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Course Package "Microeconomics (Advanced Course for Finance)"

Work Package	WP3: Development of Course Materials for the Reformed MA Programmes, Deliverable 3.1
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Document History

Version	Date	Author(s)	Description
2	24.01.2019	Irina B. Petrosyan	The document is the syllabus of "Microeconomics. Advanced course for finance" discipline. It's a final document revised after 2-week work with the Tutor, Professor V. Gazda from the Technical University of Kosice
3	01.06.2019	Irina B. Petrosyan	Final version after review

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Content

1. General information about the course

Explanation: Please fill in the table below.

Title of the course (as specified in the reformed curriculum)	Microeconomics (Advanced Course for Finance)
Name of the teacher	Irina B. Petrosyan
Novelty of the course (please select as appropriate)	This course is a newly developed course (new in the curriculum)
Year of the course in the curriculum	1st
Semester of the course in the curriculum	1st
Language of instruction of the course	Russian, English
Number of ECTS credits	4

2. Learning outcomes of the course

Explanation: Please specify the learning outcomes of the course.

The purpose of this course is to form the basis of economic thinking for students, to provide knowledge of advanced microeconomic concepts and models, to develop the ability to solve specific problems with their application, to instill the ability and desire to work independently with literature. Studying the discipline will also enable students to develop skills in microeconomic analysis, equip them with assessment methods and effective management techniques in a complex and constantly changing market environment.

After passing the discipline, the student will be able to:

• Use in practice the theoretical foundations of advanced microeconomics and its main concepts, as well as the theory and mathematical approaches of analysing individual's behavior under uncertainty and risk, game theory, externalities and public goods theories, contract theory and firm's and individuals behavior theory in the terms of asymmetric information to substantiate financial decisions or solve financial problems;

• To operate the main variables used in advanced microeconomics, understand their economic sense, understand and implement advanced microeconomic models and their graphical representation as well as their application in the sphere of finance;

• Possess methods of solving typical practical problems and possess the skills of independent economic thinking;

• To be able to work independently with the literature recommended by lecturer, and have the skills to independently search for information.

3. Syllabus of the course

Explanation: Please provide a detailed syllabus of the course (broken down in weeks) – maximum 2 pages

Topic 1. Uncertainty. Lotteries and risks (Weeks 1 and 2)

Definition of risk. Risk aversion. Expected utility of a gamble. Arrow-Pratt measure of (absolute) risk aversion. The acceptance set. The demand for insurance. Comparative statics of a simple portfolio problem. Comparative statics of a simple portfolio problem. Asset pricing.

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References

Varian H., «Microeconomic Analysis», chapter 11.

Topic 2. Game theory (Weeks 3 and 4)

Game theory definition and development history. Description of a game. Strategic form games. Assumptions on strategic form games. Examples of the games (Matching pennies, Prisoner's dilemma, Battle of sexes).

Cournot duopoly. Cournot-Nash equilibrium. Reaction curves. Bertrand duopoly.

Pure and mixed strategies. Cournot-Nash equilibrium for pure and mixed strategies.

Game tree. Defining strategies and outcomes in extensive form games. Subgames and subgame perfect equilibrium.

Repeated games. Finitely repeated game. Infinitely repeated game. Discussion of repeated games and cooperation. Repeated games and subgame perfection.

References

Varian H., «Microeconomic Analysis», chapters 15-16.

Topic 3. Externalities (Week 5)

Definition of externalities. An example of a production externality. Solutions to the externalities problem: Pigovian taxes, missing markets and property rights. The compensation mechanism. Efficiency conditions in the presence of externalities.

References

Varian H., «Microeconomic Analysis», chapter 24.

Topic 4. Public goods (Week 6)

Definition of public goods. Properties of public goods.
Efficient provision of a discrete public good. Private provision of a discrete public good.
Voting for a discrete public good.

Efficient provision of a continuous public good. Private provision of a continuous public good. Lindahl allocations. The Groves-Clarke mechanism. Clarke tax.

References

Varian H., «Microeconomic Analysis», chapter 23.

Topic 5. Asymmetric information. Adverse selection and moral hazard (Weeks 7 and 8)
Adverse selection definition. Examples of hidden information. Market of lemons.
Basic model of adverse selection. Principal-agent problem. Delegation. Agency relationships. Technology, preferences and information.
First best. Second best. Financial contracts under complete information. Financial contracts under asymmetric information.
Moral hazard. Definition. Examples. Basic model. Main model under complete information. First best. Incentive feasible contracts. Basic model for risk neutrality and risk aversion. Insurance contracts. Moral hazard in teams.

References

Varian H., «Microeconomic Analysis», chapter 25.

