PRODUCTION AUTOMATION

1	Course Title:	PRODUCTION AUTOMATION
2	Course Code:	MAK4007
3	Type of Course:	Optional
4	Level of Course:	First Cycle
5	Year of Study:	4
6	Semester:	7
7	ECTS Credits Allocated:	3.00
8	Theoretical (hour/week):	2.00
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. M.CEMAL ÇAKIR
15	Course Lecturers:	
16	Contact information of the Course Coordinator:	cemal@uludag.edu.tr 0224 2941958 U.U. Müh-Mim Fak. Makine Müh. Böl. BURSA
17	Website:	
18	Objective of the Course:	To provide technical and practical information about hardware and software devices used in automation
19	Contribution of the Course to Professional Development:	
20	Learning Outcomes:	

	1	Understand the difference between automation and mechanisation.
	2	Understand the classification of manufacturing systems according to automation and mechanisation.
	3	Understand the principles of automatic systems. Understand sequencing diagrams.
	4	Describe various sensors used in automation.
	5	Understand the principles of automatics feeding devices.
	6	Understand active and passive orientation systems used in vibratory bowls.
	7	Understand the principles of PLC and ladder diagrams. Write PLC programs
	8	
	9	
	10	

21	Course Content:	
	Course Content:	
Week	Theoretical	Practice
1	Classification of automatic systems	
2	Raw material – finished product relationship	
3	Transfer Lines	

4	Energy – information relationship, automation, mechanisation	
5	Principles of automatic systems	
6	Sequencing diagrams, control diagrams	
7	Applications about sequencing diagrams	
8	Repeating courses and midterm exam	
9	Automation means of control and inspection	
10	Automation of part handling	
11	Vibratory bowls, active and passive orienters	
12	PLC systems	
13	PLC programming	
14	Ladder diagrams, applications	

22	Textbooks, References and/or Other Materials:	Automatic Assembly, G. Boothroyd, C Poli, L.E. Murch, 1982. Fundamentals of Industrial Automation, V. Tergan, I. Andreev, B. Liberman, Mir Publishers, 1982. Pnömatikle maliyetlerin azaltılması,Werner Deppert, Kurt Stoll, VOGEL 1988.
23	Assesment	

TERM LEARNING ACTIVITIES	**NUMBE**	**WEIGHT**
Theoretical	1	14
Home work-project		10.00
Practicals/Labs	3	0
Total		100.00
Self study and preperation		2
Homeworks		10
Success Grade		1
Projects		10.00
Field Studies		3
Total		100.00
Midterm exams		1
Others		1
Course		1
Final Exams		1

Activites	Number	Duration (hour)	Total Work Load (hour)
Theoretical	14	2.00	28.00
Home work-project	10	2.00	20.00
Practicals/Labs	0	0.00	0.00
Self study and preperation	2	5.00	10.00
Homeworks	10	2.00	20.00
Projects	1	10.00	10.00
Field Studies	3	4.00	12.00
Midterm exams	1	3.00	3.00
Others	1	2.00	2.00
Final Exams	1	5.00	5.00
Total Work Load			90.00
Total work load/ 30 hr			3.00
ECTS Credit of the Course			3.00

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	3	0	0	2	0	2	0	0	0	0	0	0	0	0	0
ÖK2	0	3	4	0	0	0	1	0	0	0	0	0	0	0	0	0
ÖK3	5	4	5	0	5	0	0	0	0	0	0	0	0	0	0	0
ÖK4	4	4	4	5	3	0	0	0	0	0	0	0	0	0	0	0

ÖK5	4	4	4	3	0	0	0	0	0	0	0	0	0	0	0	0
ÖK6	5	5	5	4	5	0	0	0	0	0	0	0	0	0	0	0
ÖK7	0	5	5	5	4	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**