

ELECTROMECHANICAL CONTROL SYSTEMS

1	Course Title:	ELECTROMECHANICAL CONTROL SYSTEMS
2	Course Code:	ELEZ205
3	Type of Course:	Compulsory
4	Level of Course:	Short Cycle
5	Year of Study:	2
6	Semester:	3
7	ECTS Credits Allocated:	4.00
8	Theoretical (hour/week):	2.00
9	Practice (hour/week):	0.00
10	Laboratory (hour/week):	2
11	Prerequisites:	None
12	Language:	Turkish
13	Mode of Delivery:	Face to face
14	Course Coordinator:	Öğr.Gör. HASAN BAYAZIT
15	Course Lecturers:	Öğr.Gör. Ömer Eriş Öğr.Gör. Hasan Bayazit
16	Contact information of the Course Coordinator:	hashan@uludag.edu.tr Tel: 2942345 Adres: U.Ü Teknik Bilimler MYO Görükle
17	Website:	
18	Objective of the Course:	In this course, students will be able to assemble electromechanical control equipments and control one phase, three-phase asynchronous and direct current motors running, change the direction of the speed, braking operations using electromechanical components
19	Contribution of the Course to Professional Development:	To teach essentials of electromecanical control devices and its applications.
20	Learning Outcomes:	
	1	Describes the control elements.
	2	Describes the function of the Motor protection relays.
	3	Be able to run asynchronous motors constantly, remotely as well as jogging.
	4	Be able to construct control circuit related with the acceleration, change of direction and braking of three-phase asynchronous motors with different techniques.
	5	Be able to construct motor accelerating and speed control circuit of wound round induction motors.
	6	Be able to construct control circuit of two-speed asynchronous motors.
	7	Be able to construct control circuits of accelerating and reversing direction of single phase induction motors.
	8	Be able to construct control circuits of accelerating, reversing and braking of dc current motors.
	9	
	10	
21	Course Content:	
	Course Content:	
Week	Theoretical	Practice

1	Introduction	
2	Electromechanical control elements.	Introduction of control elements.
3	Motor protection relays.	Connection of the motor protection relay.
4	Jogging and continuous operation in the three-phase asynchronous motors. Remote operation of three-phase asynchronous motors from two different location.	Starting of Induction motor.
5	Acceleration methods of Induction motors.	Resistor type Induction motor starters.
6	Changing direction of rotation of three-phase asynchronous motors and braking.	Star-delta starters.
7	Speed control of three-phase asynchronous motors.	Speed of the induction motor with inverter.
8	Midterm exam.	
9	Acceleration methods of wound round induction motors.	Braking of three-phase asynchronous motors.
10	Control of two-speed asynchronous motors.	Two-speed motor control circuit.
11	Control methods for single-phase asynchronous motors.	Changing the direction of rotation of universal motor.
12	Changing direction of rotation of a single phase asynchronous motors and braking.	Single phase asynchronous motor brake control circuit.
13	Acceleration methods and control of direct current motors.	Making connections of direct current motors.
14	Changing direction of rotation of DC motors and braking.	Dc motor brake control circuit.

Activites		Number	Duration (hour)	Total Work Load (hour)
Theoretical		14	3.00	42.00
Practicals/Labs		14	2.00	28.00
Self study and preperation		14	1.00	14.00
Homeworks		0	0.00	0.00
Projects	R	2	10.00	20.00
Field Studies		0	0.00	0.00
Midterm exams	0	0.00	7.00	7.00
Others		0	0.00	0.00
Final Exams	1	60.00	7.00	7.00
Total Work Load				125.00
Contribution of 30h (Year) Learning Activities to		40.00		3.93
ECTS Credit of the Course				4.00
Contribution of Final Exam to Success Grade		60.00		
Total		100.00		
Measurement and Evaluation Techniques Used in the Course		Measurement and evaluation is carried out according to the priciples of Bursa uludag University Associate and Undergraduate Education Regulation.		

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	2	0	0	0	1	0	5	0	2	0	0	0	0	0	0	0

ÖK2	2	0	0	0	3	0	5	0	3	0	0	0	0	0	0	0
ÖK3	3	0	0	0	4	0	5	0	5	0	0	0	0	0	0	0
ÖK4	0	0	0	0	1	0	5	0	1	0	0	0	0	0	0	0
ÖK5	2	0	0	0	3	0	5	0	4	0	0	0	0	0	0	0
ÖK6	2	0	0	0	3	0	5	0	4	0	0	0	0	0	0	0
ÖK7	2	0	0	0	3	0	5	0	4	0	0	0	0	0	0	0
ÖK8	0	0	0	0	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			