Educational Establishment
Belarus State Economic University

GAME THEORY IN INTERNATIONAL ECONOMICS AND DIPLOMACY

Course program for Master's Degree
1-25 81 03 World Economy

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AUTHOR:

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COURSE INTRODUCTION

The Game Theory in International Economics and Diplomacy course equips students with insight about behavioral schemes and models of various subjects of international business-environment. The course introduces key concepts, game types, and strategies of game theory. It places a special focus on the issues of business strategies choice and implementation in international business and policy context.

The purpose of the course is to equip students with knowledge, tools and skills to analyze various behavioral situations and develop effective strategies of interaction with various subjects of international business-environment

The aims of the module:
- to develop students' capacity to work within various behavioral business contexts;
- to build students' skills of finding optimal decisions in various conflicting business situations;
- to develop students' skills in implementing alternative game participation strategies.

On completion of this course, Master's Degree students should

know:
- basic concepts of game theory;
- key types of games and principles of their classification;
- Nash equilibrium concept, characteristics, limitations;
- key strategies of game participation;
- key application areas of the Game Theory within international socio-economic context.

be able to:
- detect situations in international economics, business and diplomacy context to be modeled within the Game Theory framework;
- recognize and interpret patterns of players' behavior in different games;
- explore various game and strategy options;
- pick and implement optimal game strategies in the international business environment and diplomacy context,
- analyze outcomes of various strategies implementation.

The International Business-Analytics course is aimed to develop the following **academic skills**:

- to assimilate and critically analyze data from an appropriate range of sources;
  - to understand and use tools and techniques of game theory;
  - to deploy theoretical arguments and apply them to empirical cases.

Interdisciplinary relationships. The Game Theory in International Economics and Diplomacy course builds on previous courses in Microeconomics, International Economics, Statistics, Econometrics. It implies familiarity with a number of basic concepts and models studied within Calculus and Economics courses.

Total student study time

(full-time form of study) – 66 hours, including 30 in-class hours: lectures – 24 hours, seminars – 6 hours.

(part-time form of study) – 66 hours, including 16 in-class hours: lectures – 12 hours, seminars – 4 hours.

The form of knowledge control – pass-test.

SYLLABUS

Topic No.	Topic Name	Hours	
		lectures	seminars
Topic 1	**Introduction to Game Theory**	2	
Topic 2	**Prisoners' Dilemma and Dominant Strategies in Business and Diplomacy**	4	2
Topic 3	**Nash Equilibrium in International Economics and Business**	4	2
Topic 4	**Mixed Strategies in Business and Diplomacy**	4	
Topic 5	**Extensive Form Games and Backward Induction**	4	
Topic 6	**Imperfect Information and Subgame Perfect Equilibrium in International Economics**	2	
Topic 7	**Asymmetric Information in Economics and Politics**	4	2
Total		**24**	**6**

CONTENTS

Credibility building approaches: contracts, reputation, cutting off communication, burning bridges, teamwork, mandated negotiating agents.

Moral hazard problem. Incentive design. Commitment strategies.

The Stackelberg model. Zermelo's theorem. The chain-store paradox.

A game of pre-emption. Overconfidence and over-valuing.

Ultimatum game. Bargaining game. Bargaining power.

Topic 6. Imperfect Information and Subgame Perfect Equilibrium in International Economics

Games of imperfect information. Two-stage games of complete but imperfect information. Tariffs and imperfect international competition case. Bank runs case. Tournaments.

Subgames. Wars of attrition. Two-period game. Infinite game.

Topic 7. Asymmetric Information in Economics and Politics

Asymmetric information: adverse selection, moral hazard.

A principal-agent model. Diplomatic agency: concept, structural limits.

Modeling nonverifiable information in business.

Signaling and screening.

Diplomatic communication and signaling: discursive, semiotics, cognitive theory, attribution theory. "Cheap" and "costly" signals in diplomacy.

Signaling games and the lemons problem.

Auction types: English and Japanese auctions, Vickrey auctions, online auctions, sealed-bid auctions, Dutch auctions, T-bills. Spectrum auction case.

Bidding strategies. Strategies for independent private values auctions. Strategies for correlated values auctions. Expected revenues in alternative types of auctions.

