



ΕΛΛΗΝΙΚΗ ΔΗΜΟΚΡΑΤΙΑ

HELLENIC REPUBLIC

Α . Δ Ι . Π .

H . Q . A .

ΑΡΧΗ ΔΙΑΣΦΑΛΙΣΗΣ & ΠΙΣΤΟΠΟΙΗΣΗΣ

HELLENIC QUALITY ASSURANCE

ΤΗΣ ΠΟΙΟΤΗΤΑΣ ΣΤΗΝ ΑΝΩΤΑΤΗ ΕΚΠΑΙΔΕΥΣΗ

AND ACCREDITATION AGENCY

ΤΕΧΝΟΛΟΓΙΚΟ ΕΚΠΑΙΔΕΥΤΙΚΟ ΙΔΡΥΜΑ ΑΝΑΤΟΛΙΚΗΣ ΜΑΚΕΔΟΝΙΑΣ ΚΑΙ ΘΡΑΚΗΣ
ΜΟΝΑΔΑ ΔΙΑΣΦΑΛΙΣΗΣ ΤΗΣ ΠΟΙΟΤΗΤΑΣ ΤΕΙ ΑΜΘ

Quality Assurance in Higher Education Course Data Collection Form

ΤΕΧΝΟΛΟΓΙΚΟ ΕΚΠΑΙΔΕΥΤΙΚΟ ΙΔΡΥΜΑ
ΑΝΑΤΟΛΙΚΗΣ ΜΑΚΕΔΟΝΙΑΣ & ΘΡΑΚΗΣ
ΑΓΙΟΣ ΛΟΥΚΑΣ,

65404 ΚΑΒΑΛΑ

EASTERN MACEDONIA AND THRACE
INSTITUTE OF TECHNOLOGY
AGIOS LOUKAS

65404 KAVALA

COURSE OUTLINE

1. GENERAL

Name and surname of lecturer	Panagiotis Kogias		
SCHOOL	of Technological Applications		
ACADEMIC UNIT	Department of Electrical Engineering		
LEVEL OF STUDIES	Undergraduate		
COURSE CODE	ZN2	SEMESTER	7 ^o
COURSE TITLE	PROGRAMMABLE LOGIC CONTROLLERS		
INDEPENDENT TEACHING ACTIVITIES <i>if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits</i>		WEEKLY TEACHING HOURS	CREDITS
lectures		3th+3lab	6,0
<i>Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (d).</i>			
COURSE TYPE <i>general background, special background, specialised general knowledge, skills development</i>	background Skills development		
PREREQUISITE COURSES:			
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek		
IS THE COURSE OFFERED TO ERASMUS STUDENTS	NO		
COURSE WEBSITE (URL)	http://eclass.teikav.edu.gr/ED184/		

