MICROECONOMIC THEORY I, PART 1

MARCIN PĘSKI

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   Office hours: Thursday, 11.30-1.30pm, GE207,

   Lecture: Tue, Th:, 9-11pm, WW121, tutorial Wed, 2-4pm, BL114,

Objectives. This is the first of four parts of the Ph.D microeconomics sequence. The class has two objectives.

(1) The primary objective is to introduce you to the foundations of microeconomic theory. The class has roughly four parts: the consumer theory, firm theory, methods of comparative statics and the decision theory under uncertainty. Although most of you have seen the elements of the consumer's and the firm's theory in either your undergraduate or master's education, our approach is going be very different from what you know. We are going to be much more formal and analyze things at much more fundamental, deep level. For example, in your undergraduate class, you would start the consumer theory with writing down the consumer problem, i.e., utility maximization given the budget constraint. Here, we derive the consumer problem from the basic choice theory and formally prove when observable choices of the consumer can be represented (or interpreted) as the utility maximization problem.

For the great majority of you, the latter two topics will be completely new. The goal of the comparative statics is to provide you with a basic set of mathematical tools to analyze the effects of the change of parameters on the variables of interests in a whole range of problems across all areas of economics. In the last part, we study foundations of the expected utility model and various uncertainty related behaviors.

(2) The second, and more universal, objective of this course is to introduce you to the formal approach to the economic argument. The class is proof-based and

most of the lecture is going to proceed in the rhythm of definition-theorem-proof-example. You will learn how to read the proofs and how to carefully write them.

Because the topics are either new, or approached in a novel way, and because most of you haven't seen a proof-based class before, many of you will find that it is a difficult class, perhaps the most difficult course you have ever taken. It is essential that you allocate a sufficient amount of time to study for this course, and that you study in a right way. You can find some advice how to do it below.

Lectures and assigned readings. The required textbook is Microeconomic Theory by MasCollel, Whinston and Green (MWG for short). A more detailed description of the topics together with required readings can be found on the course website.

Prerequisites. I assume that you have all taken or otherwise are familiar with the material covered in the math refresher course ECO1011, L0101 Mathematics and Statistics for PhD and MA Doctoral Stream Students.

Midterm and complementary exams. The grade for my part of the class will consist $\geq 90\%$ from the midterm grade and $\leq 10\%$ from the participation in the tutorial.

The midterm will consist of four equally weighted questions. I will write the questions together with 4 questions that I am supposed to prepare for summer comps. Then I will randomly choose the questions for the midterm and the questions for the comps. In this way, you will know that the midterm and comp questions are similar when it comes to form and difficulty.

I will post past two midterms on the course website around the 4th week of the classes. You can also find the past comps (but I don't remember where - either through the library or some departmental site). There are few types of questions:

- reproduce a definition, a statement of a result, or a proof that you learned in a class,
- prove some consequence of a definition,
- derive some property of a given model, or verify that a given definition is satisfied in the model.

Very rarely, I may ask you to actually solve something - but it is not going to happen too often. In most of my questions, one way or the other, you will need to prove something.

In the tutorial, I would prefer the solutions to the homework to be presented by the students. The TA should step in only if nobody solved the problem correctly (which is not ging to happen very often), or if he wants to present an alternative method. In the beginning of each tutorial, (or perhaps, in the morning of the tutorial day), a TA will ask you to report which questions you have managed to solve. Then, the TA will choose a volunteer to present a solution from among the people who reported the solution. Your grade from the tutorial will depend on how many problems you reported and how well you managed to present the problem to the class. The exact rules will be determined by the TA.

How to study for this class. I want to emphasize - this is a difficult class. Given that the Ph.D. students are required to take 3 courses, I expect that you will spend at least 3h a day working on this course. Here is some advice how to do it effectively and how to know whether you understand the material:

- Ask questions during the lecture. Almost of the time, if you have a question, others students also are confused. For those rare occasions that you are the only confused person, your question will allow other students to catch breath and refresh their notes. This is a graduate class - if I don't hear any questions, I am going to assume that everything is clear and continue writing. And I can write fast.
- Talk to me during the office hours. If you need and cannot come during the office hours (or it is not enough), ask whether I can find some other time. (I am going to be less sympathetic for a request to meet outside of the office hours coming during the last week before midterm and from a student who have never talked to me before.) Talk to the TA.
- Make sure that you have all the required material. The readings contain strictly more material than the lecture. In the same time, although you are

required to read all the assigned material, I find it difficult to imagine a situation that I would ask for a part of material that was not covered during the lecture or the problem set.

- Read all the readings and you lecture notes. To make sure that you understand them, close the book or your lecture notes, and repeat what you have just learned. Can you restate the definition? The theorem? Do you remember the proof? Can you do it 3 days after you studied them? Do you remember the solutions to the problem set from two weeks before?
- Work on all problems. Do not worry if you cannot solve it, just try again later, or on the next day. If you don't solve it before the tutorial, make sure that you understand where and why you were stuck. Talk to me or to the TA about it.