Year

Department of Electricity and Energy / Department of Electricity and Energy /

Course Code	Course Name	Teorical	Practice	Laboratory	Credits	ECTS
AEK230	PROGRAMMABLE CONTROLLERS AND SCADA	2.00	2.00	0.00	3.00	3.00

Course Detail

Course Language	: Turkish
Qualification Degree	: PreBachelor
Course Type	: Optional
Preconditions	: Not
Objectives of the Course	: To teach Installation of control circuits, PLC's hardware setup and installation, installation of input-output units connected to the PLC, motor control with PLC and PLC program writing skills.
Course Contents	: Repeat command systems, basic technology of PLC, PLC units, PLC interface program, PLC programming, programming methods, sequence function blocks, PLC programming with sequence function blocks, PLC digital inputs / outputs, PLC analog inputs / outputs, PLC sensors, touch panels, step motor with PLC, AC motor with PLC, servo motor with PLC.
Recommended or Required Reading	: S7 - 200 PLC Eğitim Setleri, Bilgisayar, Kumanda Elemanları Çetin, R. (2008). Temel Seviye S7 - 200 PLC'lerle Otomasyon. Seçkin Yayıncılık. Çetin, R. (2008). S7–200 PLC'lerle Otomasyon, İleri Seviye. Seçkin Yayıncılık.
Planned Learning Activities and Teaching Methods	: Narration Method, Question and Answer, Group Work, Show and Do
Recommended Optional Programme Components	: ......
Course Instructors	: Öğr. Gör. Dr. Ayberk Calpbinici
Instructor's Assistants	: ....
Presentation Of Course	: The course is taught using PLC Training Sets.
Update Date	:
Dosya İndirilme Tarihi	: 2/6/2026

Course Outcomes

Upon the completion of this course a student :

1 Knows the control circuit components and their operating principles, and can design control circuits according to needs.

2 Can explain the basic technology of PLCs, their hardware and software structure, and main components such as input-output units, processor, communication modules, and power supply.

3 Can write the required program using a PLC interface software.

4 Can write PLC program by using PLC programming methods

5 Can perform motor control applications with PLC

Pre / Side Conditions

Course Code	Course Name	Condition	Teorical	Practice	Laboratory	Credits	ECTS

Weekly Contents

	Teorical	Practice	Laboratory	Preparation Info	Teaching Methods	Course Learning Outcomes
1.Week	*General repetition of control systems	*General repetition of control systems	*In the Control Laboratory, Simatic s7 200 software and Siemens S7 200 PLC training sets are used.	*Elektrik Kumanda Devreleri Kitabı Sayfa: 35 - 109	*Narrative method Question answer Team work, Show-and-Do	
2.Week	*Introduction of basic technology and systems of PLC	*Introduction of basic technology and systems of PLC	*In the Control Laboratory, Simatic s7 200 software and Siemens S7 200 PLC training sets are used.	*Temel Seviye S7 - 200 PLC'lerle Otomasyon Kitabı Sayfa: 1 - 22	*Narrative method Question answer Team work, Show-and-Do	
3.Week	*Introduction and Usage of PLC Interface Program	*Introduction and Usage of PLC Interface Program	*In the Control Laboratory, Simatic s7 200 software and Siemens S7 200 PLC training sets are used.	*Temel Seviye S7 - 200 PLC'lerle Otomasyon Kitabı Sayfa: 23 - 79	*Narrative method Question answer Team work, Show-and-Do	
4.Week	*Basic Programming Commands	*Basic Programming Commands	*In the Control Laboratory, Simatic s7 200 software and Siemens S7 200 PLC training sets are used.	*Temel Seviye S7 - 200 PLC'lerle Otomasyon Kitabı Sayfa: 45 - 79	*Narrative method Question answer Team work, Show-and-Do	
5.Week	*Timer commands	*Timer commands	*In the Control Laboratory, Simatic s7 200 software and Siemens S7 200 PLC training sets are used.		*Narrative method Question answer Team work, Show-and-Do	
6.Week	*Counter commands	*Counter commands	*In the Control Laboratory, Simatic s7 200 software and Siemens S7 200 PLC training sets are used.	*Temel Seviye S7 - 200 PLC'lerle Otomasyon Kitabı Sayfa: 105 - 168	*Narrative method Question answer Team work, Show-and-Do	
7.Week	*Number and Memory Procedures	*Number and Memory Procedures	*In the Control Laboratory, Simatic s7 200 software and Siemens S7 200 PLC training sets are used.	*Temel Seviye S7 - 200 PLC'lerle Otomasyon Kitabı Sayfa: 169 - 196	*Narrative method Question answer Team work, Show-and-Do	
8.Week	*Ara Sınav					
9.Week	*Move and Compare Commands	*Move and Compare Commands	*In the Control Laboratory, Simatic s7 200 software and Siemens S7 200 PLC training sets are used.	*Temel Seviye S7 - 200 PLC'lerle Otomasyon Kitabı Sayfa: 197 - 250	*Narrative method Question answer Team work, Show-and-Do	
10.Week	*Analog Digital Transformation with PLC (ADC) application	*Analog Digital Transformation with PLC (ADC) application	*In the Control Laboratory, Simatic s7 200 software and Siemens S7 200 PLC training sets are used.	*İleri Seviye S7 - 200 PLC'lerle Otomasyon Kitabı Sayfa: 78 - 109	*Narrative method Question answer Team work, Show-and-Do	
11.Week	*Use of operator panels in PLCs	*PLC'lerde operatör panel kullanımı	*In the Control Laboratory, Simatic s7 200 software and Siemens S7 200 PLC training sets are used.	*İleri Seviye S7 - 200 PLC'lerle Otomasyon Kitabı Sayfa: 36 - 77	*Narrative method Question answer Team work, Show-and-Do	
12.Week	*Use of operator panels in PLCs	*PLC'lerde operatör panel kullanımı	*In the Control Laboratory, Simatic s7 200 software and Siemens S7 200 PLC training sets are used.	*İleri Seviye S7 - 200 PLC'lerle Otomasyon Kitabı Sayfa: 36 - 77	*Narrative method Question answer Team work, Show-and-Do	
13.Week	*DC motor speed and speed direction control with PLC	*DC motor speed and speed direction control with PLC	*In the Control Laboratory, Simatic s7 200 software and Siemens S7 200 PLC training sets are used.	*İleri Seviye S7 - 200 PLC'lerle Otomasyon Kitabı Sayfa: 1 - 20, 162 - 180, 279 - 290	*Narrative method Question answer Team work, Show-and-Do	
14.Week	*Step (Step) Motor Control with PLC	*Step (Step) Motor Control with PLC	*In the Control Laboratory, Simatic s7 200 software and Siemens S7 200 PLC training sets are used.	*İleri Seviye S7 - 200 PLC'lerle Otomasyon Kitabı Sayfa: 1 - 20, 162 - 180, 279 - 290	*Narrative method Question answer Team work, Show-and-Do	
15.Week	*Asynchronous motor speed and speed direction control with PLC	*Asynchronous motor speed and speed direction control with PLC	*In the Control Laboratory, Simatic s7 200 software and Siemens S7 200 PLC training sets are used.	*İleri Seviye S7 - 200 PLC'lerle Otomasyon Kitabı Sayfa: 1 - 20, 162 - 180, 279 - 290	*Narrative method Question answer Team work, Show-and-Do	

