

Intermediate Microeconomics

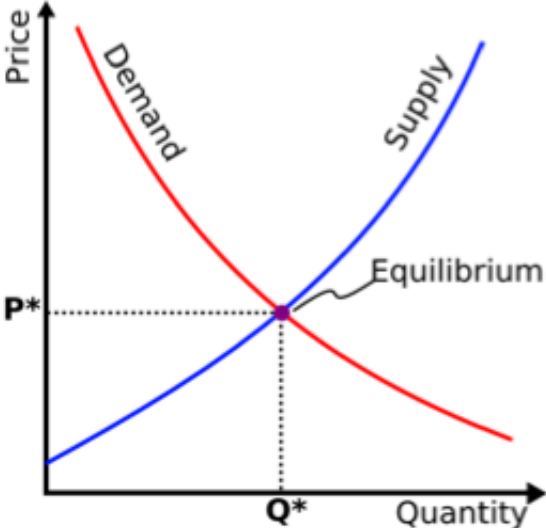
Lecture 1: General Course Overview

January 13th, 2016

What is Microeconomics?

- ▶ Microeconomics is the branch of economics that studies the specific choices made by consumers and producers
- ▶ Microeconomics at the intermediate level is not much different from either principles of microeconomics or advanced microeconomics
- ▶ Intermediate microeconomics differs from principles in that it employs a higher level of graphical and mathematical rigor

Modeling Supply and Demand



Course Sections

1. Consumer Theory

- ▶ Consumer Preferences and Utility
- ▶ Indifference Curves
- ▶ Utility Maximization
- ▶ Approximation of Market Demand

Course Sections

2. Producer Theory

- ▶ Production in short-run and long-run
- ▶ Costs and cost curves
- ▶ Cost Minimization
- ▶ Approximation of Market Supply

Course Sections

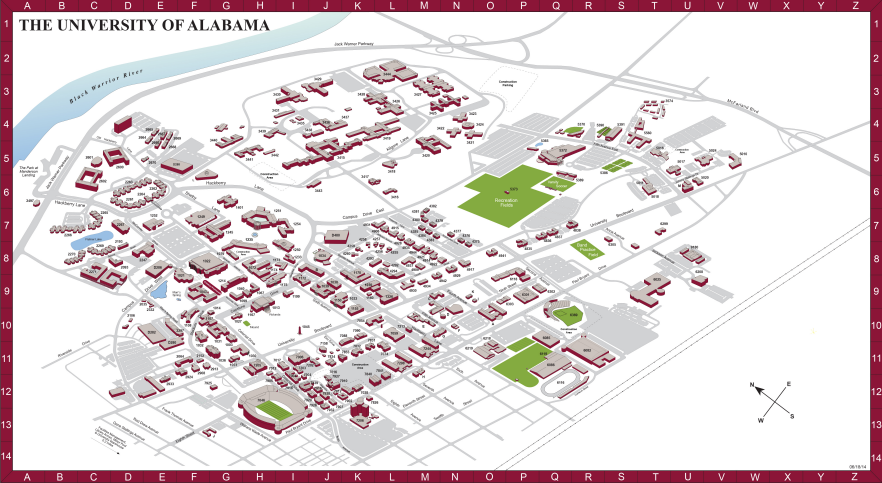
3. Game Theory

- ▶ Interaction of Supply and Demand
- ▶ Market Structure
- ▶ Market Power and Profit Maximization
- ▶ Traditional Game Theory

Economic modeling is like art



A model is like a map



The Consumer's Utility Maximization Problem

Maximize Utility (happiness) subject to some Budget Constraint

$$\text{Maximize}_{\{x,y\}} U(x,y)$$

$$\text{subject to } m = P_x * x + P_y * y$$

where x and y represent two consumption goods, m represents a consumer's income, and P_x and P_y represent the prices of goods x and y , respectively

The Producer's Cost Minimization Problem

Minimize Costs subject to some fixed level of Production

$$\text{Minimize}_{\{K,L\}} \text{Costs} = r * K + w * L$$

$$\text{subject to } \bar{Q} = f(K, L)$$

where K and L represent capital and labor employed by the firm, r and w represent the price of production inputs, \bar{Q} represents some fixed level of production, and $f(K,L)$ represents the firm's production function

Brief Math Review

Concepts

1. Functions
2. Graphs
3. Derivatives

Brief Math Review

A **function** is a relationship between inputs and outputs

$y = f(x)$ “y is a function of x”

y is the dependent variable (output), while x is the independent variable (input)

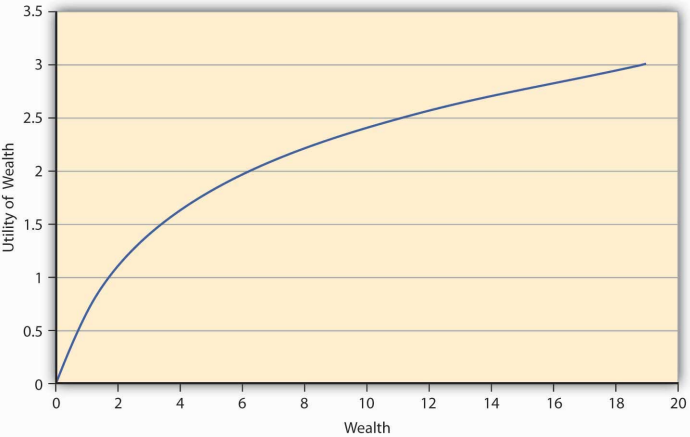
For example: $Q_d = 1000 - 200P$

$$Q_s = 200P - 200$$

Brief Math Review

Graphs

Functions are often visualized using graphs



Brief Math Review

Derivatives

Linear: $f(x) = 5x \implies f'(x) = 5$

Power: $f(x) = x^3 \implies f'(x) = 3x^2$

Cobb-Douglas: $Q = K^\alpha L^\beta$

$$\frac{dQ}{dK} = \alpha K^{\alpha-1} L^\beta$$

$$\frac{dQ}{dL} = \beta K^\alpha L^{\beta-1}$$

Next Class

Chapter 4: Consumer Behavior