SYLLABUS

1. Information about the program

1.1 Higher education institution	UNIVERSITY POLITEHNICA OF TIMISOARA
1.2 Faculty[1]/ Department [2]	ELECTRONICS, TELECOMUNICATON AND INFORMATION TECHNOLOGIES/EA
1.3 Field of study (name/code[3])	ELECTRONIC ENGINEERING, TELECOMUNICATION AND INFORMATION TECHNOLOGIES
1.4 Study cycle	License
1.5 Study program (name/code/qualification)	TST-ENG/20/20/10/100/10/TST-ENG

2. Information about the discipline

2.1 Name of discipline/ formative category[4]	Software Engineering and Applications/DS						
2.2 Coordinator (holder) of course activities	Conf. dr. ing. Roland SZABÓ						
2.3 Coordinator (holder) of applied activities[5]	Conf. dr. ing. Roland SZABÓ						
2.4 Year of study[6]	4	**2.5** Semester	7	**2.6** Type of evaluation	D	**2.7** Regime of discipline[7]	DI

3. Total estimated time – hours / semester: direct teaching activities (fully assisted or partly assisted) and individual training activities (unassisted) [8]

3.1 Number of fully assisted hours / week	4 of which:	**3.2** course	2	**3.3** seminar / laboratory / project	0/1/1
3.1* Total number of fully assisted hours / semester	56 of which:	**3.2*** course	28	**3.3*** seminar / laboratory / project	0/14/14
3.4 Number of hours partially assisted / week	0 of which:	**3.5** training	0	**3.6** hours for diploma project elaboration	0
3.4* Total number of hours partially assisted / semester	0 of which:	**3.5*** training	0	**3.6*** hours for diploma project elaboration	0
3.7 Number of hours of unassisted activities / week	3.14 of which:	additional documentary hours in the library, on the specialized electronic platforms and on the field			1
		hours of individual study after manual, course support, bibliography and notes			1.14
		training seminars / laboratories, homework and papers, portfolios and essays			1
3.7* Number of hours of unassisted activities / semester	44 of which:	additional documentary hours in the library, on the specialized electronic platforms and on the field			14
		hours of individual study after manual, course support, bibliography and notes			16
		training seminars / laboratories, homework and papers, portfolios and essays			14
3.8 Total hours / week [9]	7.14				
3.8* Total hours /semester	100				
3.9 Number of credits	4				

4. Prerequisites (where applicable)

4.1 Curriculum	• Object Oriented Programming • Digital Integrated Circuits
4.2 Competencies	• Basic Flow of Programming • Top Down and Bottom Up Approaches

5. Conditions (where applicable)

5.1 of the course	• Video projector
5.2 to conduct practical activities	• Laboratory with video projector and 8 test benches: computer, oscilloscope, signal generator, development board

6. Specific competencies acquired through this discipline

Specific competencies	• Applying basic knowledge, concepts and methods regarding the architecture of computing systems, microprocessors, microcontrollers, programming languages and techniques.
Professional competencies ascribed to the specific competencies	• Application of knowledge, concepts and basic methods related to computer system architecture, microprocessors, microcontrollers, programming languages and techniques.
Transversal competencies ascribed to the specific competencies	• Methodical analysis of field-related problems aimed at identifying acknowledged solutions, thus ensuring the accomplishment of professional tasks • Adaptation to new technologies, professional and personal development through continuous training, using printed documentation sources, specialized software and electronic resources in Romanian and at least one foreign language.

7. Objectives of the discipline (based on the grid of specific competencies acquired - pct.6)

7.1 The general objective of the discipline	• The course is designed to develop in students the knowledge, understanding, skills and values to solve problems through the creation of software solutions.
7.2 Specific objectives	• Programming techniques • Project management.

8. Content [10]

8.1 Course	Number of hours	Teaching methods [11]
1. PLC Basics, PLC Instruction Set	3	Slides, discussion
2. Telecommunication System (Mobile Phone) Applications	3	
3. Biometry Overview, Introduction	3	
4. Fingerprint Identification, Palm Recognition	3	
5. Iris Recognition, Retina Technology.	3	
6. Steganography, Spoof and Vulnerability	3	
7. IDE, ICD2, Proteus.	3	

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[10] It details all the didactic activities foreseen in the curriculum (lectures and seminar themes, the list of laboratory works, the content of the stages of project preparation, the theme of each practice stage). The titles of the laboratory work carried out on the stands shall be accompanied by the notation "(*)".
[11] Presentation of the teaching methods will include the use of new technologies (e-mail, personalized web page, electronic resources etc.).

8. BLDC Control, Analog Sensors Software, DAQ	3	
9. Bootloaders, Tire Pressure Monitoring (TPM) System, Achieving Higher ADC Resolution Using Oversampling	3	
10. RS232, RS422, RS485, DB Easy	1	

Bibliography [12]   1. McConnell, S., Code Complete: A Practical Handbook of Software Construction, Mircosoft Press, 2004.
2. Gamma, E., Helm R., Johnson R., Vlissides, J., Design Patterns: Elements of Reusable Object-Oriented Software, Adison-Wesley, 2005.

8.2 Applied activities [13]	Number of hours	Teaching methods
NI CompactRIO Control and Acquisition System NI CompactRIO installing & FPGA Chassis programming NI CompactRIO Real-Time Controller Programming NI CompactRIO Networked RealTime Host Program Development NI CompactRIO Windows Host Program Development	4	Exercises
SIEMENS SIMATIC S7-200 Programmable Controller	2	
Microcontroller Programming with MPLAB IDE. Simulation with Proteus	2	
PIC Voltage Meter Using LCD	2	
BLDC Motor Control	2	Exercises
Data Acquisition (DAQ)	2	Exercises
Project – Creating an Application on a Telecommunication System (Mobile Phone)	14	Project Implementation

Bibliography [14]   Szabo, R., Software Development Applications, Politehnica, 2016.

9. **Corroboration of the content of the discipline with the expectations of the main representatives of the epistemic community, professional associations and employers in the field afferent to the program**

- The content of the discipline is in concordance with the approaches existing in other university centers in the country and abroad as well as with the requirements of the associations and employers interested in the field.

10. **Evaluation**

Type of activity	**10.1** Evaluation criteria [15]	**10.2** Evaluation methods	**10.3** Share of the final grade
10.4 Course	Gaining knowledge related discipline, understanding technologies / methods presented	Written exams, 2 x 1.5 hrs.	60%
10.5 Applied activities	**S:**		
	L: Level of familiarity with the various topics presented	Continuous assessment, written and oral examination	20%
	P[16]**:** Project result success and presentation	Presentation	20%

	Pr:		
10.6 Minimum performance standard (minimum amount of knowledge necessary to pass the discipline and the way in which this knowledge is verified [17])			
• 5 for couse exam and 5 for laboratory			

Date of completion	**Course coordinator (signature)**	**Coordinator of applied activities (signature)**
15.06.2023		

Head of Department (signature)	**Date of approval in the Faculty Council [18]**	**Dean (signature)**
	14.09.2023	

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[16] In the case where the project is not a distinct discipline, this section also specifies how the outcome of the project evaluation makes the admission of the student conditional on the final assessment within the discipline.

[17] It will not explain how the promotion mark is awarded.

[18] The endorsement is preceded by the discussion of the board's view of the study program on the discipline record.