



EFFECTUS
University of Applied
Sciences

DESCRIPTION OF THE COURSE

GENERAL INFORMATION		
Course Holder	Izv. Prof. Dr. Sc. Robert Kopal	
The name of the college	Game Theory	
Study program	Professional Graduate Study of Business Management - MBA	
Status of the College	Mandatory	
Year	1 st Year	
Point value and method of teaching	ECTS coefficient of student workload	7
	Number of hours (P+V)	28+28

DESCRIPTION OF THE COURSE
<i>1.1. Objectives of the course</i>
<p>From the expected learning outcomes of the Game Theory course, it follows that they are aimed at training students to solve business problems using practically applicable tools and methods of game theory</p> <p>Through this course, students acquire the necessary knowledge to get acquainted with all segments of game theory, acquire the skills of recognizing game classification, 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.</p> <p>Many situations in which players participate in the field of management require a strategic mindset and the application/analysis of available information so that players are able to devise the best plan to achieve certain goals</p>
<i>1.2. Requirements for enrolment in the course</i>
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1.3. *Expected learning outcomes for the course*

1. Break down segments of game theory and classify games.
2. Solve problems of simultaneous games with clean and mixed strategies.
3. Solve sequential game problems.
4. Demonstrate solving various uncertainty problems in games.
5. Make strategic moves.
6. Practical application of game methods in business.

1.4. *Course content*

Introduction to the College

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: A practical example.

Simultaneous games with pure strategies

Characteristics of simultaneous games with pure strategies

An example from practice and Nash equilibrium.

Methods of searching for Nash balance

Methods of Seeking Nash Balance: Practical Examples

Simultaneous Mixed Strategy Games

Definition of games and expected utility

Method of solving games with mixed strategies and examples from practice

Sequential games

Sequential games: solution concepts.

Sequential Games: Examples from Practice



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<p>Reverse Induction Business Examples of Solving Sequential Games by Reverse Induction</p> <p>Uncertainty and information Division of games according to the amount of information that each participant has Specific models and their application in practice (Moral hazard, Harsanyi transformation...)</p> <p>Strategic moves Types of strategic moves Strategic moves through business examples</p> <p>Application of Game Theory in Human Resource Management The concept of evolutionary game theory as an alternative to Nash equilibrium Auctions</p> <p>Price competition Case study analysis</p> <p>Foreign direct investment Case study analysis</p> <p>Hostile takeover of the company Case study analysis</p> <p>Preventing entry into the market Case study analysis</p> <p>Review of Game Theory and further research Presentation of further possibilities in the study of game theory</p>	<p><input checked="" type="checkbox"/> lectures <input type="checkbox"/> seminars and workshops <input checked="" type="checkbox"/> exercises <input type="checkbox"/> Distance education <input type="checkbox"/> Field Teaching</p>	<p><input checked="" type="checkbox"/> Independent tasks <input type="checkbox"/> Multimedia & Network <input type="checkbox"/> laboratory <input type="checkbox"/> Mentoring work <input type="checkbox"/> Other _____</p>
<p>1.5. <i>Types of teaching (put X)</i></p>		

1.6. Student obligations

The obligations of students are prescribed in detail by the Statute, Study Regulations, and Student Obligations Guidelines. The key obligations of students are:

ATTENDANCE AT CLASSES: 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 through the Infoeduka digital office system. The minimum obligations 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 classes to be eligible to sign.

PASSING EXAMS: 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 of knowledge (has achieved a total of at least 54 points in the course and has met the lower point threshold of adoption of each learning outcome, i.e. a minimum of 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 verifies the acquisition of advanced theoretical knowledge about 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 skill of practical application of theoretical knowledge on 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 EXAMINATION:** In order to make students progress more efficiently in class, continuous examinations of knowledge (2 intermediate exams) are carried out. In this way, students acquire smaller teaching units and master the subject material more easily.