2. LEARNING OUTCOMES

Learning outcomes <i>The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.</i> <i>Consult Appendix A</i> • <i>Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area</i> • <i>Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B</i> • <i>Guidelines for writing Learning Outcomes</i>																	
The aim of the course is theoretical and practical training of students in the operating principles, architecture and programming Logic Controllers (PLC) to control industrial systems. They analyze the structure and architecture of general PLC models and is deepening in their programming languages (Lists of Orders, Contacts Plans, Logically Charts, monorail designs, language LADDER). Give the programming examples on common industrial applications, through a special software (GMWIN), for PCs. Upon successful completion of the course students will be able to: • To know the basic principles of operation and structure of the PLC • be able to choose the right equipment for each automation • make the correct wiring of the PLC in any application • be able to plan the PLC (STL, LADDER, FBD) • be able to design and implement complex automations																	
General Competences <i>Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?</i> <table border="0"> <tr> <td><i>Search for, analysis and synthesis of data and information, with the use of the necessary technology</i></td><td><i>Project planning and management</i></td></tr> <tr> <td><i>Adapting to new situations</i></td><td><i>Respect for difference and multiculturalism</i></td></tr> <tr> <td><i>Decision-making</i></td><td><i>Respect for the natural environment</i></td></tr> <tr> <td><i>Working independently</i></td><td><i>Showing social, professional and ethical responsibility and sensitivity to gender issues</i></td></tr> <tr> <td><i>Team work</i></td><td><i>Criticism and self-criticism</i></td></tr> <tr> <td><i>Working in an international environment</i></td><td><i>Production of free, creative and inductive thinking</i></td></tr> <tr> <td><i>Working in an interdisciplinary environment</i></td><td><i>.....</i></td></tr> <tr> <td><i>Production of new research ideas</i></td><td><i>Others...</i></td></tr> </table>		<i>Search for, analysis and synthesis of data and information, with the use of the necessary technology</i>	<i>Project planning and management</i>	<i>Adapting to new situations</i>	<i>Respect for difference and multiculturalism</i>	<i>Decision-making</i>	<i>Respect for the natural environment</i>	<i>Working independently</i>	<i>Showing social, professional and ethical responsibility and sensitivity to gender issues</i>	<i>Team work</i>	<i>Criticism and self-criticism</i>	<i>Working in an international environment</i>	<i>Production of free, creative and inductive thinking</i>	<i>Working in an interdisciplinary environment</i>	<i>.....</i>	<i>Production of new research ideas</i>	<i>Others...</i>
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• Search, analysis and synthesis of data and information, the use and the necessary technologies • Autonomous Work • Teamwork • Design and Project Management • Generate new research ideas																	

3. SYLLABUS

I.	Introduction to Programmable Logic Controllers (Programmable Logic Controllers-PLC) and principle of operation
II.	Structure and architecture of the PLC. Input-output units
III.	Auxiliary circuits, counters and time
IV.	Addressing the data of PLC. Wiring of the PLC.
V.	Programming languages PLC. List Order (Statement List-STL)

- VI. Chart Contacts (Ladder Diagram-LAD)
- VII. Logical Diagram (Function Block Diagram-FBD).
- VIII. General description of the free software GMWIN
- IX. Create programs in LADDER language and use GMWIN software emulation program
- X. Transfer GMWIN software programs PLC LG
- XI. Start Applications and Reversing Motor
- XII. Applications using counters and time (counting objects with photocell, car parking completeness check, filling reservoirs)
- XIII. Complex automation. Examples of industry.

4. TEACHING and LEARNING METHODS - EVALUATION

DELIVERY <i>Face-to-face, Distance learning, etc.</i>	Face to face (in the classroom)	
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY <i>Use of ICT in teaching, laboratory education, communication with students</i>	Presentation and Theory and Laboratory with the help of slides. Website of the course with supporting and auxiliary material. In the laboratory application of GMWIN software application with a PLC of LG.	
TEACHING METHODS <i>The manner and methods of teaching are described in detail.</i> <i>Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.</i> <i>The student's study hours for each learning activity are given as well as the hours of non-directed study according to the principles of the ECTS</i>	Activity	Semester workload
	Lectures	39
	laboratory Exercises	39
	independent Study	72
	Total Course (25 hours workload per credit unit)	150
STUDENT PERFORMANCE EVALUATION <i>Description of the evaluation procedure</i> <i>Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open-ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other</i> <i>Specifically-defined evaluation criteria are given, and if and where they are accessible to students.</i>	Theory Final written examination (100%) Laboratory Course Final Exam (100%) by direct creation of programs and their implementation in PLC LG.	

5. ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

- Related academic journals:

- Kranas C Daskalopoulos E, Industrial Automation and programmable logic controllers, ION Publications, 2001.
- LS Industrial systems, User Manual GMWIN 1994 - 2002

- Pantazis N, Automation with PLC, A Publishing. Stamoulis, 1998.
- F.D. Petruzella "Programmable Logic Controllers (PLC)", edition Tziola, 2000
- D.Collins, E.Lane, "Programmable Controllers", edition Tziola, 1997.
- I. Beretas, "Automation using PLC", edition Tziola.