EXPERIMENTAL DESIGN

1	Course Title:	EXPERIMENTAL DESIGN	
2	Course Code:	END5153	
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. SEDA ÖZMUTLU	
15	Course Lecturers:	Yok	
16	Contact information of the Course Coordinator:	Prof.Dr. Seda Özmutlu seda@uludag.edu.tr 0224-294-2085 Mühendislik Fakültesi Endüstri Mühendisliği Bölümü Görükle Bursa	
17	Website:		
18	Objective of the Course:	To convey the experimental design techniques to graduate students for them to design experiments to reach correct conclusions and make correct deductions in their scientific or applied studies.	
19	Contribution of the Course to Professional Development:	Data analysis applications should increase in Turkey, and the students who have taken this course can contribute to this objective by applying the material they have learnt in class.	
20	Learning Outcomes:		
		1	Ability to identify and solve real-life problems that contain uncertainty
		2	Performing analytical studies for the quality improvement concept
		3	Ability to design experimentss
		4	Ability to analyze collected data from designed or undesigned experiments
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		10	
21	Course Content:		

Course Content:

Week	Theoretical	Practice
1	Introduction to Experimental Design	
2	Statistical Analysis Methods Review	
3	Introduction to Regression	

4	Advanced Regression Analysis	
5	Single factor experiments and ANOVA	
6	Random blocks	
7	Latin Squares and Related Designs	
8	Repeating courses and midterm exam	
9	Introduction to Factorial Design	
10	Factorial Designs for factors with two levels	
11	Factorial Designs for factors with three and more levels	
12	Nested and cross-over designs	
13	Taguchi Method	
14	Response Surface Metholodolgy	

22	Textbooks, References and/or Other Materials:	Montgomery, D. C. “Design and Analysis of Experiments”, Sixth Ed., John Wiley & Sons, 2004. Probability and Statistics for Engineers and Scientists, Walpole, Myers, Myers and Ye, Prentice Hall, 2011
23	Assesment	

TERM LEARNING ACTIVITIES	**NUMBER**	**WEIGHT**
Midterm Exam	1	30.00
Quiz	0	0.00
Total	7	100.00
Contribution of Term (Year) Learning Activities to		60.00
Contribution of Final Exam to Success Grade		40.00
Total		100.00

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	8.50	119.00
Homeworks	5	10.00	50.00
Projects	0	0.00	0.00
Field Studies	0	0.00	0.00
Midterm exams	1	2.00	2.00
Others	3	4.00	12.00
Final Exams	1	3.00	3.00
Total Work Load			230.00
Total work load/ 30 hr			7.60
ECTS Credit of the Course			7.50

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	0	0	0	0	5	5	0	5	5	0	0	0	0
ÖK2	0	5	5	0	0	0	0	5	5	0	5	5	0	0	0	0
ÖK3	0	5	5	0	0	0	0	5	0	0	5	5	0	0	0	0
ÖK4	0	5	5	0	0	0	0	5	0	0	5	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