	PRODUCTION AUTOMATION											
1	Course Title:	PRODU	CTION AUTOMATION									
2	Course Code:	MAK400	7									
3	Type of Course:	Optional										
4	Level of Course:	First Cyc	le									
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 f	face									
14	Course Coordinator:	Prof. Dr.	MUSTAFA CEMAL ÇAKIR									
15	Course Lecturers:											
16	Contact information of the Course Coordinator:	cemal@ 0224 294 U.U. Mü	uludag.edu.tr 41958 h-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:	The abili industrie	ty to interpret the automation systems, found in many s, is gained.									
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:											
		Co	ourse Content:									
Week	Theoretical		Practice									
1	Classification of automatic systems											
2	Raw material – finished product rela	tionship										
3	Transfer Lines											

4	Energ	gy – natio	inforr on. m	nation echan	relati isatio	ionship n	,												
5	Principles of automatic systems																		
6	Sequ	enci	ing dia	agram	s, cor	ntrol dia	agram	s											
7	Appli	catio	ons at	oout se	equer	ncing di	agran	าร											
8	Repe	ating	g cou	rses															
9	Autor	natio	on me	eans o	f cont	rol and	l inspe	ection											
10	Autor	natio	on of	part h	andlin	g													
11	Vibra	tory	bowl	s, activ	ve and	d passi	ve ori	enters	;										
12	PLC :	syst	ems																
13	PLC programming																		
14	Ladder diagrams, applications																		
22	Textbooks, References and/or Other Materials:								Αι 19	Automatic Assembly, G. Boothroyd, C Poli, L.E. Murch, 1982.									
									Fu Ar	indame idreev,	entals o B. Lib	of Indus erman,	trial Au Mir Pul	tomatio olisher:	on, V. T s, 1982	ergan, I.			
										Pnömatikle maliyetlerin azaltılması,Werner Deppert, Kurt Stoll, VOGEL 1988.									
23	Asse	sme	nt																
TERM L Activit	TERM LEARNING ACTIVITIES NUMBE							: Iwi	eight Numb	per		Dura	ition (hour)	Total Work Load (hour)				
Hheore										38			2.00		28.00				
Practica	als/La	bs							(0			0.00		0.00				
Şelf astu	idy an	d pr	epera	ition			2		10	ð.00			5.00		10.00				
Homew	vorks									10			2.00	2.00					
PHGees	ss Gra	de								1				10.00					
Field S	tudies									3						12.00			
Mietern	erm exams									100.00						3.00			
Others										1			2.00	2.00 2.00					
Einnaise	xams								the	Rules	s & Reg	gulation	is 5 .f0B0u	rsa Ulu	n∰y@enjsity on				
Total W	otal Work Load															90.00			
Total w	ital work load/ 30 hr													3.00					
ECTS	S Credit of the Course									3.00									
25	CONTRIBUTION OF LEARNING OUTCOMES TO PROGRAMME QUALIFICATIONS																		
	P	Q1	PQ2	PQ3	PQ4	PQ5	PQ6	PQ7	PQ8	PQ9	PQ1 0	PQ11	PQ12	PQ1 3	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		

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																
Contrib ution Level:	Contrib 1 very low ution _evel:			2 low		3 Medium			4 High			5 Very High				