory of the firm and markets when there is price taking behavior. Topics include the theory of production, commodity supply and input demand in competitive markets, and competitive market equilibrium.

### *Required Texts:*

- (1) Varian, H. R. 2014. *Intermediate Microeconomics with Calculus*. W. W. Norton & Company, Inc.
- (2) Mark Machina's Econ 100ABC Math Handout.

*Web Resources:* You are encouraged to take advantage of the following supplemental material for the 100ABC sequence, available free over the Internet.

- (1) Martin Osborne's intermediate mathematics tutorial:  
<http://www.economics.utoronto.ca/osborne/MathTutorial/index.html>
- (2) Preston McAfee's Introductory textbook (this material is at a level between most microeconomics principles textbooks and Perloff's more advanced treatment.) <http://www.introecon.com/>

*Weekly Homework:* Each week, I will post practice problems on TritonEd. They will not be graded. The best way to prepare for the exams is to form study groups and practice doing the problem sets together. I will post the answers after the problems are reviewed in TA sessions.

*Exams:* Grading will be based on two midterms (25% each) and a final examination (50%). The final exam will be cumulative. You must take both midterms. All exams are closed book, and you may not use notes, calculators and cell phones during the exams.

*Regrade Requests:* I will give back the midterm exams in class. You can ask for a regrade before you leave the room with your exam. Your whole exam will be regarded, and your score can go up or down. If you don't think you have enough time to look at your exam after the class, you can pick up your exam from my office during my office hours.

*Supplemental Instruction (SI)* is a peer-led study group program that targets difficult classes.

High achieving students who have previously taken the course or have strong content knowledge related to the course run the study sessions outside the classroom. The SI Leader facilitates the session in a way to help you work with the content and collaborate with peers who are taking the course as well.

**SI works** — data indicates that students who take advantage of SI earn better grades. In fact, 95% of the students who attended four or more SI sessions earned a higher grade in their courses and overall GPA (per data on SI support for Calculus and pre-Calculus at UC San Diego).

### **Supplemental Instruction Overview**

- Involves weekly study sessions (3 per week) run by highly trained SI student leaders
- Targets high-risk courses
- Includes your instructor in the process
- SI Leader is in class each day with you

Supplemental Instruction is a key way to support your learning in this course. The peer-to peer interactions provides you with a session to explain, explore and elaborate what you know. Simultaneously, it allows you to clarify what you might struggle to understand.

SI schedule:

Monday 2pm            Center 316  
Wednesday 2pm      Center 316  
Thursday 12pm        TLC 1504

*Schedule:*

Week	Topic	Textbook Chapter	Video
1	Theory of Production	Ch. 19	D1
	<b>Midterm 1, July 16</b>		
2	Theory of Cost	Ch. 22	D2
3	Profit Maximization and Supply Under Perfect Competition	Ch. 23	D3
	<b>Midterm 2, July 25</b>		
4	Demand for Factors of Production; Equilibrium, Dynamics & Comparative Statics of Perfectly Competitive Markets	Ch. 16	E1
5	General Equilibrium	Ch. 32	E2
	<b>Final, August 3, 11:30-1:30</b>		

# FAMOUS OPTIMIZATION PROBLEMS IN ECONOMICS

Optimization Problem	Objective Function	Constraint	Control Variables	Parameters	Solution Functions	Optimal Value Function
<b>Consumer's Problem</b>	$U(x_1, \dots, x_n)$ utility function	$p_1 \cdot x_1 + \dots + p_n \cdot x_n = I$ budget constraint	$x_1, \dots, x_n$ commodity levels	$p_1, \dots, p_n, I$ prices and income	$x_i(p_1, \dots, p_n, I)$ regular demand functions	$V(p_1, \dots, p_n, I)$ indirect utility function
<b>Expenditure Minimization Problem</b>	$p_1 \cdot x_1 + \dots + p_n \cdot x_n$ expenditure level	$U(x_1, \dots, x_n) = u$ desired utility level	$x_1, \dots, x_n$ commodity levels	$p_1, \dots, p_n, u$ prices and utility level	$h_i(p_1, \dots, p_n, u)$ compensated demand functions	$e(p_1, \dots, p_n, u)$ expenditure function
<b>Labor/Leisure Decision</b>	$U(H, I)$ 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
<b>Consumption/Savings Decision</b>	$U(c_1, c_2)$ 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
<b>Long Run Cost Minimization</b>	$w \cdot L + r \cdot K$ 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
<b>Long Run Profit Maximization</b> (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
<b>Long Run Profit Maximization</b> (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