

Course Title	Programmable Logic Controllers (PLC)				
Course Code	ETECH 260				
Course Type	Compulsory				
Level	First Cycle				
Year / Semester	Second Year / Fall				
Teacher's Name	Tsolias Kallinikos				
ECTS	6	Lectures / week	1 ½	Laboratories / week	1 ½
Course Purpose and Objectives	<p>The main objectives of the course are to:</p> <ul style="list-style-type: none">• Introduce students to Programmable Logic Controllers (PLCs)• Develop logic programming skills for PLCs• Introduce different programming techniques commonly used in PLCs• Explain the operation and characteristics of components used in PLCs• Provide tools and experience on design, implementation, testing, troubleshooting, and commissioning of PLCs for a variety of industry applications• Provides hands-on experience on PLC programming to control output devices				
Learning Outcomes	<p>After completion of the course students are expected to:</p> <ul style="list-style-type: none">• Program PLCs for a variety of applications• Know the operation of components used in PLCs such as counters, shift registers, timers, etc• Be familiar with different types of PLC programming techniques• Perform design, implementation, testing, and commissioning of PLCs for a plethora of applications				
Prerequisites	None		Required	None	
Course Content	<ul style="list-style-type: none">• Overview of Programmable Logic Controllers (hardware, internal architecture, and systems)• Types of input and output devices including applications• Review of digital system fundamentals (binary system, octal, hex, etc)• I/O processing (signal conditioning, remote connections, networks, addressing)• Ladder and functional block programming (ladder diagrams, logic functions, latching, multiple outputs, entering program, function blocks)• Programming methods (instruction lists, sequential function charts)• Internal relays (One-shot, Set/Reset, master control relay)• Jump and Call• Types of timers and programming examples• Counters and programming examples				

	<ul style="list-style-type: none"> • Shift registers and examples • Data handling • System design (program development, safe systems, commissioning, fault finding) • Program examples (e.g. control of a process, temperature control, motor control, etc)
Teaching Methodology	Lectures, in-class examples, exercises, practical.
Bibliography	<u>Compulsory</u> <ul style="list-style-type: none"> • Programmable Logic Controllers (2009), W. Bolton, Newnes, 5th Edition, ISBN: 978-1856177511 • Lecturers notes.
Assessment	Homework: 10% Participation: 10% Laboratory: 20% Mid Term: 20% Final Exam: 40%
Language	Greek