Educational and Methodological Course Outline
Full-Time Form of Study

Topic No.	Topic name, topic contents	Lectures	Practical classes	Seminars	Labarotry studies	Managed (controlled) student independent learning	Literature	Form of control
1	**Introduction to Game Theory**	2					1–27	**Quizzes**
2	**Prisoners' Dilemma and Dominant Strategies in Business and Diplomacy**	4	2				1–27	**Quizzes, assignments**
3	**Nash Equilibrium in International Economics and Business**	4	2				1–27	**Quizzes, assignments**
4	**Mixed Strategies in Business and Diplomacy**	4					1–27	**Quizzes, problem solving**
5	**Sequential Games and Backward Induction**	4					1–27	**Quizzes, problem solving**
6	**Imperfect Information and Subgame Perfect Equilibrium in International Economics**	2					1–27	**Quizzes, problem solving**
7	**Asymmetric Information in Economics and Politics**	4	2				1–27	**Quizzes, problem solving**
	Total	24	6					

Educational and Methodological Course Outline
Part-Time Form of Study

Topic No.	Topic name, topic contents	Lectures	Practical classes	Seminars	Labarotry studies	Managed (controlled) student independent learning	Literature	Form of control
1	**Introduction to Game Theory**	1					1–27	**Quizzes**
2	**Prisoners' Dilemma and Dominant Strategies in Business and Diplomacy**	1	2				1–27	**Quizzes, assignments**
3	**Nash Equilibrium in International Economics and Business**	2	1				1–27	**Quizzes, assignments**
4	**Mixed Strategies in Business and Diplomacy**	2					1–27	**Quizzes, problem solving**
5	**Sequential Games and Backward Induction**	2					1–27	**Quizzes, problem solving**
6	**Imperfect Information and Subgame Perfect Equilibrium in International Economics**	1					1–27	**Quizzes, problem solving**
7	**Asymmetric Information in Economics and Politics**	3	1				1–27	**Quizzes, problem solving**
	Total	12	4					

INFORMATION AND METHODOLOGICAL PART

Required reading

1. Baye, M.R. Managerial Economics and Business Strategy / Michael R. Baye – 7th edition.– McGraw-Hill, 2010. – 658 p.
2. Dixit, A.K., Nalebuff, B.J. The Art of Strategy: a Game Theorist's Guide to Success in Business and Life / Avinash K. Dixit, Barry J. Nalebuff. – Norton & Co., 2016. – 483 p.
3. Dodge, R.V. Schelling's Game Theory: How to Make Decisions / Robert V. Dodge. – Oxford University Press, 2012. – 292 p.
4. Dutta, P.K. Strategies and Games: Theory and Practive / Prajit K. Dutta. – MIT Press, 1999. – 475 p.
5. Perea, A. Epistemic Game Theory: Reasoning and Choice / Andres Perea. – Cambridge University Press, 2012. – 582 p.
6. The SAGE Handbook of Diplomacy / ed. by Costas M. Constatinou, Pauline Kerr and Paul Sharp. – SAGE Publications Ltd., 2016. – 722 p.

