Department of Electronics and Automation / Department of Electronics and Automation /

Course Code	Course Name	Teorical	Practice	Laboratory	Credits	ECTS
KNT231	PROGRAMMABLE LOGIC CONTROLLER (PLC) AND SCADA	3.00	1.00	0.00	4.00	5.00

Course Detail

Course Language	: Turkish
Qualification Degree	: PreBachelor
Course Type	: Compulsory
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	: Textbook; 1) Ceylan, M. (2024). Elektromekanik kumanda sistemleri ve PLC. Seçkin Yayıncılık. 2) S7–200 PLC'lerle otomasyon – Temel seviye. Seçkin Yayıncılık. Projector, Computer, Experiment ation Sets
Planned Learning Activities and Teaching Methods	: Lecture, question-answer, group work, skill development work
Recommended Optional Programme Components	: You need to understand the logic of control systems.
Course Instructors	: Öğr. Gör. Dr. Yunus Kara
Instructor's Assistants	: Öğr. Gör. Dr. Yunus KARA
Presentation Of Course	: Face to face
Update Date	: 9/4/2025 3:39:57 PM
Dosya İndirilme Tarihi	: 10/2/2025

Course Outcomes

Upon the completion of this course a student :

1 Can know the structure of industrial automation systems.

2 Can know PLC hardware and architecture.

3 Can program PLC.

4 Can apply PLC programming methods in the design process.

Preconditions

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Weekly Contents

	Teorical	Practice	Laboratory	Preparation Info	Teaching Methods	Course Learning Outcomes
1.Week	*Introduction to industrial automation systems.	*Introduction to industrial automation systems.	*Introduction to industrial automation systems.	*Electromechanical Control Systems and PLC(Murat Ceylan) Pages 1-68	*Lecture, question-answer.	Ö.Ç.1
2.Week	*Basic input and output elements used in automation systems	*Basic input and output elements used in automation systems	*Basic input and output elements used in automation systems	*Electromechanical Control Systems and PLC(Murat Ceylan) Pages 69-154	*Lecture, question-answer, group work, skill development work	Ö.Ç.1
3.Week	*PLC Basic structure and features.	*PLC Basic structure and features.	*PLC Basic structure and features.	*Electromechanical Control Systems and PLC(Murat Ceylan) Pages 157-165	*Lecture, question-answer, group work, skill development work	Ö.Ç.1 Ö.Ç.2
4.Week	*PLC programming editor and PLC programming languages	*PLC programming editor and PLC programming languages	*PLC programming editor and PLC programming languages	*Electromechanical Control Systems and PLC(Murat Ceylan) Pages 165-177	*Lecture, question-answer, group work, skill development work	Ö.Ç.2
5.Week	*Binary number system concepts: Bit, Byte, Word, DoubleWord	*Binary number system concepts: Bit, Byte, Word, DoubleWord	*Binary number system concepts: Bit, Byte, Word, DoubleWord	*Electromechanical Control Systems and PLC(Murat Ceylan) Pages 257-263	*Lecture, question-answer, group work, skill development work	Ö.Ç.2 Ö.Ç.3
6.Week	*Basic commands used in PLCs	*Basic commands used in PLCs	*Basic commands used in PLCs	*Electromechanical Control Systems and PLC(Murat Ceylan) Pages 178-192	*Lecture, question-answer, group work, skill development work	Ö.Ç.2 Ö.Ç.3
7.Week	*Bit Logic Commands	*Bit Logic Commands	*Bit Logic Commands	*Electromechanical Control Systems and PLC(Murat Ceylan) Pages 193-203	*Lecture, question-answer, group work, skill development work	Ö.Ç.3
8.Week	*Timers	*Timers	*Timers	*Electromechanical Control Systems and PLC(Murat Ceylan) Pages 203-230	*Lecture, question-answer, group work, skill development work	Ö.Ç.3
9.Week	*Counters	*Counters	*Counters	*Electromechanical Control Systems and PLC(Murat Ceylan) Pages 231-256	*Lecture, question-answer, group work, skill development work	Ö.Ç.3
10.Week	*Compare Commands	*Compare Commands	*Compare Commands	*Electromechanical Control Systems and PLC(Murat Ceylan) Pages 257-263	*Lecture, question-answer, group work, skill development work	Ö.Ç.3
11.Week	*Move commands	*Move commands	*Move commands	*Electromechanical Control Systems and PLC(Murat Ceylan) Pages 276-278	*Lecture, question-answer, group work, skill development work	Ö.Ç.3 Ö.Ç.4
12.Week	*Transfer, Loop, and Subroutine Usage	*Transfer, Loop, and Subroutine Usage	*Transfer, Loop, and Subroutine Usage	*Basic Level Automation with S7-200 PLCs (Recep Çetin) Sayfa 197-251	*Lecture, question-answer, group work, skill development work	Ö.Ç.3 Ö.Ç.4
13.Week	*Program Flow Control Commands	*Program Flow Control Commands	*Program Flow Control Commands	*Basic Level Automation with S7-200 PLCs (Recep Çetin) Sayfa 265-296	*Lecture, question-answer, group work, skill development work	Ö.Ç.3 Ö.Ç.4
14.Week	*Analog I/O	*Analog I/O	*Analog I/O	*Electromechanical Control Systems and PLC(Murat Ceylan) Pages 279-290	*Lecture, question-answer, group work, skill development work	Ö.Ç.3 Ö.Ç.4

Assesment Methods %

2 Final : 60.000

3 Vize : 40.000

ECTS Workload

Activities	Count	Time(Hour)	Sum of Workload
Final	1	1.00	1.00
Derse Katılım	14	4.00	56.00
Ara Sınav Hazırlık	1	5.00	5.00
Final Sınavı Hazırlık	1	6.00	6.00
Vize	1	1.00	1.00
Ders Öncesi Bireysel Çalışma	14	1.00	14.00
Ders Sonrası Bireysel Çalışma	14	2.00	28.00
Uygulama / Pratik Sonrası Bireysel Çalışma	14	2.00	28.00
			Total : 139.00
			Sum of Workload / 30 (Hour) : 5
			ECTS : 5.00

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
L.O. 1	1	0	3	3	2	0	2	0	0	0	3	1	4	3
L.O. 2	0	0	2	3	2	0	2	0	0	0	3	1	4	3
L.O. 3	0	0	2	4	2	0	2	0	0	0	3	1	4	3
L.O. 4	0	0	2	4	2	0	2	0	0	0	3	1	4	3
Avarage	0.25	0	2.25	3.50	2.00	0	2.00	0	0	0	3.00	1.00	4.00	3.00

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.