

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

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

22	Textbooks, References and/or Other Materials:	<p>Automatic Assembly, G. Boothroyd, C Poli, L.E. Murch, 1982.</p> <p>Fundamentals of Industrial Automation, V. Tergan, I. Andreev, B. Liberman, Mir Publishers, 1982.</p> <p>Pnömatikle maliyetlerin azaltılması, Werner Deppert, Kurt Stoll, VOGEL 1988.</p>
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23	Assesment
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TERM LEARNING ACTIVITIES	NUMBE	WEIGHT		
Activites		Number	Duration (hour)	Total Work Load (hour)
Theoretical				
Home Work-project	1	10.00	2.00	28.00
Practicals/Labs		0	0.00	0.00
Self study and preperation	3	10.00	5.00	10.00
Total				
Homeworks		10	2.00	20.00
Success Grade Projects		1	10.00	10.00
Field Studies		3	4.00	12.00
Mid-term exams		10.00	3.00	3.00
Others		1	2.00	2.00
Course 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

[illegible]

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			