Basic data of the subject						
Academic unit:	Faculty of E	Ingineering a	and Informatics			
	Applied Inf	ormatics				
Title of the subject:	Operational	Research				
Level:	Bachelor					
Course Status:	Obligatory					
Year of studies:	II					
Number of hours per week:	3					
Value of Credits - ECTS:	5					
Time / location:						
Course lecturer:	Prof.Ass.Dr	.Bashkim Çe	erkimi			
Contact details:	Bashkim.cer	kini@ushaf.n	iet			
Course Description:	Operational problems fro examples gi	Research j om a wide ra ven will con	for assisting with ange of real life set	methods used in the analysis of ttings. Many of the on of Operational ormatics.		
Objectives of the course:	The component will introduce mathematical modelling methods frequently used in Operational Research, including linear programming, integer programming, stochastic analysis, queuing theory and compartmental modelling. Students will also be introduced to the practical problem solving methodology of Operational Research and the processes involved in developing a mathematical modelling structure.					
Expected learning outcomes:	 Upon successful completion of this course, student will be able to: Classify mathematical programs on the basis of the number and types of their solutions Apply linear programming to real-world decision problems with real and integer-valued variables Model adversarial decision problems using linear programming Select an appropriate solution method or synthesise a new method for a given mathematical program Formulate mathematical programs used for decision-making and decision-making under uncertainty Formulate an adversarial decision problem in terms of a game 					
	u sui					
Contribution to the stude	Contribution to the student load (which must correspond with learning outcomes)					
Activity	in iouu (will	Hour	Day/Week	In total		
Lectures with numerical exercis	es	3	15	45		
Internship			15	+5		
Contacts with teacher / consulta	tions					
Contacts with teacher / consultations						

Field exercises							
Midterm, seminars and projects.		3	2	6			
Homework		5		0			
Self-learning time student (at the library or		3	15	45			
at home)		5	15	15			
Final preparation for the exam		7	2	14			
Time spent on evaluation (tests, quiz and							
final exam)	, 1.						
Projects and presentations.		3	5	15			
Total				125			
				•			
Teaching methodology:	The course t	akes 15 week	s with 2 hours of le	ctures and 2 hours			
	weekly indiv	weekly individual and group exercises.					
	Exercises wi	Exercises will be held in the form of individual and group work					
	in which con	in which concrete examples will be discussed.					
	-	Active participation is extremely important, so students are					
	encouraged to attend lectures and exercises regularly and						
	contribute to the discussions that take place in lectures.						
	Lectures, exercise, individual work, discussions and group						
	work.	<u> </u>					
Assessment methods:	Test 1, Test 2, Attendance and Activity. Final exam: 100%						
The notic of theory and	Final exam:	100%					
The ratio of theory and practice:	100% Theor	y with numer	ical exercises.				
Literature							
Basic Literature:	1 Intro	duction to m	athematical program				
	1. Introduction to mathematical programming. Operation research. Volume 1 Winston, Wayne L. 4th ed., Pacific						
			1 0	ē 1			
	resec	arch. Volume	1 Winston, Wayne	ē 1			
	resec Grov	urch. Volume ve, CA: Thom.	1 Winston, Wayne son/Brooks/Cole	L. 4th ed., Pacific			
	resec Grov 2. Lineo	arch. Volume ve, CA: Thom. ar and nonlin	1 Winston, Wayne son/Brooks/Cole ear programming	L. 4th ed., Pacific Luenberger, David			
	resec Grov 2. Linec G., 1	arch. Volume ve, CA: Thom. ar and nonlin 937- author.	1 Winston, Wayne son/Brooks/Cole lear programming Fourth edition., Cha	L. 4th ed., Pacific Luenberger, David am: Springer			
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Week nine:	Infinite Queuing Models	
Week ten:	Finite Queuing Models	
Week eleven:	Simulation	
Week twelve:	Simulation Monte-Carlo Method	
Week thirteen:	Game Theory	
Week fourteen:	Test 2	
Week fifteen:	Course summary and exam preparation	
Academic policies and rules of conduct		

Regular attendance of lectures and exercises is necessary, as well as active participation with discussion and solution of tasks. Not impeding the progress required for learning using mobile phones turned off or in silent mode.