Syllabus
Advanced Microeconomics
(5 ECTS)

Approved by the Academic council of the Education programme

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Protocol No. ___ from __. __. 20

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1. Course description

This course examines how economic decisions are made by households and firms, and how they interact to determine the quantities and prices of goods and the allocation of resources under different market structures. It also studies the equilibrium in presence of externalities/public goods and information asymmetry. The course examines microeconomic policy and the role of government in allocating resources.

Prerequisites: the course requires knowledge of calculus and some basic tools of constrained optimization (Lagrangian function).

2. Learning objectives

The objectives of the course are:

- to provide students with the knowledge of core concepts and models in the field of microeconomics;
- to provide students with the knowledge of basic microeconomic models' assumptions, internal logic and predictions, grounding the explanations on intuitive, graphical and analytical approaches;
- to develop students' ability to apply the knowledge acquired to the analysis of specific economic cases, recognizing proper framework of analysis and constructing and analyzing adequate economic model within this framework.

3. Intended learning outcomes

By the end of the course a successful student should:

- be familiar with the main elements and techniques of microeconomic theory at intermediate level;
- be able to solve and interpret stylized problems based on microeconomic models;

- be able to use these models to analyze real-world microeconomic phenomena and to evaluate issues of microeconomic policy.

4. Methods of Instruction

While teaching the course the following teaching methods and forms of study and control are used:

- lectures (4 hours a week);
- classes (2 hours a week);
- written in-class quizzes (take place during the lectures/classes and are not preannounced);
- self-study;
- teachers' consultations;
- written tests (midterm test and final exam)

5. Reading

Required readings:

Varian Hal R., Intermediate Microeconomics: A Modern Approach, W. W. Norton & Company; Eighth Edition, 2009 [V]

Pindyck Robert S., Daniel L. Rubinfeld, Microeconomics, 8th Edition, Pearson Series in Economics, 2013 [P&R]

6. Course Outline

№	Topic/Focus /Activity	Week	Course format			Readings
			lectures	classes	self-study	
	Part I: Fall term					
1	Consumer theory: ▪ preferences and utility, budget constraint, consumer choice ▪ demand and comparative statics, Slutsky decomposition ▪ choice under in-kind income, labour supply and intertemporal choice ▪ consumer surplus	1-3	12	6	16	P&R Chs. 3-4, 14.2 V. Chs. 2-10, 14

2	Uncertainty ▪ contingent commodities ▪ expected utility and attitude toward risk ▪ choice under uncertainty ▪ demand for insurance ▪ demand for risky asset ▪ price of information	4-5	6	4	10	P&R Ch. 5 V. Ch. 12
3	Producer theory ▪ technologies and their properties ▪ cost minimization (SR and LR) ▪ profit maximization and firm's supply	5-7	8	4	12	P&R Chs. 6-8 V. Chs.18-22
4	Perfectly competitive market ▪ market demand ▪ industry supply ▪ partial equilibrium and efficiency ▪ government policies analysis	7-9	8	4	12	P&R Chs. 8-9, 14.1 V. Chs. 15-16, 23
5	Monopoly and monopolistic behavior ▪ pure monopoly ▪ inefficiency and regulation ▪ monopsony ▪ price discrimination (perfect discrimination, market segmentation, example of second-degree price discrimination)	9-10	8	4	12	P&R Chs. 10-11, 14.3-14.4 V. Chs.24-25
6	Strategic interactions ▪ basic concepts of game theory (dominant strategies, Nash equilibrium, dynamic games and subgame perfect Nash equilibrium) ▪ simultaneous quantity competition (Cournot model) ▪ first-mover advantage in Stackelberg model ▪ price competition (Bertrand model) ▪ Differentiated goods	11-12	10	4	14	P&R Chs. 12-13 V. Chs.27-29

7	Externalities and public goods ▪ externalities and efficiency loss ▪ regulation (direct regulation, taxes/subsidies, tradable permits; internalization, property rights and Coase theorem) ▪ common property resources ▪ public goods and efficiency ▪ free riding problem	13-14	6	4	10	P&R Ch. 18 V. Chs. 34, 36
8	Asymmetric information ▪ hidden characteristics and adverse selection ▪ private and government response ▪ hidden action and moral hazard problem	15-16	6	2	8	P&R Ch. 17 V. Ch. 37 Akerlof G., The market for lemons: Quality uncertainty and the market mechanism, QJE, 89, 488-500, 1970
	Total		64	32	94	

7. Grading System

Grades will be determined on the basis of your performance on quizzes, midterm test and final exam. Course mark is calculated according to the following formula:

$G_{Final}=\max(0.1G_{QI} + 0.2G_{QII} + 0.25G_{Midterm}+0.45G_{Exam}; 0.1G_{QI} + 0.2G_{QII} +0.7G_{Exam})$, where

G_{QI} - average mark for module 1 quizzes;

G_{QII} - average mark for module 2 quizzes;

$G_{Midterm}$ - midterm mark;

G_{Exam} – final exam mark.