1.7. Student Work Tracking (Add X to the appropriate tracking format)

Attending classes	x	Teaching activity		Seminar paper		Experimental work	
Written exam	x	Viva voce		Assay		Research	
Project		Continuous Assessment*		Report		Practical work	x



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

Evaluation and evaluation of students' work during classes and at the final exam is carried out on the basis of the Regulations on Studying of the EFFECTUS University of Applied Sciences. Allocation of points according to the forms of student work monitoring:

	Attending classes	Written exam	Practical work	Altogether
I1		16		16
I2		16		16
I3		16		16
I4			16	16
I5			16	16
I6			16	16
OUT OF OUTCOME	4			4
ALTOGETHER	4	48	48	100



Linking learning outcomes, teaching methods and knowledge assessment methods:

FORMS OF TRACKING	NAME OF LEARNING OUTCOMES	TEACHING METHOD	KNOWLEDGE ASSESSMENT METHOD	Maximum number of points
<i>Written exam</i>	<i>OUTCOME 1 Break down segments of game theory and classify games</i>	<i>lecture</i>	<i>Essay-problem questions that are required to be answered that demonstrate the identification and definition of key terms, their connection and appropriate argumentation of a higher degree of complexity</i>	<i>16</i>
		<i>Asking questions</i>		
		<i>discussion</i>		
<i>Written exam</i>	<i>OUTCOME 2 Solve problems of simultaneous games with clean and mixed strategies</i>	<i>lecture</i>	<i>Computational tasks with appropriate argumentation and interpretation</i>	<i>16</i>
		<i>Asking open-ended questions</i>		
		<i>Guided training</i>		
<i>Written exam</i>	<i>OUTCOME 3 Solve sequential game problems</i>	<i>lecture</i>	<i>Computational tasks with appropriate argumentation and interpretation</i>	<i>16</i>
		<i>Asking open-ended questions</i>		
		<i>Guided training</i>		
<i>Practical work</i>	<i>OUTCOME 4</i>	<i>lecture</i>	<i>Problem questions with explanations</i>	<i>16</i>



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	<i>Demonstrate solving various insecurity problems in games</i>	<i>Rehearsal and feedback</i>	<i>and argumentation that require problem identification, analysis, synthesis, linkage, and critical judgment</i>	
<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>Rehearsal and feedback</i>		
<i>Practical work</i>	<i>OUTCOME 6 Practical application of 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>Rehearsal and feedback</i>		
<i>Attending classes</i>	<i>All outcomes</i>	<i>Lectures and exercises</i>	<i>Attendance records</i>	<i>4</i>
	TOTAL POINTS			100



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<i>Type of student workload</i>	<i>Student Load Hours</i>	<i>ECTS credits</i>
Attending contact 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

RATING:

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.



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Grades are calculated based on the following distribution of points:

<i>SCORE</i>	<i>RATING</i>
<i>0,00 – 53,90</i>	<i>Insufficient (1)</i>
<i>54,00 – 64,90</i>	<i>Sufficient (2)</i>
<i>65,00 – 79,90</i>	<i>Good (3)</i>
<i>80,00 – 89,90</i>	<i>Very good (4)</i>
<i>90.00 and more</i>	<i>Excellent (5)</i>

Grading is carried out in a transparent manner by collecting points. The course is evaluated 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 with 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 course. Points for the Challenge learning outcome are not distributed according to the learning outcomes, but the number achieved makes 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.



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1.9. Required reading and number of copies in relation to the number of students currently attending classes in the course		
Title	Number of copies	Number of students
<i>Kopal, R. and Korkut, D. (2020): Introduction to Game Theory, 4th Unchanged Edition, Zagreb: Effectus – University College</i>	5* *students receive compulsory literature in permanent ownership	60
1.10. Supplementary literature		
<i>Carmichael, F. (2005) A Guide to Game Theory. Financial Times/Prentice Hall; 1st edition</i> <i>Dixit, A., Skeath, S. and Reiley, D. H. (2009) Games of Strategy. New York: W. W. Norton. 3rd edition</i>		
1.11. Ways of quality monitoring that ensure the acquisition of output knowledge, skills and competencies		
<ul style="list-style-type: none">• analysis of exam results, achieved results, level of understanding and knowledge during exercises, practical tasks and group work,• conducting a survey among students,• The evaluation of the teacher,• achieved results and level of knowledge presented during the preparation and defense of the final thesis (students who choose a graduate thesis in this course),• analysis of the Quality Centre's reports 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.		