NUMERICAL METHODS I

1	Course Title:	NUMERICAL METHODS I	
2	Course Code:	ISL4401	
3	Type of Course:	Compulsory	
4	Level of Course:	First Cycle	
5	Year of Study:	4	
6	Semester:	7	
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:		
12	Language:	Turkish	
13	Mode of Delivery:	Face to face	
14	Course Coordinator:	Doç. Dr. GÜL EMEL	
15	Course Lecturers:	Öğr.Gör.Dr.Burcu AVCI ÖZTÜRK	
16	Contact information of the Course Coordinator:	Yrd.Doç.Dr.Gül GÖKAY EMEL ggokay@uludag.edu.tr Tel: 0224 29 41055	
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 a linear programming model with graphical method.
		4	To be able to solve linear programming problems that include different constraint types with simplex method.
		5	To be able to define and solve complex business problems.
		6	To be able to solve linear programming problems with minimum and maximum objectives.
		7	To be able to use linear programming effectively in all functions of a business.
		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 model building	

2	Linear programming and establishment of linear programming models	
3	Graphical method solution of maximum problems	
4	Graphic method solution of minimum problems	
5	Simplex method algorithm	
6	Simplex method solution of maximum problems	
7	Simplex method solution of minimum problems	
8	Special cases (degenerations and unlimited solutions)	
9	Invalid starting solution models and solutions	
10	Solutions with two stage method	
11	Duality in linear programming	
12	Simplex method solution of dual problem and economical interpretation	
13	Sensitivity analysis and simplex method	
14	Application of graphic and simplex method	

22	Textbooks, References and/or Other Materials:	* Zekai, Yılmaz, Sayısal Yöntemler, Ekin Kitabevi, Bursa, 2004. * Ahmet Öztürk, Yöneylem Araştırması, Ekin Kitabevi, Bursa, 2011

23	Assesment				
TERM LEARNING ACTIVITIES		**NUMBER**	**WEIGHT**		
Midterm Exam		1	40.00	14	4.00	56.00
Homeworks		0	0.00	0	0.00	0.00
Projects		0	0.00	0	0.00	0.00
Field Studies		0	0.00	0	0.00	0.00
Midterm exams		2	100.00	1	25.00	25.00
Others				0	0.00	0.00
Final Exams				1	30.00	30.00
Total Work Load						178.00
Total work load/ 30 hr				100.00		5.10
ECTS Credit of the Course						5.00

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
Homework-project	0	0.00	0.00
Midterm Exam	1	4.00	4.00
Total	1	25.00	25.00
Success Grade	1	30.00	30.00

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	2	4	0	0	0	0	3	0	5	0	3	0	0	0	0	0
ÖK2	0	4	0	0	0	0	3	0	5	0	3	0	0	0	0	0
ÖK3	0	0	0	0	0	0	0	0	5	0	0	0	0	0	0	0

ÖK4	0	0	0	0	0	0	3	0	5	0	0	0	0	0	0	0
ÖK5	2	4	0	0	0	0	0	0	5	0	3	0	0	0	0	0
ÖK6	0	0	0	0	0	0	0	0	5	0	3	0	0	0	0	0
ÖK7	2	4	0	0	0	0	3	0	5	0	3	0	0	0	0	0
ÖK8	2	4	0	0	0	0	3	0	5	0	3	0	0	0	0	0

LO: Learning Objectives PQ: Program Qualifications

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