Topic 6. Signaling and screening as the ways to overcome asymmetric information (Week 9)
Using a signal. Education as a signal in labor markets (M. Spence). General structure of signaling (and cheap talk) game. Benchmark cases. Properties of signaling in markets. Competitive screening. Properties of market screening.

References

Jean-Jacques Laffont & David Martimort, The Theory of Incentives The Principal-Agent Model. chapters 3-5.

4. Teaching methodology of the course

Explanation: Please explain the teaching methodology and pedagogical approaches of the course – maximum ½ page

Course is designed for 9 weeks, during each week students will have 2 lectures (duration of 1 lecture is 80 minutes).

Course consists of lectures (all the lectures are in the form of slide show), discussion of key and the most difficult issues, solution of exercises and tasks in class. There are also supposed homework assignments (problem sets) to be solved individually.

5. Labour market relevance of the course

Explanation: Please explain the labour market relevance of the course (linked to findings of WP1) – maximum ½ page

The course structure is built in the connection with the practice, so knowledge got from each topic can be used not only for solving theoretical issues, but also can be applied in the real economy, especially in taking strategic decisions if students are employed, for example, as financial managers, financial officers and etc. This course contributes to the skills of operating in the terms of uncertainty and risks, analyze risks and implement elements of risk management in the sphere of finance, especially. The course was designed with the elements of contract theory, so the students will have skills of drawing up optimal contracts with the employees if they are taking the position of manager or are the owners of business. The course will be the most useful for the students who are going to continue their career as a researcher. But at the same time course gives fundamental knowledge of a wide range of categories that can be effectively used by the students in their further activities in the sphere of finance.

6. Assessmentand grading

Explanation: Please explain the form of assessment of the course – maximum ½ page

The weights presented below combine into final grade for the course.

There ***are two types*** of assessment in this course:

- Current control (50%);
- Final exam (50%).

Current control considers:

1. **Home assignments** are the form of current control and their weight is 0,5 (50%);
2. **Discussions in the class** on the main issues of the topics has weight 0,5 (50%) and they are also a form of current control.

So, together (1 and 2) they form midterm grade for the 9 weeks of the course. Final exam consists of two theoretical questions and the solution of two problems.

There is only one re-take for the final exam.

The maximum number of points for each type of work and for the whole course is 100 points, the minimum is 40 points. The mark for the course is set on the basis of the following scale:

Points	From 88 to 100	From 74 to 87	From 64 to 73	From 63 to 54	From 40 to 54	From 20 to 39	Less than 20
Grade	A (excellent)	B (very good)	C (good)	D (fair)	E (satisfactory)	F (not satisfactory)	FX (not satisfactory)

7. References

Explanation: Please provide the main references and recommended reading for the course – maximum 1 page

Primary Text

- **Mas-Colell Andreu, Whinston Michael D., Green Jerry R.**, «Microeconomic Theory», Oxford University Press. 1995. 977 pages.

- **Mas-Colell Andreu, Whinston Michael D., Green Jerry R.**, «Microeconomic Theory», Oxford University Press, «Delo» Publishing House. Moscow. 2016. Books 1. 736 pages. Book 2. 640 pages **(in Russian, Translation from English)**
- **Varian H.**, «Microeconomic Analysis», Third Edition. 1992. 559 pages.

Secondary Text

- **Frank Cowell**, «Microeconomics. Principles and Analysis», Second Edition, Oxford University Press. 2018. 656 pages.
- **Samuel Bowles**, «Microeconomics. Behavior, Institutions, and Evolution», 2004.
- **Samuel Bowles**, «Microeconomics. Behavior, Institutions, and Evolution». «Delo» Publishing House. Moscow. 2011. 563 pages **(in Russian, Translation from English)**
- **Geoffrey A. Jehle, Philip J. Reny**, «Advanced Microeconomic Theory (3rd Edition)». Prentice Hall. 2000. 560 pages.
- **Geoffrey A. Jehle, Philip J. Reny**, «Advanced Microeconomic Theory (3rd Edition)». High Economic School Publishing House. Moscow. 2011. 733 pages **(in Russian, Translation from English)**
- **Christopher Thomas, S.Charles Maurice**, «Managerial Economics. Foundations of Business Analyses and Strategy»,The McGraw-Hill Economics Series. 2016. 738 pages.
- **Jean-Jacques Laffont & David Martimort**, The Theory of Incentives The Principal-Agent Model. 2002. 440 pp.
- **Jeffrey M. Perloff, James A. Brander**, «Managerial Economics and Strategy». 2014. 688 pages.
- **M. J. Alhabeeb, L. J. Moffitt**, «Managerial Economics: A Mathematical Approach». John Wiley & Sons. 2012. 608 pages.
- **Le Roy S.F., Werner J.**, «Principles of Financial Economics», Cambrige University Press. 2010.
- **Gollier, C.**, «The Economics of Risk and Time», MIT Press. 2004. 443 pages.
- **Cochrane J.H.**, «Asset Pricing», Princeton University Press. 2005. 462 pages.