Assesment Methods %

2 Final : 100.000

ECTS Workload

Activities	Count	Time(Hour)	Sum of Workload
Teorik Ders Anlatım	14	2.00	28.00
Uygulama / Pratik	14	2.00	28.00
Uygulama / Pratik Sonrası Bireysel Çalışma	8	2.00	16.00
Ev Ödevi	4	2.00	8.00
Ara Sınav Hazırlık	4	1.00	4.00
Vize	1	1.00	1.00
Final Sınavı Hazırlık	4	1.00	4.00
Final	1	1.00	1.00

Activities	Count	Time(Hour)	Sum of Workload
		Total :	90.00
		Sum of Workload / 30 (Hour) :	3
		ECTS :	3.00

Program And OutcomeRelation

	P.O.1	P.O.2	P.O.3	P.O.4	P.O.5	P.O.6	P.O.7	P.O.8	P.O.9	P.O.10	P.O.11	P.O.12	P.O.13	P.O.14
	P.O. 1	P.O. 2	P.O. 3	P.O. 4	P.O. 5	P.O. 6	P.O. 7	P.O. 8	P.O. 9	P.O. 10	P.O. 11	P.O. 12	P.O. 13	P.O. 14
L.O. 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
L.O. 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
L.O. 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0
L.O. 4	0	0	0	0	0	0	0	0	0	0	0	0	0	0
L.O. 5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Avarage	0	0	0	3.00	0	0	1.00	0	0	0	2.00	0	1.00	1.00

Ders/Program Çıktıları İlişkisi

P.O. 1	P.O. 2	P.O. 3	P.O. 4	P.O. 5	P.O. 6	P.O. 7	P.O. 8	P.O. 9	P.O. 10	P.O. 11	P.O. 12	P.O. 13	P.O. 14
0	0	0	15	0	0	5	0	0	0	10	0	5	5

BEWARE OF PLAGIARISM! Please pay attention to proper academic citation rules and avoid plagiarism, an unethical and academically fraudulent behavior, when completing reports, assignments, or other academic works, and it is treated with the same disciplinary action as cheating in a classroom setting. It is imperative to refrain from presenting another person s ideas, language, expressions, or any other form of intellectual property as your own. Regardless of quality, your assignments/projects/research should reflect your original work. Perfection is not a requirement, and in case of any uncertainties regarding academic writing guidelines, you may seek clarification from your course instructor.

Engel Durumu/Uyarlama Talebi : Engel durumuna ilişkin herhangi bir uyarlama talebinde bulunmak isteyen öğrenciler, dersin öğretim elemanı ya da Nevsehir Engelli Öğrenci Birimi ile en kısa sürede iletişime geçmelidir.