OPERATIONS RESEARCH II

1	Course Title:	OPERATIONS RESEARCH II
2	Course Code:	END3034
3	Type of Course:	Compulsory
4	Level of Course:	First Cycle
5	Year of Study:	3
6	Semester:	6
7	ECTS Credits Allocated:	5.00
8	Theoretical (hour/week):	3.00
9	Practice (hour/week):	0.00
10	Laboratory (hour/week):	1
11	Prerequisites:	END3033
12	Language:	English
13	Mode of Delivery:	Face to face
14	Course Coordinator:	Doç. Dr. DUYGU YILMAZ EROĞLU
15	Course Lecturers:	
16	Contact information of the Course Coordinator:	Doç. Dr. Duygu Yılmaz Eroğlu duygueroglu@uludag.edu.tr, 0(224) 2940916 Endüstri Mühendisliği Bölümü Görükle Bursa
17	Website:	
18	Objective of the Course:	The objective of the course is to provide different solution techniques for varying problem definitions such as network models, stochastic systems and non-linear systems that can be encountered in the service and production industries.
19	Contribution of the Course to Professional Development:	It's been planned to contribute to professional development by analyzing real life problems by scientific methods and offering solutions.
20	Learning Outcomes:	

		1	Ability to build advanced mathematical models of real life systems
		2	Ability to determine correct solving methodology of a given problem.
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21	Course Content:	

Course Content:	

Week	Theoretical	Practice
1	Introduction to Integer Programming	Sample problems
2	Formulating Integer Programming Problems	Sample problems (either-or constraints; if then constraints)

3	The branch and bound method for solving pure integer programming problems	Sample problems			
4	Binary integer programming problems solution method: Implicit enumeration	Sample problems			
5	Goal Programming	Sample problems			
6	Goal Programming-Solution Methods	Sample problems			
7	Deterministic Dynamic Programming	Sample problems			
8	Deterministic Dynamic Programming (resource allocation, knapsack, travelling salesman problems)	Sample problems			
9	Non-linear programming	Sample problems			
10	Non-linear programming: Golden Section Searc method	Sample problems			
11	Stochastic Dynamic Programming	Sample problems			
12	Markov Decision Prosesses	Sample problems			
13	Markov Decision Prosesses (Policy Iteration, Value Iteration)	Sample problems			
14	Sharing some application examples				
22	Textbooks, References and/or Other Materials:	1.Wayne L. Winston, Operations Research Applications and Algorithms 4th edition, Wiley, 1990. 2.Ronald L. Rardin, Optimization in Operations Research, Printice Hall, 1998. ISBN: 0-02-398415-5. 3.Gilbert Strang, "Linear Algebra and Its Applications", Third Edition, Harcourt Brace Jovanovich Inc. (HBJ			

Activites			Number	Duration (hour)	Total Work Load (hour)
TERM LEARNING ACTIVITIES Theoretical	NUMBER	WEIGHT 14		3.00	42.00
Practicals/Labs		14		1.00	14.00
Self study and preperation Quiz	0	0.00 14		3.00	42.00
Homeworks		0		0.00	0.00
Projects Final Exam	1	60.00 0		0.00	0.00
Field Studies		0		0.00	0.00
Midterm exams Contribution of Term (Year) Learning Activities to		40.00 1		20.00	20.00
Others		0		0.00	0.00
Final Exams Contribution of Final Exam to Success Grade		60.00 1		35.00	35.00
Total Work Load					173.00
Total work load/ 30 hr Measurement and Evaluation Techniques Used in the Midterm exam and final exam					5.10
ECTS Credit of the Course					5.00

24	ECTS / WORK LOAD TABLE

25	CONTRIBUTION OF LEARNING OUTCOMES TO PROGRAMME QUALIFICATIONS															
	PQ1	PQ2	PQ3	PQ4	PQ5	PQ6	PQ7	PQ8	PQ9	PQ10	PQ11	PQ12	PQ13	PQ14	PQ15	PQ16
ÖK1	4	0	5	3	0	0	0	4	0	0	0	4	0	0	0	0
ÖK2	4	0	5	3	0	0	0	4	0	0	0	4	0	0	0	0
	LO: Learning Objectives PQ: Program Qualifications															

Contribution Level:	1 very low	2 low	3 Medium	4 High	5 Very High

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