

DESCRIPTION OF THE COLLEGE

GENERAL INFORMATION		
Course Holder	Prof. dr. sc. Robert Kopal	
Name of the College	Game Theory	
Study program	Professional Graduate Study of Business Management - MBA	
Status of the College	Mandatory	
Code	MBA-TI-18	
Year	Year 1	
Point value and method of teaching	ECTS Student Workload Coefficient	7
	Number of hours (P+V)	28+28

DESCRIPTION OF THE COLLEGE
1.1. <i>Objectives of the course</i>
From the expected outcomes of learning the subject of Game Theory, it follows that they are aimed at training students to solve business problems using practically applicable tools and methods of game theory Through this course, students acquire the necessary knowledge to get acquainted with all segments of game theory, acquire the skills of recognizing the classification of games, the skills of solving various problems of uncertainty in games, and, most importantly, the ability to practically apply the tools of game theory by making strategic moves as well as to practically apply the methods of game theory in the business of economic entities. A number of situations involving players in the field of management require a strategic mindset and application/analysis of available information so that players are able to devise the best plan to achieve certain goals
1.2. <i>Requirements for enrolment in the course</i>
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1.3. <i>Expected learning outcomes for the course</i>

1. Break down the segments of game theory and classify games.
2. Solve the problems of simultaneous games with clean and mixed strategies.
3. Solve the problems of sequential games.
4. Demonstrate solving various problems of insecurity in games.
5. Apply strategic moves.
6. Practically apply game methods in business.

1.4. *The content of the course*

Introduction to the course

Introduction to Game Theory

Examples from practice and decision-making

Breakdown of game theory segments

Game classification

Basic types of games

Breakdown of TI segments: An example from practice.

Simultaneous games with pure strategies

Characteristics of simultaneous games with pure strategies

An example from practice and Nash equilibrium.

Nash Equilibrium Search Methods

Nash Equilibrium Search Methods: Examples from Practice

Simultaneous games with mixed strategies

Definition of games and expected usefulness

Mixed Strategy Game Solving Method and Practice Examples

Sequential games

Sequential games: solution concepts.

Sequential Games: Examples from Practice

Reverse induction

Business Examples of Sequential Games by Reverse Induction

Uncertainty and information

Distribution of games according to the amount of information possessed by each of the participants

Specific models and their application in practice (Moral hazard, Harsanyi transformation...) Strategic moves Types of strategic moves Strategic moves through business examples Application of Game Theory in Human Resources Management The concept of evolutionary game theory as an alternative to Nash equilibrium Auctions Price competition Case Study Analysis Foreign direct investment Case Study Analysis Hostile takeover of companies Case Study Analysis Preventing market entry Case Study Analysis Review of Game Theory and Further Research Presentation of further possibilities in the study of game theory		
1.5. <i>Types of teaching (put X)</i>	☒ Lectures ☐ Seminars and workshops ☒ Exercises ☐ Distance education ☐ Field Teaching	☒ Independent tasks ☐ Multimedia & Network ☐ Laboratory ☐ mentoring work ☐ other _____
1.6. <i>Obligations of students</i>		
<i>Student obligations are prescribed in detail by the Statute, the Study Regulations and the Instructions on Student Obligations. The key obligations of students are:</i> ATTENDANCE AT CLASSES: <i>students are obliged to attend classes, actively follow lectures and exercises and participate constructively in classes, and in order to acquire the right to take the exam, it is necessary to attend classes in the percentages prescribed by the Study Regulations. For each student, their presence in class is recorded</i>		

through the Infoeduka digital office system. The minimum commitments are;

- Full-time students must attend at least 70% of the total number of classes to be eligible to sign.
- Part-time students need to attend at least 50% of the total number of teaching hours to be eligible to sign.

EXAM: in order to achieve a positive grade in the subject, it is necessary to achieve at least 54 points in the subject, but also at least 50% of points for each learning outcome. The method of taking the exam is described in more detail in the item Assessment and evaluation of students' work during classes and at the final exam.

***FINAL EXAM** – a student who has not met the conditions for passing the exam during the continuous examination (has achieved a total of at least 54 points in the course and met the lower point threshold for the acquisition of each learning outcome, i.e. at least 50% of the points of each learning outcome), may take the learning outcomes of the course at the final exam.

WRITTEN EXAM: the student is required to take a written exam that tests the acquisition of advanced theoretical knowledge of the features of traditional game theory and its application in business decision-making

PRACTICAL WORK: the student is obliged to participate in solving individual and group practical tasks and exercises with the aim of practicing the skills of practical application of theoretical knowledge about the traditional model of game theory, including solving various problems of uncertainty in games, the application of strategic moves and different types of games on specific business cases.

***CONTINUOUS ASSESSMENT OF KNOWLEDGE:** For more efficient progress of students in teaching, continuous examinations (2 intermediate exams) are carried out. In this way, students acquire smaller teaching units and master the subject material more easily.

1.7. Monitoring of student work (add X with the appropriate form of monitoring)

Attendance	x	Teaching activity		Term paper		Experimental work	
Written exam	x	Oral exam		Essay		Research	
Design		Continuous assessment*		Paper		Practical work	x
Portfolio							

1.8. Assessment and evaluation of students' work during classes and at the final exam

Assessment and evaluation of students' work during classes and at the final exam is carried out on the basis of the Study Regulations of the EFFECTUS University of Applied Sciences.