8. Course assignments

Explanation: Please provide two assignments for the course (e.g. group work, project,essay, case study, homework).

8.1 Assignment 1

Homework

Topic 1. A person has an expected utility function of the form $u(w) = fi$. He initially has wealth of \$4. He has a lottery ticket that will be worth \$12 with probability 1/2 and will be worth \$0 with probability 1/2. What is his expected utility? What is the lowest price p at which he would part with the ticket?

Topic 2. Consider an industry with 2 firms, each having marginal costs equal to c_0. The (inverse) demand curve facing this industry is $P(Y) = 100 - Y$, where $Y = y_1 + y_2$ is total output.

(a) What is the competitive equilibrium level of industry output?

(b) If each firm behaves as a Cournot competitor, what is firm 1's optimal choice given firm 2's output?

(c) Calculate the Cournot equilibrium amount of output for each firm.

(d) Calculate the cartel amount of output for the industry.

(e) If firm 1 behaves as a follower and firm 2 behaves as a leader, calculate the Stackelberg equilibrium output of each firm.

Topic 3. A person has an expected utility function of the form $u(w) = fi$. He initially has wealth of \$4. He has a lottery ticket that will be worth \$12 with probability 1/2 and will be worth \$0 with probability 1/2. What is his expected utility? What is the lowest price p at which he would part with the ticket?

Topic 4. Suppose that two agents are deciding how fast to drive their cars. Agent i chooses speed xi and gets utility ui(xi) from this choice; we assume that $u_i(x_i) > 0$. However, the faster the agents drive, the more likely it is that they are involved in a mutual accident. Let $p(x_1, x_2)$ be the probability of an accident, assumed to be increasing in each argument, and let c_i>0 be the cost that the accident imposes on agent *i*. Assume that each agent's utility is linear in money.

(a) Show that each agent has an incentive to drive too fast from the social point of view.

(b) If agent *i* is fined an amount t_i in the case of an accident, how large should $t_i$be to internalize the externality?

(c) If the optimal fines are being used, what are the total costs, including fines, paid by the agents? How does this compare to the total cost of the accident?

(d) Suppose now that agent *i* gets utility $u_i(x_i)$ only if there is no accident. What is the appropriate fine in this case?

Topic 5. Professor **P** has hired a teaching assistant, **Mr A**. Professor **P** cares about how many hours that **Mr. A** teaches and about how much she has to pay him. Professor **P** wants to maximize her payoff function, ***x* – *s***, where ***x***is the number of hours taught by **Mr. A** and s is the total wages she pays him. If **Mr. A** teaches for ***x*** hours and is paid ***s***, his utility is ***s* – *c(x),*** where c(x) = $x^2/2$. **Mr. A's** reservation utility is zero.

8.2 Assignment 2

Classwork (discuss the question[1])

[1] Questions for this assignment are taken from ***Varian H.,*** «Microeconomic Analysis», Third Edition. Norton&Company Inc.,1992.

Topic 1. What will the form of the expected utility function be if risk aversion is constant? What if relative risk aversion is constant?

Topic 2 (a). Why are there many equilibria in the finitely repeated Cournot game and only one in the finitely repeated Prisoner's Dilemma?

Topic 2 (b). Suppose that we have two firms with constant marginal costs of c_1 and two firms with constant marginal costs of c_2, and that c_1>c_2. What is the Bertrand equilibrium in this model? What is the competitive equilibrium in this model?

Topic 3. Suppose, your upstairs neighbors throwing an awesome, but loud party.

1. Does an externality exist? If so, classify the externality as positive/negative (or both). 2. If an externality exists, determine whether the Coase theorem applies (i.e. is it possible/reasonably feasible to assign property rights and solve the problem?)

3. If an externality exists and the Coase theorem does not apply, argue which of the governments tools are best suited to address the issue: quantity regulation, taxes/subsidies, tradable permits, or something else.

Topic 4. Does the Clarke tax result in a Pareto efficient allocation? Does the Clarke tax result in a Pareto efficient amount of the public good?

Topic 5. Suppose that in the hidden action principal-agent problem the agent is risk neutral. Show that the first-best outcome can be achieved.

Annex: Presentation slides

Explanation: Please provide presentation slides for your course (this can be done in a separate document, e.g. Power Point (Minimum: 25 slides)

See in attached files.