STATISTICAL QUALITY CONTROL

1	Course Title:	STATISTICAL QUALITY CONTROL	
2	Course Code:	END5523	
3	Type of Course:	Optional	
4	Level of Course:	Second Cycle	
5	Year of Study:	2	
6	Semester:	3	
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:	Doç.Dr. ALI YURDUN ORBAK	
15	Course Lecturers:		
16	Contact information of the Course Coordinator:	orbak@uludag.edu.tr, 0(224)2942086, Uludağ Üniversitesi Endüstri Mühendisliği Bölümü Oda Y315 Görükle, 16059, Bursa	
17	Website:	http://endustri.uludag.edu.tr/~orbak/END5522.html	
18	Objective of the Course:	Students will learn the formation of quality control systems in manufacturing or service sector using statistical knowledge, monitoring processes in these sectors to improve them, assessing capabilities of the processes and determining relevant tools to improve them. All these information and knowledge will be provided within the quality management philosophy.	
19	Contribution of the Course to Professional Development:		
20	Learning Outcomes:		
		1	Students will be able to understand and develop control charts.
		2	Students will understand how to collect data for monitoring industrial and service processes.
		3	Students will understand the broad context of quality technologies.
		4	Students will understand a quality management theory.
		5	Students will understand process analysis.
		6	Students will understand quality improvement techniques.
		7	Students will understand the meaning of statistical control and random variability.
		8	Students will be able to analyze failures in processes and tehy will develop methods for improvement.
		9	Students will be able to design and apply experiments to solve real life problems.
		10	
21	Course Content:		

Course Content:

Week	Theoretical	Practice
1	What is quality, quality costs	

2	Historical background of quality control	
3	Total quality control, kaizen, quality standards	
4	Statistical process control: Reasons of variability	
5	SPC: Control charts for variables	
6	SPC: Control charts for variables	
7	SPC: Control charts for attributes	
8	SPC: Control charts for attributes	
9	Process capability analysis	
10	Tolerance systems	
11	Product and process design: Taguchi's loss function	
12	Design of experiments and Taguchi	
13	Product and process design: FMEA, Triz and Axiomatic Design	
14	Product and process design: FMEA, Triz and Axiomatic Design	
22	Textbooks, References and/or Other Materials:	• Managing Quality, 5th Edition. Barrie G. Dale (University of Manchester), Ton van der Wiele (Erasmus University), Jos van Iwaarden (Erasmus University) ISBN: 978-1-4051-4279-3, Wiley, 2007. • Managing, Controlling, and Improving Quality, 1st • Axiomatic Quality: Integrating Axiomatic Design with Six- Haik , ISBN: 978-0-471-68273-8, Wiley 2005. Karen Gadd , ISBN: 978-0-470-74188-7, Wiley 2011. Improvement , Second Edition, Prentice Hall, 1998. ISBN: 0-13-645086-5. • Montgomery, D. C. "Introduction to Statistical Quality Control", Fifth Edition, John Wiley & Sons, 2004. ISBN: 0- • Taguchi, Genichi. "Introduction to Quality Engineering: Resources, 1986. ISBN: 9-28-331084-5.

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	12	9.00	108.00
Homeworks	1	9.00	9.00
Projects	1	62.00	62.00
Field Studies	0	0.00	0.00
Midterm exams	1	2.00	2.00
Others	0	0.00	0.00
Final Exams	1	2.00	2.00
Total Work Load			225.00
Total work load/ 30 hr			7.50
ECTS Credit of the Course			7.50

23	Assesment

TERM LEARNING ACTIVITIES	**NUMBER**	**WEIGHT**
Midterm Exam	1	30.00
Quiz	0	0.00
Home work-project	1	30.00
Final Exam	1	40.00
Total	3	100.00
Contribution of Term (Year) Learning Activities to Success Grade		60.00
Contribution of Final Exam to Success Grade		40.00

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	4	4	4	0	0	0	0	0	0	0	0	0	0	0	0
ÖK2	0	4	3	3	0	0	0	0	0	0	0	0	0	0	0	0
ÖK3	0	4	3	0	0	0	0	0	0	0	0	0	0	0	0	0
ÖK4	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ÖK5	0	4	3	3	0	0	0	0	0	0	0	0	0	0	0	0
ÖK6	0	4	3	3	0	0	0	0	0	0	0	0	0	0	0	0
ÖK7	0	4	3	3	0	0	0	0	0	0	0	0	0	0	0	0
ÖK8	0	4	3	3	0	0	0	0	0	0	0	0	0	0	0	0
ÖK9	0	4	3	3	0	0	0	0	0	0	0	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**						