

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	The main objectives of the course are to: • 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	After completion of the course students are expected to: • 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	• 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 • 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> • 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