

Collegio Carlo Alberto

Allievi Program

Microeconomics I

Fall 2007

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Lectures: TBA
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Course Objectives

This course is the equivalent of the first part of a year-long doctoral level sequence in microeconomic theory. It is designed for the dual purposes of giving students a systematic grounding in microeconomic theory and preparing them to use economic models in their research. We will cover consumption choice, production, choice under uncertainty, and general equilibrium analysis. The sequel of this course, which will cover game theory, the economics of incomplete and asymmetric information, welfare economics, and the theory of incentives, will be taught as Microeconomics II in Spring 2008.

Unlike traditional courses in economics theory, this course will motivate the theory by means of applications. There are extensive readings, which will be used in class to introduce the theoretical concepts and to illustrate how those concepts are used in practice. By the end of the course, students should have a solid knowledge of economic theory at the level required for dissertation research in economics, public policy, business analysis, public health and similar related fields.

Prerequisites

This course requires a certain amount of both mathematical and economic sophistication. Significant prior exposure to economic concepts and to mathematical reasoning is more important than any specific piece of prior knowledge.

As a guide, traditional mathematics sequences through multivariable calculus and some real analysis should suffice. There will be concepts, however, not covered in such sequences, which will be introduced and used in this course, without a lot of special attention to the mathematics itself. It will, therefore, be necessary for students to have enough mathematical ability that they can acquire the necessary knowledge "on the fly".

Required prior exposure to economics is at a similar level. A course such as those typically called "Intermediate Microeconomic Theory" would be a good background. Yet students whose economics is limited to an introductory course and only one intermediate microeconomics course will probably find both the material and the pace of this course rather daunting.

Requirements

Formal requirements for the course include regular attendance and participation in lectures, weekly problem sets, a midterm examination and a final examination.

The problem sets are mandatory and an essential part of the course. They will be graded (excellent, good, adequate, and not adequate). The grading is intended to give students a guide as to how well they are grasping the material on a "real time" basis.

In determining the grade for the course, however, the distinction between "excellent" and "good" problem sets will have no effect. A student who has a consistent record of good or excellent problem sets will get extra credit towards the course grade. This is due to the fact that the problems sets will be demanding and I want to encourage you to work in study groups when doing your problem sets, and otherwise, in order to discuss the material with other students outside of class hours. Needless to say, it is expected that the material you turn in will reflect your own work product.

The course grade will be determined by the final and midterm examinations and the problem sets; these will count for 50%, 30%, and 20% of the course grade, respectively. I will give extra credit for problem sets that are better than adequate as described above.

Textbooks

The main text for the course is Andreu Mas-Colell, Michael D. Whinston and Jerry R. Green, *Microeconomic Theory*, Oxford University Press, 1995.

Alternate textbooks that students might also find useful are:

- David Kreps, *A Course in Microeconomic Theory*, Princeton University Press, 1990, and
- Hal R. Varian, *Microeconomic Analysis* (Third Edition).

Additional readings will be available separately and handed out in class.

TOPICS

1. Consumer Choice

Preference and Choice

(MWG Ch. 1; Kreps Ch. 2.1; Varian Ch. 7 & 8)

- (i) Preference Relations and Utility Functions
 - Rationality
- (ii) Choice Rules and Budget Sets
 - Rational Preferences imply a Choice Structure
- (iii) Issues regarding the nature of choice
- (iv) Individual Demand and Revealed Preference
 - The Weak Axiom of Revealed Preference (WARP)
 - Rationalizing a Choice Rule
 - The relationship between Preferences and Choice

Revealed Preference and Price-Taking

(MWG Ch. 2; Kreps Ch. 2.2; Varian Ch. 9)

- (i) Walrasian Budget Sets
- (ii) Demand Correspondences, Cournot and Engel Aggregation, Normal and Inferior Goods, Giffen's Paradox
- (iii) The WARP for Walrasian Demand Functions
- (iv) The Compensated Law of Demand and the WARP

Axiomatic Treatment of Preferences

(MWG Ch. 3.A-3.C)

- (i) Assumptions regarding preferences
- (ii) Equivalence of Preferences and Ordinal Utility
- (iii) Existence of Utility Functions
- (iv) The relationship between rational preferences and utility functions

Lagrange Multipliers and Constrained Optimization

Demand Behavior

(MWG Ch. 3.D-3.J; Kreps Ch. 2.3-2.5)

