



CURRICULUM

Academic subject:		Business Analyses and Forecasts
Subject code:		B30000C0534
Educational and qualification degree:		Bachelor
Status of the course		Compulsory
Field of higher education:		Social Sciences, Economics and Law
Professional:		Bachelor of Economics
Specialty:		Marketing and Strategic Planning
Faculty:		Management and Administration
Department:		Marketing and Strategic Planning
Total student academic load (average classes per course):		30/30
Non-contact student academic load		90
Credits:		6
Lecturer of the course:		Christian Tanushev, Ph.D., Associate Professor,

ANNOTATION

PREMISE

Students must have training, provided from subjects Mathematics, Macroeconomics, Microeconomics, Statistics.

1. The academic course "Business Analyses and Forecasts" shall start from the academic year 2014-2015 with the students of the specialty of "Marketing and Strategic Planning" of the educational and qualification degree of "Bachelor". The course is presented in fifth semester of third course of education and presumes participation through independent work founded on acquired habits and abilities. Lectures are oriented to discussions of practical problems in the field of analyses of each level in business organizations.

2. Content of the course:

The aim of the course is the students of "Marketing and Strategic Planning" specialty to acquire knowledge about the character and application of game theory on company level. The ambition is to learn main concepts, ideas and results of mathematics game theory. Another main aim of the course is to present to students more different view on analyses of surrounded environment in which organizations function in current global economy and possible choices of companies for strategic position toward another market participants. The aim of the course is students to achieve knowledge and abilities which are connected with forming of the strategic future of the company.

Important aim of the course is students to learn along with theoretic-methodologic knowledge and concrete practical abilities through appropriate examples that present workability of acquired from investigation of different economic models mathematical results. The course of Business Analyses and Forecasts puts emphasis on matters related to the essence and basis of game theory; different models of Extensive form game and Normal-form game; main applications of game theory; opportunities of game theory as regards choice of the best strategy in response to strategies chosen by another participants in business field; solving problems, showing applicability of game theory on each level of strategic management in companies.

It is expected students to work out in team and/or independently practical papers on analyses, developing forecasts, strategies, etc.

3. Language of education: English

CONTENT OF THE CURRICULUM

A. LECTURES

№	Topic	Classes
1.	Main characteristics of game theory GAME THEORY - INTRODUCTION 1. Game models and strategies 2. Extensive form games and Normal-form games	4

2.	GAMES WITH TWO PARTICIPANTS <ol style="list-style-type: none"> 1. Dominant strategies and social dilemma 2. Nash equilibrium 3. Games between two players 4. Maximin strategy and Minimax strategy 	4
3.	MIXED STRATEGIES EQUILIBRIUM <ol style="list-style-type: none"> 1. Shelling focal point 2. Mixed strategies 3. Defining of probabilities of players in the game 	3
4.	COURNOT COMPETITION MODEL <ol style="list-style-type: none"> 1. Definition of optimal quantities in case of applying of Cournot completion model 2. Graphic figure of the model 3. Application of the model in forming of state tax policy and company's behavior 	2
5.	BERTRAND, STACKELBERG COMPETITION MODELS, MONOPOLY <ol style="list-style-type: none"> 1. Bertrand competition model 2. Stackelberg competition model 3. Monopoly 4. Domination 	2
6.	GAMES WITH N-PARTICIPANTS AND RISK VALUATION <ol style="list-style-type: none"> 1. Games between three players 2. Defining mixed strategies with more than two players 3. Games between n participants 	2
7.	GAMES IN EXTENSIVE FORM <ol style="list-style-type: none"> 1. Models of the Extensive form games 2. Opposite induction principle 3. Mechanisms for Interaction 4. Games with endless space of time 	2
8.	COOPERATION	3

	<ol style="list-style-type: none"> 1. Elements of the cooperative games 2. Application of cooperative games in the economy. 	
9.	BEHAVIORAL AND EVOLUTIONARY THEORY OF GAMES <ol style="list-style-type: none"> 1. Games, experiments and behaviour games theory 2. Essence of evolution games theory 	4
10	APPLICATIONS OF GAME THEORY <ol style="list-style-type: none"> 1. Advantages of the game theory in forming strategic future of the companies 2. Games with voting 3. Auctions 4. Game theory – legal and social mechanism 	4

B. SEMINARS

№	Topic	Student Contact academic load (number of classes)	Student non-contact academic load (number of classes)
1.	GAME THEORY - INTRODUCTION Discussions on the lecture material. Clarifying the essence of the game theory, presentation of the kinds of game models and strategies, essence of Extensive form games and Normal-form games	2	2
2.	GAMES WITH TWO PARTICIPANTS Discussions on the lecture material. Presentation of dominating strategies and social dilemma in game theory, essence of Nash equilibrium, speciality of games between two players. Problem solving.	4	5
3.	MIXED STRATEGIES EQUILIBRIUM Discussions on the lecture material. Mixed strategies, Maximin strategy and Minimax strategy, Optimal strategies, 2x2 games. Problem solving.	4	4
4.	COURNOT, BERTRAND, STACKELBERG COMPETITION MODELS, MONOPOLY Discussions on the lecture material. Characteristics and essence of the models. Problem solving.	8	10
5.	MIDTERM EXAM		20