Additional reading

7. Baird, D.G., Gertner, R.H., Picker, R.C. Game Theory and the Law / Douglas G. Baird, Robert H. Gertner, Randal C. Picker. – Harvard University Press, 1998. – 323 p.
8. Maschler, M., Solan, E., Zamir, S. Game Theory / Michael Maschler, Eilon Solan, Shmuel Zamir. – Cambridge University Press, 2013. – 979 p.
9. Miller, J. Game Theory at Work: How to Use game Theory to Outthink and Outmaneuver Your Competition / James Miller. – McGraw-Hill, 2003. – 306 p.
10. Munck, G.L. Game Theory and Comparative Politics: New Perspectives and Old Concerns / Gerardo L. Munck // World Politics, 2001. – Volume 53. – Number 2.– pp. 173-204.
11. Putnam, R.D. Diplomacy and domestic politics: the logic of two-level games / Robert D. Putnam // International Organization. – 1988. – № 42 (3), pp. 427-460.
12. Snidal, D. The Game Theory in International Polictics / Duncan Snidal // World Politics, 1985. – Vol. 38, No. 1. – pp. 25-57.
13. Stevens, S.P. Games People Play: Game Theory in Life, Business, and Beyond / Scott P. Stevens. – The Teaching Company, 2008. – 124 p.
14. Varian, H.R. Intermediate Microeconomics: a Modern Approach / Hal R. Varian. – 8th ed. – Norton & Co., 2010. – 806 p.
15. Ветренко, И.А. Игровые практики в политическом процессе / И.А. Ветренко. – Омск: Омский государственный университет, 2009. – 176 с.
16. Гадельшина, Г.А., Упшинская, А.Е., Владимирова, И.С. Введение в теорию игр: учебное пособие / Г.А. Гадельшина, А.Е. Упшинская, И.С. Владимирова. – Казань: Изд-во КНИТУ, 2014. – 112 с.
17. Диксит, А. Нейлбафф, Б. Теория игр: Искусство стратегического мышления в бизнесе и жизни / А.К. Диксит, Б.Дж. Нейлбафф. – М.: Манн, Иванов и Фербер, 2017. – 464 с.
18. Захаров, А. Теория игр в общественных науках: учебник / А. Захаров. – М.: Высшая школа экономики, 2015. – 304 с.
19. Кобзарь, А.И., Тикменов, В.Н., Тикменова, И.В. Теория игр: играют все / А.И. Кобзарь, В.Н. Тикменов, И.В. Тикменова. – М.: Физматлит, 2016. – 520 с.

20. Колесник, Г. Теория игр с приложениями к моделированию экономических систем: учебное пособие / Г. Колесник. – М.: Ленанд, 2017. – 256 с.

21. Конюховский, П., Малова, А. Теория игр: учебник / П. Конюховский, А. Малова. – М.: Юрайт, 2015. – 252 с.

22. Лабскер, Л.Г., Ященко, Н.А. Теория игр в экономике, финансах и бизнесе: учебник / Л.Г. Лабскер, Н.А. Ященко; под ред. Л.Г. Лабскера. – М.: КНОРУС, 2016. – 526 с.

23. Петросян, Л.А., Зенкевич, Н.А., Шевкопляс, Е.В. Теория игр / Л.А. Петросян, Н.А. Зенкевич, Е.В. Шевкопляс. – СПб.: БХВ-Петербург, 2012. – 432 с.

24. Печерский, С.Л. Яновская, Е.Б. Кооперативные игры: решения и аксиомы / С.Л. Печерский, Е.Б. Яновская. – СПб.: Изд-во Европ. ун-та в С.-Петербурге, 2004. – 459 с.

25. Челноков, А. Теория игр: учебник и практикум / А. Челноков. – М.: Юрайт, 2016. – 224 с.

26. Шелехова, Л.В. Теория игр в экономике: учебное пособие / Л.В. Шелехова. – Директ-Медиа, 2015. – 119 с.

27. Шиловская, Н. Теория игр: учебник и практикум / Н.Шиловская. – М.: Юрайт, 2017. – 320 с.

The study program coordination protocol to other study disciplines of the specialization

Study discipline for coordination	Department	Suggestions of the alterations in the study program contests	Decision taken by the Department regarding the study program (data and protocol number)
1. Microeconomics (advanced level)	Economic Theory	The content of the training syllabus of higher educational establishment is agreed. No changes are required.	Protocol № 10 dated 09.03.2017

ДОПОЛНЕНИЯ И ИЗМЕНЕНИЯ К УЧЕБНОЙ ПРОГРАММЕ УВО
на _____ / _____ учебный год

№ п/п	Дополнения и изменения	Основание

Учебная программа пересмотрена и одобрена на заседании кафедры
_____ (протокол № _____ от _____ 201_ г.)
(название кафедры)

Заведующий кафедрой

_____   _____   _____
(ученая степень, ученое звание)   (подпись)   (И.О.Фамилия)

УТВЕРЖДАЮ
Декан факультета

_____   _____   _____
(ученая степень, ученое звание)   (подпись)   (И.О.Фамилия)

SYLLABUS NEGOTIATION PROTOCOL

Study discipline for coordination	Department	Suggestions of the alterations in the study program contests	Decision taken by the Department regarding the study program (data and protocol number)
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