

INSTITUTO TECNOLÓGICO AUTÓNOMO DE MÉXICO

Department of Economics

Eco-11121-003
Advanced Microeconomic Theory I
Microeconomía Avanzada I
Time: 3:30 to 5 PM, MW
Place: RH 110

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Office Hours: MW 2:30 PM to 3:30 PM and
by appointment

INTRODUCTION

This is the first part of a two-semester sequence of microeconomic theory for students specializing in political economy and/or financial economics. The principal object of study in this course is the behavior of rational economic agents (consumers and producers), facing a given economic environment and the “benchmark” general equilibrium model under perfect competition. The material of this class will form the basis for further study of microeconomics, as well as for understanding modern foundations of other branches of economic analysis.

The formal subject matter of this course is similar to that of the Intermediate Microeconomics classes you may have taken in the past, though additional topics, such as choice under uncertainty and asset markets will be introduced and explored. This class, however, will provide a more in-depth presentation of the material. While we are not going to get too deeply into formal side of the subject matter, a major goal of this class is to equip students with the technical "machinery" required for understanding modern research in economics. Still, it is essential, that students try to see the economic intuition behind the, sometimes, somewhat mathematical language.

The formal mathematical prerequisites for the class are limited to the standard topics in calculus and probability, which should be familiar to most of the students. If, on occasion, additional material is needed it will be fully developed in class.

TEXTS

Main Textbooks

- Jehle, G. and P. Reny: *Advanced Microeconomic Theory*, 3rd edition, Addison Wesley, 2011
- Osborne, M. and Rubinstein, A., *Models in Microeconomic Theory*, Open Book Publishers, 2020 (you may download the book for free from the publisher's webpage)

The main textbooks for this class are the *Advanced Microeconomic Theory* by Jehle and Reny and the *Models in Microeconomic Theory* by Osborne and Rubinstein. Both are clear, self-contained and up-to-date books and I strongly suggest you make sure to have access to both for your reference. In both books we shall, mostly, cover the material of the first few chapters, and not necessarily in the order it is presented, so please follow the syllabus. Please note that the books do disagree somewhat on definitions and notation. In all cases where such disagreement exists I shall be following the Jehle and Reny book, so please make sure you do the same. The first part of this class will be a math review, which will roughly follow the Appendix sections of Jehle and Reny. By the end of the review **you should be very comfortable** with the material in it. On occasion you may want to consult a more basic microeconomic theory text, such as the Nicholson's book you all know and love. Additional handouts will also be circulated in class.

EXERCISES AND HOMEWORKS

You will find that proper understanding of the material of this class is impossible without solving exercises. Therefore, these will be assigned regularly throughout the semester (sometimes informally). Additional exercises can be found after every chapter of the textbook.

Formal homeworks will be assigned on a regular basis, and some of them **may be graded**. You are encouraged to consult me about any problems you may have while working on them. All homeworks will be solved in class and written solutions to the more important exercises will be provided on request.

WEB PAGE

All relevant materials for the class, such as exercises, notes, past exams, grades, etc. will be posted at the course web page at <https://gente.itam.mx/gomberg/AMI>

EXAMS AND GRADING

There will be two midterm examinations and one final examination in this class. The final examination will be cumulative, in the sense that the exam questions may refer to any material covered from the beginning of the semester. No make-up opportunities will be provided, unless an **extremely** valid medical or other reason can be documented. The final grade will be determined as follows:

Grade on each midterm - 25%

Grade on the final - 50%

Class participation, homeworks, etc. may be used in difficult cases to decide on the ties between the grades.

Keep in mind, that while homework does not form a major part of the grade, experience shows, that the effort applied to doing them is highly correlated with the performance on

the exams. I will not record your attendance either at online or at presential classes, but, obviously, attendance is encouraged.

If we do not return to presential instruction by the time of any of the exams, these will be implemented as take home examinations with rules I shall describe in class.

OFFICE HOURS

Students are **STRONGLY** encouraged to schedule appointments to discuss any matters relevant to the class. I can always be reached by e-mail and will respond as soon as possible. Formal office hours will be posted once we are back on campus.

LANGUAGE AND OTHER MATTERS

The language of instruction in this class is **English**. However, homeworks, exams, etc. could be submitted either in English or in Spanish. If you do not understand anything I say or write in class or in a private discussion after class and during the office hours, feel free to interrupt at any time and ask for clarification (you may ask your questions in Spanish). I would also appreciate any comments on the material and style of the class that you can make.

APPROXIMATE OUTLINE OF THE CLASS

Introduction. Microeconomics as a behavioral science.

Part I. Math Review

1. Elements of set theory and logic (JRA1.1 – 1.2)
2. Relations and functions (JR A.1.2.3 – 1.3.1)
3. Vectors and Matrices
4. Calculus of many variables (JR A2.1.2)
5. Optimization (JR A2.2- 2.3)

Part II. Consumer Theory

1. Choice and Revealed Preference (JR 2.3, OR 2.1)
2. Rational Preferences (JR1.2, OR 1.1, 1.2, 2.2)
 - 2a. Other models of individual behavior (OR 2.4, 2.6)
3. Properties of Preferences and Utility Representation (JR 1.2, OR 1.4 and 4)
3. Utility maximization (JR1.3, OR 5.1-5.4)
4. Indirect utility and expenditure (JR 1.4)
5. Rationalizing Consumer Demand (JR 1.5, 2.1, OR 5.5,5.6)
6. Intertemporal Choice

Part III. Decisions under Uncertainty

1. Choice under uncertainty (JR 2.4, OR 3)
2. Value of information (review exercise)
3. Asymmetric information and existence of markets (JR 8.1, 8.2, OR 13.2)

Part IV. Competitive Equilibrium in an Exchange Economy

1. Basic Definitions in an Exchange Economy (JR 5.1, OR 10.1, 10.9)
2. Existence and efficiency of equilibrium (JR 5.2, OR 10.2, 10.3, 10.5)
3. Core (JR 5.5, OR 10.6)
4. Competitive equilibrium, time and uncertainty (JR 5.4, OR 11.2)