6.	TERM PAPER		15
7.	GAMES IN EXTENSIVE FORM Discussions on the lecture material. Presentation of Extensive form games models, application of opposite induction principle, speciality of games with endless space of time. Problem solving.	2	3
8.	COOPERATION Discussions on the lecture material. Midterm exam (test) for valuation of the degree of learning the material, adaptation of the teaching in the second part of the semester towards student's achievement up to now, specification of the gaps and necessity of clarifying of definite thesis or directing discussions to obscure problems.	3	3
9.	BEHAVIORAL AND EVOLUTIONARY THEORY OF GAMES Generalizing midterm exam results and discussing of main theoretical and practical omissions. Discussions on the lecture material. Essence of games, experiments and behavior games theory, essence of evolution games theory. Problem solving.	3	3
10.	APPLICATIONS OF GAME THEORY Midterm exam (test) for valuation of the degree of learning the material. Discussions on the lecture material. Clarification of the advantages of game theory in forming strategic future of the companies, presentation of examples and application of games with voting and auctions, essence of legal and social mechanism in game theory. Problem solving.	4	5
11.	SECOND MIDTERM EXAM		20

METHOD / TEACHING STRATEGY:

- The method for assessment is based on complex final mark in which is included the results of the semester exam and the process of continuous assessment. The process of continuous assessment is formed from presence and participation in the seminars (10 %), individual work (paper – 10 %), tests (80 %).
- Students achieved over 76 % on each of two midterm exams (test with closed questions, elaboration of theoretical subject, task) for examining of the current knowledge, prepared paper on the subject of the course and participated actively during the semester (with no more than two absences with good reason) are exempted from the written exam and receive final mark “Very good” or “Excellent”.

Scale for evaluation (100 %)
 Fair /3/ - minimum 60 %
 Good /4/ - 61%-75%
 Very good/5/ - 76%-90%
 Excellent – 91%.

- The formula for formation of the final assessment is:

$$FA = 0,5 (0,1 P + 0,8 T + 0,1 AP) + 0,5 WE,$$

Where

FA = Final assessment
WE = assessment from the written exam
P = assessment from paper
T = assessment from exams (test, solving problems)
AP = assessment from active participation

- The final assessment is based on 6 degree system. The minimum assessment for successful conclusion of the education is “Fair /3/”. The correspondence of the assessment with the European Credit Transfer System is as follows:

Excellent /6/	Very good /5/	Good /4/	Fair /3/	Слаб /2/Poor /2/
A	B	C	D	F
Credits awarded in accordance with the curriculum				No credits awarded

EXPECTED RESULTS OF THE ACADEMIC TRAINING

The course will provide basic knowledge for:

- Knowledge about the possibilities of the game theory in the management process on company level and choice of the strategic position.
- Knowledge for the process of analysis of the actions of the interacting rational players through game theory
- Knowledge for different models in the game theory
- Knowledge for the application of game theory in business organizations

The education will provide basic skills for:

- Skills for applying received base knowledge and specific economic knowledge, related to planning and management in the companies in conditions of competition and uncertainty of the environment
- Skills for making management decisions and choice of strategy based on deep knowledge of the application of game theory

Achieved knowledge and skills from the course may be applied in practice after graduating in variety of organizations with a view to constantly strained competition in the national business environment and aroused necessity for companies for international realization.

DISSEMINATION OF THE COURSE:

Идентификация на статуса: **ОДНК_7.1.3-3/** Версия 01/Изменение ____/_____; стр. ____/____

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Ниво на достъп: общодостъпен за служебно ползване поверителен секретен

- London Business School (UK) – Game Theory
- University of Milano –Bicocca – Advanced Game Theory
- University of Wien – Decision and Game Theory
- Yale University (UK) – Game Theory
- Stanford University (USA) – Game Theory

TOTAL STUDENT ACADEMIC LOAD

Type of classes/academic load	Overall student academic load	Student academic load, average classes per week	Student non-contact academic load	Total
Lectures	30	2		30
Seminars	30	2	35	65
Laboratory training				
Practical training				
Term paper			15	15
Final thesis				
Individual assignment				
Interim exam/test			20	20
On-going assessment				
Exam			20	20
Total	60		90	150

RECOMMENDED LITERATURE

A. BASIC

1. Watson, J. (2008) , Strategy: An introduction to game theory, W.W.Norton & Company
2. McCain, R. (2010), Game Theory: A Nontechnical Introduction to the Analysis of Strategy.
3. Brandenburger, A., Neibuff, B., (1997), Co-Opetition : A Revolution Mindset That Combines Competition and Cooperation : The Game Theory Strategy That's Changing the Game of Business, Currency Doubleday

B. ADDITIONAL

1. McCain, R. (2010), Game Theory: A Nontechnical Introduction to the Analysis of Strategy.
2. Brandenburger, A., Neibuff, B., (1997), Co-Opetition : A Revolution Mindset That Combines Competition and Cooperation : The Game Theory Strategy That's Changing the Game of Business, Currency Doubleday
3. Binmore, K., (2007), Playing for Real, Oxford University Press, 2007
4. Dutta, P., (1999), Strategies and Games: Theory and Practice, The MIT Press