- (i) Utility Maximization and Comparative Statics
- (ii) Support Functions
- (iii) Expenditure Minimization - The Expenditure Function
- (iv) Hicks/Slutsky Compensation
- (v) Duality
- (vi) Indirect Utility Function
- (vii) Identities

Summary of "Equivalence" of SARP-Preferences-Utility-Slutsky Matrix

(MWG Ch. 3.D-3.J; Kreps Ch. 2.3-2.5)

- (i) From the Expenditure Function to the Slutsky Matrix
- (ii) From the WARP and the Walrasian Demand function to the Slutsky Matrix
- (iii) From the Slutsky Matrix to rationalizing preferences
- (iv) Recovering Preferences from Walrasian Demand
- (v) Equivalence when it matters: the zone of ignorance and the extension of Revealed Preference
- (vi) SARP and rationalizability

Aggregation

(MWG Ch. 4)

- (i) When does the distribution of income matter?
- (ii) The WARP fails to aggregate
- (iii) The Unrestricted Law of Demand and its implications

Consumer Surplus

(MWG Ch. 4; Varian Ch. 10)

- (i) Compensation Schemes
- (ii) Quasi-linearity and zero income effects
- (iii) Harberger Triangles
- (iv) Skitovsky Contours
- (v) Cost-Benefit Analysis in the small

2. Consumer Choice under Uncertainty

(MWG Ch. 6; Kreps Ch. 3)

Preferences over Lotteries and Expected Utility

- (i) Lotteries: simple and compound, consequentialism, and independence, the Allais and Elsborg Paradoxes
- (ii) von-Neuman-Morgenstern and Bernoulli Utility functions
- (iii) The Expected Utility Theorem

Risk Aversion and Stochastic Dominance

- (i) Money lotteries and Risk Aversion: risk aversion, concavity of the Bernoulli utility function, and the certainty equivalent
- (ii) Stochastic Dominance: first- and second-order
- (iii) The Arrow-Pratt Measure of Risk Aversion

3. Social Choice and Efficiency

(MWG Ch. 21-22; Kreps Ch. 5)

Arrow's Impossibility Theorem

Social Welfare Functionals and Axiomatic Bargaining

- (i) Utility Possibility Sets, Social Welfare Functions and Social Optima
- (ii) The Axiomatic Bargaining Approach
- (iii) The Shapley Value

4. Theory of the Firm

(MWG Ch. 5; Kreps Ch. 7-9; Varian Ch. 1)

Cost Minimization

(Varian Ch. 4-6)

- (i) Production Possibility Sets (PPS): definition of technology, assumptions
- (ii) Properties of Cost Functions
- (iii) Shephard's Lemma
- (iv) Duality: sufficiency of homogeneity, concavity etc.

Profit maximization

(Varian Ch. 3)

- (i) Properties of Profit Functions
- (ii) Hotelling's Lemma
- (iii) Duality: recovering the PPS from the profit function

Average and Marginal

- (i) Effects of a change in the price of a factor on supply
- (ii) Monopoly and the effects of a price ceiling
- (iii) Competition and discriminating monopoly
- (iv) Monopsony and the effect of a minimum wage

5. General Equilibrium

(MWG Ch. 16-17; Kreps Ch. 6.1-6.5)

The Basic Set-up

(MWG Ch. 16; Kreps Ch. 6.1-6.3)

- (i) The Basic Model and Definitions
- (ii) The First and Second Welfare Theorems
- (iii) Pareto Optimality and Social Welfare Optima

The Theory of Equilibrium

(MWG Ch. 17A-17.F; Kreps Ch. 6.4-6.5)

- (i) Existence of Walrasian Equilibrium
- (ii) Local Uniqueness and the Index Theorem
- (iii) The Sonnenschein-Mantel-Debreu Theorem

5.A General Equilibrium under Uncertainty

(MWG Ch. 19; Kreps Ch. 6.5)

Equilibrium under Uncertainty

(MWG Ch. 19A-D)

- (i) Contingent Commodities
- (ii) The Arrow-Debreu Equilibrium
- (iii) The Radner Equilibrium

Asset Markets

(MWG Ch. 19E-19H)

- (i) Complete and incomplete markets: sunspot equilibria
- (ii) Imperfect information: asymmetric information, rational expectations
- (iii) The No-Trade Theorem

5.B Intertemporal Equilibrium

(MWG Ch. 20; Kreps Ch. A.2)

- (i) Intertemporal Utility
- (ii) Intertemporal Production and Efficiency
- (iii) Intertemporal Equilibrium