Allocation of points according to the forms of student work monitoring:

	Attendance	Written exam	Practical work	Total
I1		16		16
I2		16		16
I3		16		16
I4			16	16
I5			16	16
I6			16	16
OUT OF THE BOX	4			4
TOTAL	4	48	48	100

Linking learning outcomes, teaching methods and methods of assessment of knowledge:

FORMS OF TRACKING	NAME OF LEARNING OUTCOMES	TEACHING METHOD	METHOD OF ASSESSMENT KNOWLEDGE	Maximum number of rating points
Written exam	OUTCOME 1 Break down the segments of game theory and classify games	Lecture	Essay-problem questions to which an answer is sought that demonstrates the identification and definition of key concepts, their connection and corresponding arguments of a higher degree of complexity	16
		Asking questions		
		Discussion		
Written exam	OUTCOME 2 Solve problems of simultaneous games with clean and mixed strategies	Lecture	Computational tasks with appropriate argumentation and interpretation	16
		Asking open-ended questions		
		Guided training		
Written exam	OUTCOME 3 Solve the problems of sequential games	Lecture	Computational tasks with appropriate argumentation and interpretation	16
		Asking open-ended questions		
		Guided training		
Practical work	OUTCOME 4 Demonstrate the solution of various problems of insecurity in games	Lecture	Problem questions with explanations and argumentation that require problem identification, analysis, synthesis, linking and critical judgment	16
		Training and feedback		

<i>Practical work</i>	<i>OUTCOME 5 Apply strategic moves</i>	<i>Lecture</i>	<i>Practical tasks that test the skill of practical application of knowledge about different game constructs (strategic moves: threat, promise and commitment) in solving specific business problems</i>	<i>16</i>
		<i>Guided training</i>		
		<i>Training and feedback</i>		
<i>Practical work</i>	<i>OUTCOME 6 Practically apply game methods in business</i>	<i>Lecture</i>	<i>Practical tasks that test the skill of practical application of knowledge about different types and models of games in solving specific business problems</i>	<i>16</i>
		<i>Guided training</i>		
		<i>Training and feedback</i>		
<i>Attendance</i>	<i>All outcomes</i>	<i>Lectures and exercises</i>	<i>Attendance records</i>	<i>4</i>
	<i>TOTAL POINTS</i>			<i>100</i>

<i>Type of student workload</i>	<i>Hours of student workload</i>	<i>ECTS credits</i>
Attending face-to-face classes	56	1,86
Field trips/visits outside the college	0	0
Independent study/research	65	2,17
Out-of-classroom preparation and preparation of seminars/presentations	0	0
Work on an out-of-classroom project assignment	0	0
Independent preparation for exams and exam time	74	2,47
Consultation activities	15	0,50
Other	0	0
TOTAL ECTS credits	210	7

JUDGING:

In order to achieve a positive grade in the course, the student must cumulatively meet two conditions: achieve a total of at least 54 (fifty-four) points in the course and meet the lower point threshold for the adoption of each individual learning outcome, which is 50% of the total points of the learning outcomes.

Grades are calculated based on the following distribution of points:

<i>NUMBER OF POINTS</i>	<i>RATING</i>
<i>0,00 – 53,90</i>	<i>Insufficient (1)</i>

54,00 – 64,90	Sufficient (2)
65,00 – 79,90	Good (3)
80,00 – 89,90	Very Good (4)
90.00 and more	Excellent (5)

The evaluation is carried out in a transparent manner by collecting points. The course is valued with 100.00 points (with the possibility of achieving an additional 8 points on the Challenge learning outcome).

CHALLENGE LEARNING OUTCOME - the student has the opportunity to earn an additional maximum of 8 points through the Challenge learning outcome; The student independently chooses one of the activities proposed in the first lesson, and has the opportunity to independently propose an activity by which he wants to increase the number of points and, with the consent of the course holder, achieves them according to the criteria of the subject. Points for the Challenge learning outcome are not distributed according to the learning outcomes, but the number achieved is an additional number of points to the total number of points achieved according to the learning outcomes.

Before taking the final written exam, each student must meet the prescribed conditions, which primarily means that they have attended the % of classes determined by the Study Regulations and that they have received an electronically encrypted permission to take the exam.

1.9. Required literature and number of copies in relation to the number of students currently attending classes in the course

Title	Number of copies	Number of students
Kopal, R. and Korkut, D. (2020): Introduction to Game Theory, 4th Unchanged Edition, Zagreb: Effectus – University College	5* *students receive compulsory literature in permanent ownership	60

1.10. Supplementary literature

Carmichael, F. (2005) A Guide to Game Theory. Financial Times/Prentice Hall; 1st edition

Dixit, A., Skeath, S. and Reiley, D. H. (2009) Games of Strategy. New York: W. W. Norton. 3rd edition

1.11. Quality monitoring methods that ensure the acquisition of output knowledge, skills and competences

- *analysis of exam results, achieved results, level of understanding and knowledge during exercises, practical tasks and group work,*
- *conducting a survey among students,*
- *The teacher's evaluation,*
- *the achieved results and the level of knowledge presented during the preparation and defense of the final thesis (of students who choose the graduate thesis in this subject),*
- *analysis of the reports of the Quality Center and*
- *Feedback from students who have already graduated and their employers on the usefulness of the content of this course in the performance of the work they do.*