Economics 681
Microeconomic Theory
Reading list and Course Outline

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Required Texts (available at the Book Store)


An Intermediate Level Text Suggested for Review and Background (available at the Book Store)


The Bulk Pack (available at Wharton Duplicating which is located in the basement of Steinberg Hall-Dietrich Hall)

The bulk pack contains the math notes and articles which are listed below as required reading and marked by a ♦. The bulk pack also contains lecture notes, problem sets and answers and old exams.

Lecture Notes (In the bulk pack and also to be distributed in class from time to time)
Students registered in the class will be billed for notes distributed in class by the University.

**Other Intermediate Level Texts that Can Also Be Used for Review and Background Reading**


**Other Useful Texts**


**Three Classics:**


**Problem Sets**

Problem sets and answer sheets are in the bulk pack. In addition there may be some additional problem sets handed out from time to time. These will neither be handed in nor graded. The questions you will be asked to answer in these problem sets will be very similar to the kinds of questions you will be asked on the exams.

**Required Reading**

Readings marked with a ◇ are required (meaning that when I write the exam questions I will assume that you have read these). The math notes, journal articles and segments of nonrequired books marked with a ◇ are available in the course ”Bulk Pack.”

**Exams**

There will be one mid-term and a final. There will be a review for the midterm on Wednesday October 24 and the midterm will be scheduled for a time outside of class on Thursday or Friday following that day. A review for the final will be scheduled. The final will be held during the scheduled final time. The final will be cumulative but will emphasize heavily the last part of the course. The midterm will be worth 100 points and the final will be worth 150 points.

1. **INTRODUCTION AND BRIEF REVIEW (9/3)**

   - Comparative statics methodology and its relationship to the theories of the firm and consumer
     - Intermediate consumer theory as an example of how comparative statics methodology is applied
       * the logical structure of the analysis
the kinds of mathematics required

- **Fisher’s ”consumption-savings model”** as another illustration of comparative statics methodology

**Readings:**

Pindyck and Rubinfeld, Chapters 3 and 4.

2. **THE THEORY OF THE FIRM**

- **The Output Decision of a Competitive Firm** (9/8 and 9/10)
  - A comparative static problem with one choice variable
    * Using **first and second order conditions, concavity and the implicit function theorem**
    * **Corner solutions** in which the firm chooses not to produce
  - The firm’s **profit function**: maximum profits as a function of output price
    * A first encounter with the **envelope theorem**
    * **Convexity**
  - **The multiplant firm**
    * A problem with two decision variables
    * **Decentralization**

**Readings**

◇ Math Notes 1 and Notes on the Implicit Function Theorem
◇ Varian, Chapter 27, Section 27.1.
◇ Mas-Colell, et. al., Appendices M.C, M.E, M.J and M.L.
Pindyck and Rubinfeld, Chapter 8

- **The Output Decision of a Monopolist** (9/15)
  - Monopoly and competition compared
  - **Regulation** and monopoly
– Discriminating monopoly

* An example of comparative statics with two decision variables
* Using first and second order conditions, concavity and the implicit function theorem
* Corner solutions in which the firm chooses not to supply one market

– Two-part tariffs

Readings

◊ Math Notes II and Notes on the Implicit Function Theorem
◊ Varian, Chapters 14 and 27, Section 27.2.
◊ Mas-Colell, et. al., Appendices M.C, M.E, M.J and M.L. Pindyck and Rubinfeld, Chapters 10 and 11.

• Oligopoly (9/17 and 9/22)
  – Cournot oligopoly
  – Oligopoly and competition compared
  – Stackelberg equilibrium
  – Collusion
    * The prisoner’s dilemma
    * A first encounter with an externality
  – Mergers

Readings

◊ Varian, Chapter 16, Sections 16.1 and 16.3.
◊ Pindyck and Rubinfeld, Chapter 12, Sections 12.2, 12.3, 12.5 and 12.7.

• Production Technologies and Production Functions (9/24 and 9/29)
  – Production sets and their properties
Production functions

* Examples
* Returns to Scale and concavity
* Diminishing MRTS and strict quasi-concavity
* Leontief technologies and their relationship to constant returns to scale production functions
* The elasticity of substitution and CES productions functions

Readings

◊ Mas-Colell, et. al., Chapter 5, Sections 5.A and 5.B. Also Appendix M.M.
◊ Varian, Chapter 1

Mas-Colell, et. al., Chapter 5, Appendix A.