Final mark is calculated out of 100 and then converted to the 10-points in accordance with the following scheme[1]:

Final mark out of 100 points	10-points scale
0	0
1-10	1
11-19	2
20-29	3
30-35	4
36-44	5

[1] The conversion scale might by adjusted by 5 points out of 100 upon the exam results

45-52	6
53-59	7
60-64	8
65-74	9
75 and higher	10

Make-up/retake policies
There are no makeup/retakes for quizzes/midterm. Student gets 0 for the missed quiz/midterm even if a valid document is provided.
If the Final mark is below 4 out of 10 then the student can sit a retake exam in the end of January/beginning of February. There will be two retakes for the final exam. Exam and retake tests may include any topics from the syllabus.
All quizzes, midterm and final exams (and retakes) are closed book written tests.

8. Sample exam questions

1. Consider an economy with two goods, 1 and 2. There is a competitive market for the goods. There are 100 identical firms in the competitive industry producing good 1, and the cost of the representative firm producing q_1 units of good 1 is given by $C(q_1) = 2q_1 + (q_1)^2$. There are 50 identical consumers. The representative agent consuming q_1 units of good 1 and q_2 units of good 2 obtains utility $u(q_1, q_2) = \min(q_1, q_2)$. The price of good \$1 is denoted by P and the price of good 2 is \$1. Each consumer has income of \$10.
(a) Find the **market** supply function for good 1.
(b) Derive the **market** demand function for good 1. Prove every claim.
(c) Suppose that a per unit tax with tax rate t=\$6 is imposed on every unit of good 1 and this tax is paid by consumers. Find the after tax producers' price assuming that the number of firms stays the same.

2. An individual has initial wealth $w = \$10$ and can take part in the gamble: he could make a bet of \$X and get a **net** return of \$X with probability 9/16 or a **net** loss \$X with probability 7/16. Individual's preferences are described by the utility function $u(w) = \sqrt{w}$. Suppose the government wants to discourage gambling by taxing the individual's gain (of \$X) at a rate t, so that in case of winning his **net** gain is reduced to \$X(1 − t).
(a) Find all tax rates that will effectively discourage gambling for this individual assuming that individual can choose the size of his bet \$X. Provide algebraic solution and explain the result intuitively.
(b) Repeat part (a) for an individual with a different utility function given by $\tilde{u}(w) = w^2$. In addition to algebraic solution provide graphical solution using well-labeled contingent commodities diagram. Compare with part (a) and explain the result.

3. The value of a worker's marginal product is \$60 per hour for high-ability (*H*) workers and \$20 per hour for low-ability (*L*) workers. Labour is the only factor of production. The preferences of high and low ability workers are given by $u_H(E,W) = W - 4E$ and $u_L(E,W) = W - 8E$, where *E* is education level and *W*-

consumption of aggregate commodity, the price of which is \$1. One-quarter of the population has low ability, and three quarters have high ability. The reservation utility is 28 for high ability and 12 – for low ability worker. All agents are risk neutral and behave like price takers. Assume that firms treat education as a productivity signal.
(a) Find all pooling equilibria.
(b) Find **the best** (Pareto superior) pooling equilibrium. Prove that this equilibrium is Pareto superior in comparison with all other pooling equilibria. Calculate the resulting total surplus and compare with the maximum possible one.

4. Consider an industry with N firms that compete in quantities. The cost function of firm i $(i = 1,2,\ldots,N)$ is given by $C_i(q_i) = cq_i$. The inverse demand curve in the market is given by $P(Q) = \frac{1}{Q}$, where Q is industry output.
(a) Suppose all firms choose quantities simultaneously and independently. Calculate the equilibrium outputs.
(b) Show that you can get an equilibrium in perfectly competitive industry as a limiting case of the equilibrium found in (a).
(c) Find a subsidy provided to the firms in part (a) that results in efficient outcome and explain the result intuitively.

9. Academic Integrity

The Higher School of Economics strictly adheres to the principle of academic integrity and honesty. Accordingly, in this course there will be a zero-tolerance policy toward academic dishonesty. This includes, but is not limited to, cheating, plagiarism (including failure to properly cite sources), fabricating citations or information, tampering with other students' work, and presenting a part of or the entirety of another person's work as your own. Students who violate university rules on academic honesty will face disciplinary consequences, which, depending on the severity of the offense, may include having points deducted on a specific assignment, receiving a failing grade for the course, being expelled from the university, or other measures specified in HSE's Internal Regulations.

10. Disabilities Statement

If you have a documented disability that requires academic accommodations, please submit your request to the study office in advance so that your needs can be addressed.