OPERATIONS RESEARCH

1	Course Title:	OPERATIONS RESEARCH	
2	Course Code:	BMB2016	
3	Type of Course:	Optional	
4	Level of Course:	First Cycle	
5	Year of Study:	2	
6	Semester:	4	
7	ECTS Credits Allocated:	5.00	
8	Theoretical (hour/week):	3.00	
9	Practice (hour/week):	0.00	
10	Laboratory (hour/week):	0	
11	Prerequisites:	none	
12	Language:	Turkish	
13	Mode of Delivery:	Face to face	
14	Course Coordinator:	Prof. Dr. PINAR KIRCI	
15	Course Lecturers:	yok	
16	Contact information of the Course Coordinator:	Bilgisayar müh. bölüm binası 1. kat oda 110 pinarkirci@uludag.edu.tr	
17	Website:		
18	Objective of the Course:	To teach approaches for modelling stochastic and deterministic systems that can be encountered in real life and the methods for making optimal decisions in problems concerning such systems	
19	Contribution of the Course to Professional Development:	to learn approaches for modelling stochastic and deterministic systems that can be encountered in real life	
20	Learning Outcomes:		
		1	Being able to mathematically model stochastic or deterministic systems in real life
		2	Being able to formulate the problems that may arise in a system
		3	Being able to select the appropriate optimization method for a problem
		4	Being able to use software tools in modelling the systems and solving the optimization problems
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21	Course Content:		

Course Content:

Week	Theoretical	Practice
1	Introduction, mathematical model design and modelling philosophy	
2	Linear programming and simplex algorithm	
3	Solving linear programming problems using LINDO	

4	Big M method	
5	Two-phase simplex method	
6	Analyses of the special cases that are encountered in application of simplex algorithm	
7	Duality and sensitivity analysis	
8	Programming solutions to sample problems	
9	Integer programming, branch and bound algorithm, cutting plane algorithm	
10	Solving integer programming problems using MPL	
11	Goal programming, preemptive and non-preemptive algorithms	
12	Solving goal programming problems using MPL	
13	Transportation problem and solution algorithms	
14	Network models, minimum spanning tree algorithm, shortest path algorithm	

22	Textbooks, References and/or Other Materials:	1. Operations Research: Applications and Algorithms, W.L. Winston, 4th Edition, Brooks/Cole-Thomson Learning, 2004. 2. Introduction to Operations Research, F.S. Hillier and

Activites	Number	Duration (hour)	Total Work Load (hour)
Theoretical	14	3.00	42.00
Practicals/Labs	0	0.00	0.00
Self study and preperation	14	2.00	28.00
Homeworks	0	0.00	0.00
Projects	0	0.00	0.00
Field Studies	0	0.00	0.00
Midterm exams	1	40.00	40.00
Others	0	0.00	0.00
Final Exams	1	40.00	40.00
Total Work Load			150.00
Total work load/ 30 hr			5.00
ECTS Credit of the Course			5.00

Measurement and Evaluation Techniques Used in the Course	written exam

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	5	5	4	4	2	2	1	1	1	1	1	1	1	1	1	1
ÖK2	5	5	3	3	2	2	1	1	1	1	1	1	1	1	1	1
ÖK3	5	5	2	4	2	1	1	1	1	1	1	1	1	1	1	1

ÖK4	4	4	3	5	3	3	1	1	3	1	1	1	1	1	1	1

LO: Learning Objectives PQ: Program Qualifications					
Contribution Level:	**1 very low**	**2 low**	**3 Medium**	**4 High**	**5 Very High**