QUANTITATIVE TECHNIQUES

1	Course Title:	QUANTITATIVE TECHNIQUES	
2	Course Code:	IIS4401	
3	Type of Course:	Optional	
4	Level of Course:	First Cycle	
5	Year of Study:	4	
6	Semester:	7	
7	ECTS Credits Allocated:	6.00	
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. ZEHRA BAŞKAYA	
15	Course Lecturers:		
16	Contact information of the Course Coordinator:	zbaskaya@uludag.edu.tr Tel: 0224 29 41046	
17	Website:		
18	Objective of the Course:	Anayzing the business cases and mathematical modelling, solving the models, interpreting the solutions and presenting to the decision-makers in a useful format for the effective management of decision making activities.	
19	Contribution of the Course to Professional Development:		
20	Learning Outcomes:		
		1	To be able to analyze business problems successfully
		2	To be able to model the problems mathematically
		3	To be able to solve linear programming problems that include different constraint types with graphical and simplex method.
		4	To be able to define and solve complex business problems.
		5	To be able to use linear programming effectively in all functions of a business.
		6	To be able to model and solve transportation problems successfully.
		7	To be able to solve transportation and assignment problems with minimum and maximum objectives and interpret the solutions.
		8	To be able to interpret the solutions as a manager and use numerical techniques for decision support.
		9	
		10	
21	Course Content:		
	Course Content:		
Week	Theoretical		Practice

1	Definition of numerical methods and establishment of linear programming models	
2	Graphical method solution in linear programming	
3	Simplex method algorithm and solution of maximum problems	
4	Invalid starting solution models and two stage method	
5	Special cases (degenerations and unlimited solutions)	
6	Simplex method solution of minimum problems	
7	Duality in linear programming and simplex method solution of dual problem and economical interpretation (Midterm Exam)	
8	Application of graphic and simplex method	
9	Structure of transportation problem and Starting table methods in transportation problems (northwest corner, minimum cost and Vogel approach methods).	
10	Optimum solution to transportation models with stepping-stone method.	
11	Optimum solution to transportation models with MODI (modified distribution) method.	
12	Unbalanced transportation models (situations that demand more than supply and supply	
13	Optimum solution to assignment models with Hungarian algorithm.	
14	Application of transportation and assignment models to different business problems.	
15	Materials.	
16		
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22	Assesment	
23		

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	4.00	56.00
Homeworks	0	0.00	0.00
Projects	0	0.00	0.00
Field Studies	0	0.00	0.00
Midterm exams	1	25.00	25.00
Others	0	0.00	0.00
Final Exams	1	30.00	30.00
Total Work Load			153.00
Total work load/ 30 hr			5.10
ECTS Credit of the Course			6.00

2004.
* Ahmet Öztürk, Yöneylem Araştırması, Ekin Kitabevi,
Wayne L. Winston, Operations Research: Applications and Algorithms, Thomson Brooks/Cole, Australia, 2004.

Midterm Exam	1	40.00
Home work-project	0	0.00
Final Exam	1	60.00
Total	2	100.00
Contribution of Term (Year) Learning Activities to Success Grade		40.00
Contribution of Final Exam to Success Grade		60.00
Total		100.00
Measurement and Evaluation Techniques Used in the Course		

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	5	1	3	2	3	1	2	3	1	0	4	0	0	0	0
ÖK2	3	5	1	3	2	3	1	2	3	1	0	4	0	0	0	0
ÖK3	2	4	1	2	1	2	1	1	2	1	0	4	0	0	0	0
ÖK4	4	5	1	2	1	3	1	1	3	1	0	4	0	0	0	0
ÖK5	3	3	1	2	1	2	1	1	2	1	0	4	0	0	0	0
ÖK6	3	3	1	2	1	2	1	1	2	1	0	4	0	0	0	0
ÖK7	3	3	1	2	1	2	1	1	2	1	0	4	0	0	0	0
ÖK8	4	5	1	3	2	3	1	2	3	1	0	5	0	0	0	0
LO: Learning Objectives PQ: Program Qualifications																
Contribution Level:	**1 very low**		**2 low**			**3 Medium**				**4 High**			**5 Very High**			