

SIMULATION ANALYSIS

1	Course Title:	SIMULATION ANALYSIS	
2	Course Code:	END5115	
3	Type of Course:	Optional	
4	Level of Course:	Third Cycle	
5	Year of Study:	1	
6	Semester:	1	
7	ECTS Credits Allocated:	7.50	
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. ERDAL EMEL	
15	Course Lecturers:		
16	Contact information of the Course Coordinator:	erdal@uludag.edu.tr Tel: 0224 294 2080 Endüstri Mühendisliği Bölümü, Mühendislik Mimarlık Fakültesi Uludağ Üniversitesi, Görükle, Bursa	
17	Website:	http://endustri.uludag.edu.tr	
18	Objective of the Course:	To be informed about complex and discrete manufacturing and service systems analysis and computer simulation models to determine optimal operating conditions tested under stochastic conditions in establishment and, to obtain solutions with high statistical reliability	
19	Contribution of the Course to Professional Development:		
20	Learning Outcomes:		
		1	Acquire the ability to solve and identify real life problems
		2	Gain the ability to design a new system or to examine the behavior of an existing system
		3	Be informed about computer modeling environment and the necessary software
		4	Be able to model a complex system and to collect and analyze data
		5	Be able to develop computer algorithms according to the system and gain the ability to encode this algorithm
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21	Course Content:		
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Week	Theoretical	Practice	
1	Discrete simulation models for the systems, simulation software, modeling with Promodel		

2	Modeling and analysis of a sample system, and its application with PROMODEL			
3	Mathematical and statistical models, application of probability distribution functions with StatFit and Statistica; model building with Promodel			
4	Mathematical and statistical models, queuing models via Promodel, StatFit and applications with Statistica			
5	Random number and variate generation, random input modeling, goodness of fit testing, and applications with StatFit			
6	Verification of Simulation Models, Promodel, StatFit and applications with Statistica			
7	Analysis of systems with single output data, applications with Promodel			
8	Repeating courses and midterm exam			
9	Comparative analysis of the system and alternative designs, application with PROMODEL			
10	Experimental design and optimization, 2k factorial design, Statistica and applications			
11	Multi-level and Taguchi experimental design and Metamodelling, Statistica and applications			
12	Modeling and optimization of production systems, applications with Promodel			
Activites		Number	Duration (hour)	Total Work Load (hour)
14	Theory Application with PROMODEL	14	3.00	42.00
Practicals/Labs		0	0.00	0.00
22	Textbooks, References and/or Other Materials: Self study and preparation	12	5.00	65.00
Homeworks		3	12.00	36.00
Projects		1	81.00	81.00
Field Studies		0	0.00	0.00
TERM LEARNING ACTIVITIES		NUMBE	WEIGHT	2.00
Others		0	0.00	0.00
Midterm Exam		1	2.00	2.00
Final Exams		1	2.00	2.00
Quiz		0	0.00	0.00
Total Work Load				228.00
Home work project		0	0.00	0.00
Total work load/ 30 hr				7.60
Final Exam		1	20.00	20.00
ECTS Credit of the Course				7.50
Total		5	100.00	100.00
Contribution of Term (Year) Learning Activities to Success Grade		70.00		
Contribution of Final Exam to Success Grade		30.00		
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	0	5	5	3	0	0	0	3	4	4	5	5	0	0	0	0
ÖK2	0	3	5	3	0	0	0	0	3	0	5	4	0	0	0	0
ÖK3	0	4	4	0	0	0	0	4	3	0	3	3	0	3	0	0
ÖK4	0	3	4	0	0	0	0	4	4	4	5	5	0	0	0	0
ÖK5	0	3	4	0	0	0	0	5	0	0	4	4	4	0	0	0
LO: Learning Objectives PQ: Program Qualifications																
Contribution Level:	1 very low			2 low			3 Medium			4 High			5 Very High			