• The Firm’s Cost Function (10/1 and 10/6)
  – The firm’s cost minimization problem as a constrained minimization problem
    * using first and second order conditions and quasi-concavity
    * corner solutions in which some inputs are not used

  – Properties of cost functions
    * Shepard’s lemma and the envelope theorem
    * Concavity in input prices
* Interpreting the Lagrange multiplier as marginal cost
* Marginal cost and returns to scale
* The effect of an increase in input price on the demand for inputs: a comparative static exercise
* Long run and short run cost functions and the envelope theorem

Readings

◇ Varian, Chapters 4, 5, 6 and 27 Sections 27.3, 27.4, 27.5 and 27.6.
◇ Mas-Colell, et. al., Chapter 5, Section 5.D and Appendices M.C, M.E, M.K and M.L.
◇ Notes on the Constrained Maximization and Notes on the Implicit Function Theorem

Fall Break (10/13)

• The Profit Maximizing Competitive Firm’s Supply and Input Demand (10/8, 10/15 and 10/17)
  – Profit maximization and cost minimization
  – The first and second order conditions, concavity, quasi-concavity and returns to scale
  – The firm’s profit function: maximum profits as a function of input and output prices
    * Convexity
    * Shepard’s lemma and the envelope theorem
    * A proof that input demand functions slope down: comparative statics again
  – Producer’s surplus
    – Properties of competitive supply and input demand required in General Equilibrium Theory
    – A ”revealed preference” proof that input demand functions slope down
Readings

◊ Varian, Chapters 2 and 3.
◊ Notes on Constrained Maximization and Notes on the Implicit Function Theorem

Mid-Term Review (10/22)
Mid-Term Exam (10/23 or 10/24)

• Empirical Studies of Production and Cost

References

Varian, Chapter 12.
See especially:
3. CONSUMER THEORY AND THE THEORY OF DEMAND  
(10/27, 10/29 and 11/3)

• Preference orderings
• The general model based on utility maximization
• The utility maximization problem as a constrained maximization problem
  – Deriving Marshallian demand functions
  – The indirect utility function: maximum utility as a function of prices and income
  – Interpreting the Lagrange multiplier as the marginal utility of income
• The expenditure function
  * Duality
  * The analogy with the cost function
  * Roy’s identity and the envelope theorem
  * Concavity in prices
• Income compensated (Hicksian) demand and income and substitution effects
  * The Slutsky equation
  * Properties of Hicksian demand
• Consumer’s Surplus and Compensating Variation
  – Income and substitution effects and the elasticity of substitution

• Revealed preference
• Properties of consumer demand required in General Equilibrium Theory

• Aggregation: anything can happen

Readings

◊ Varian, Chapters 7, 8, 9 and 10.
◊ Notes on the Constrained Maximization and Notes on the Implicit Function Theorem
\*Mas-Colell, et. al., Chapters 1, 2, 3, 4 and Appendices M.C, M.E, M.K and M.L.


Samuelson, Chapter 7, 189-202.


- Special Functional Forms and Empirical Work in Consumer Theory

**References**

Varian, Chapter 12.


4. APPLICATIONS, EXTENSIONS AND REINTERPRETATIONS OF CONSUMER THEORY (11/5)

- The multiperiod Fisher model and **dynamic programming**
  - The roles of the envelope theorem and the indirect utility function
  - The **Bellman equation**
- The **labor-leisure choice model**
- **Becker’s time allocation model**
- **Household production**

**Readings**

- Mas-Colell, et. al., Appendix M.N.

5. **DECISION MAKING IN THE FACE OF UNCERTAINTY**  
(11/10 and 11/12)

- Maximizing **expected utility** of von Neumann-Morgenstern utility
- Choosing a **portfolio of assets**
- **Risk aversion**
- **Measures of risk aversion**

**Readings**

◇ Varian, Chapter 11.
◇ Mas-Colell, et. al., Chapter 6, Sections 6.A, 6.B, and 6.C.

6. **GENERAL COMPETITIVE EQUILIBRIUM AND THE WELFARE THEOREMS**  
(11/17, 11/19, 11/24, and 11/26)

- **Competitive (Walrasian) equilibrium** defined
  - An **Edgeworth box** example
  - One producer-one consumer case
  - The two period Fisher interpretation: determining the interest rate
  - 2-input, 2-output, 2-consumer case: graphical interpretation derived from the calculus equilibrium conditions

- **Pareto Optimality** of an allocation defined and the first welfare theorem illustrated
The Edgeworth box Example again
- One producer-one consumer case: the two period Fisher interpretation
- A constrained maximization problem solved by a Pareto Optimal allocation: The first and second order conditions
- 2-input, 2-output, 2-consumer case: graphical interpretation derived from the calculus first order conditions

- The first welfare theorem proved in general
- The second welfare theorem
- The existence of competitive equilibrium

Readings
◇Varian, Chapters 17, 18, 19 and 21 Sections 21.2 and 21.3.

7. GENERAL COMPETITIVE EQUILIBRIUM AND UNCERTAINTY (12/1, 12/3)

- Arrow-Debreu Contingent Claims
- The two state case and the Edgeworth Box
- Arrow’s demonstration that repeated trading can replicate contingent claims markets
- Hart’s model of repeated trading and the inefficiency of equilibrium

Readings
Mas-Colell, et. al., Chapter 19, Sections 19.G and 19.H.