

Helsinki GSE  
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## **Advanced Microeconomics 1**

### **Syllabus and Course Outline**

The four parts in the research M.Sc. sequence in microeconomic theory at Helsinki GSE cover: Decision Theory (Advanced Microeconomics 1), Welfare Economics and Competitive Markets (Advanced Microeconomics 2), Game Theory (Advanced Microeconomics 3) and Economics of Information (Advanced Microeconomics 4). At a very general level, the aim of this first part is to introduce formal models of individual decision making. This means that the course has multiple goals: it gives the students a first look at decision theoretic models and one goal is to present a variety of substantive economic models. The second goal is to introduce students to formal arguments. This explains why the notes may seem overly pedantic at times. Since this first course in decision theory is also the last course on the subject in our current curriculum, I have included some discussions on more advanced topics with some pointers towards further reading.

#### **Required textbooks:**

The primary source for this course is:

**Mas-Colell, Whinston and Green: Microeconomic Theory, Oxford University Press, 1995. (MWG)**

Other books that you may find useful are:

**Kreps, Microeconomic Foundations I: Choice and Competitive Markets, Princeton University Press, 2013. (K)**

**Jehle and Reny: Advanced Microeconomic Theory, Addison Wesley, 2011. (JR)**

For many of the concepts, a particularly useful reference is the slightly less formal:

**Osborne and Rubinstein:** [Models in Microeconomic Theory](#), 2020.

This book is available for download in electronic format at the link accessible by clicking the title.

For some topics, the following lecture notes and manuscripts can be particularly useful:

**Tomasz Strzalecki:** [Stochastic Choice Theory](#)

**Tomasz Strzalecki:** [Decision Theory](#)

**Todd Sarver:** [Lecture Notes on Monotone Comparative Statics](#)

Key concepts in this course include *choice rules* and *preference relations* on various domains, *utility representations* of preference relations, and implications of *utility maximization* in different contexts, with particular focus on *choice under uncertainty*.

Here is a tentative schedule for the course with relevant chapters in the textbooks (the numbering also indicates the relevant section in the lecture notes).

1. Rational Choice (week 1-2) (MWG 1, K 1, JR 1.2)
  - (a) Choice Rules: Coherent Choice and Independence of Irrelevant Alternatives
  - (b) Preferences: Revealed Preference from Coherent Choice Rules and Choice Rules from Rational Reference Relations
  - (c) Utility Representations: Real-Valued Functions Representing Preferences
  
2. Revealed Preference (week 2) (MWG 2, 5, K 4, K 9, JR 2.4, JR 3.1-3.2)
  - (a) Classical Consumer Choice via Revealed Preference
  - (b) Firm's Problem via Revealed Profit

3. Maximizing a Numerical Objective Function (week 3-4) (MWG 2-3, K 2-3, JR 1.3-1.4)
  - (a) Continuous Utility Representation and Choice from Budget Sets
  - (b) KKT Conditions for Utility and Profit Maximization
  - (c) Comparative Statics of Optimal Choice (See notes by Sarver for Monotone Comparative Statics)
  - (d) Value Functions and Envelope Theorem
4. Duality in Consumer and Firm Problems (week 4) (MWG 3, 5, K 9-11)
  - (a) Expenditure Minimization, Slutsky Equation, and Integrability
  - (b) Cost Function, Shephard's Lemma, Hotelling's Lemma
5. Choice Under Uncertainty (week 5-6) (MWG 6, K 5-6, JR 2.4)
  - (a) Domain of Choice: Lotteries
  - (b) Expected Utility Theorem
  - (c) Monetary Payoffs: Risk Aversion and Comparison of Risks
  - (d) Risk and Time
6. Advanced Topics (mostly for self-study) (Decision Theory notes by Strzalecki and the book on Stochastic Choice are very useful for these topics.)
  - (a) Probability Weighting, Rank-Dependent Utility
  - (b) Behavioral Theories: Time-Inconsistent Preferences, Reference-Dependent Utility
  - (c) Menus of Lotteries: Preference for Flexibility, Temptation
  - (d) Stochastic Choice

## Expected student performance

The Lecture Notes provided at the beginning of the course on the [course webpage](#) cover the material presented in the lectures. In order to make the most of the lectures, you should read the corresponding part in the notes **before** the lecture.

I also expect you to read the **relevant parts** in the textbook by Mas-Colell et al. I do not expect you to read all the other books that I have listed above. I am happy to provide additional sources when you want to deepen your understanding on particular topics in the course.

Problem sets are probably the most important part of the course. As a result, I give this year 20% of the grade based on problem set solutions. You may work on the problems individually or in teams, but each student should submit a separate answer sheet on the [course webpage](#) on MyCourses by the deadline of the problem set.

In some sets, I have marked some problems as *bonus problems* so that the grand total from all problems exceeds 20 points. The maximum number of points on the final exam is 80.

The minimum number of points required for passing the course is 50. You pass the course in the sum of your points on the final exam and  $\min\{\text{PS points}, 20p\}$  exceeds 50. Hence you pass the course if you have 35 on the exam and 17 points on the problem sets, but not if you get 24 on the exam and 30 on the problem sets. If you pass the course, your grade is determined by the sum of final exam points and problem set points so that 40 of the exam and 37 on the problem sets gives you 77 points.