

## SYLLABUS

### 1. Data about the program of study

1.1 Institution	Technical University of Cluj-Napoca
1.2 Faculty	Faculty of Electronics, Telecommunications, and information Technology
1.3 Department	Basis of Electronics
1.4 Field of study	Electronic Engineering, Telecommunications, and Information Technologies
1.5 Cycle of study	Master of Science
1.6 Program of study / Qualification	Integrated Circuits and Systems
1.7 Form of education	Full time
1.8 Subject code	CSI 10

### 2. Data about the subject

2.1 Subject name	Technologies and test environments						
2.2 Subject area	Theoretical area						
	Methodological area						
	Analytic area						
2.3 Course responsible	Lecturer Robert GROZA, PhD eng. – <a href="mailto:robert.groza@bel.utcluj.ro">robert.groza@bel.utcluj.ro</a>						
2.4 Teacher in charge with seminar / laboratory / project	Lecturer Robert GROZA, PhD eng. – <a href="mailto:robert.groza@bel.utcluj.ro">robert.groza@bel.utcluj.ro</a> Lecturer Alexandru LODIN, PhD eng. – <a href="mailto:alexandru.lodin@bel.utcluj.ro">alexandru.lodin@bel.utcluj.ro</a>						
2.5 Year of study	I	2.6 Semester	2	2.7 Assessment	Exam	2.8 Subject category	DA/DI

### 3. Estimated total time

3.1 Number of hours per week	3	of which: 3.2 course	1	3.3 seminar / laboratory/project	2
3.4 To Total hours in the curriculum	42	of which: 3.5 course	14	3.6 seminar / laboratory/ project	28
Distribution of time					hours
Manual, lecture material and notes, bibliography					28
Supplementary study in the library, online specialized platforms and in the field					28
Preparation for seminars / laboratories, homework, reports, portfolios, and essays					12
Tutoring					12
Exams and tests					3
Other activities:					-
3.7 Total hours of individual study	83				
3.8 Total hours per semester	125				
3.9 Number of credit points	5				

### 4. Pre-requisites (where appropriate)

4.1 curriculum	
4.2 competence	Basic knowledge of computer science, mathematics, and programming

## 5. Requirements (where appropriate)

5.1. for the course	video projector, screen, blackboard
5.2. for the seminars / laboratories / projects	computer with internet access

## 6. Specific competences

Professional competences	<p>C3.2 Use of programming languages of general use and specific to microprocessor and microcontroller applications; explaining the operation of some automatic control systems that use these architectures and interpreting the experimental results.</p> <p>C3.3 Solving concrete practical problems that include elements of data structures and algorithms, programming and using microprocessors or microcontrollers.</p> <p>C3.4 Development of programs in a general and/or specific programming language, starting from the specification of requirements to execution, debugging and interpretation of the results in correlation with the processor used.</p> <p>C4.1 Definition of concepts, principles and methods used in the fields: computer programming, high-level and specific languages, CAD techniques for making electronic modules, microcontrollers, computer system architecture, programmable electronic systems, graphics, reconfigurable hardware architectures.</p> <p>C4.2 Explaining and interpreting the specific requirements of hardware and software structures in the fields of computer programming, high-level and specific languages, CAD techniques for making electronic modules, microcontrollers, computer system architecture, programmable electronic systems, graphics, reconfigurable hardware architectures</p> <p>C4.3 Identification and optimization of hardware and software solutions to problems related to industrial electronics, medical electronics, automotive electronics, automation, robotics, consumer goods production</p> <p>C4.4 Use of appropriate performance criteria to evaluate, including through simulation, the hardware and software of dedicated systems or service activities using microcontrollers or low- or medium-complexity computing systems</p>
Cross competences	N/A

## 7. Discipline objectives (as results from the key competences gained)

7.1 General objective	Development of professional skills in the field of software testing
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**9. Bridging course contents with the expectations of the representatives of the community, professional associations, and employers in the field**

The skills acquired will be used in the following occupations according to COR (Classification of Occupations from Romania): IT consultant, programmer analyst in the software field, system analyst, software designer

**10. Evaluation**

Activity type	10.1 Assessment criteria	10.2 Assessment methods	10.3 Weight in the final grade
10.4 Course	The level of acquired theoretical knowledge and practical skills	<i>Written exam (quiz) (theoretical topics and problem solving).</i>	60% (E) 10 pt.
10.5 Seminar/ Laboratory	The level of acquired knowledge and abilities	<i>Project defense at the end of the semester.</i>	40% (L) 10 pt.
10.6 Minimum standard of performance			
<p><b>Quality level:</b></p> <p>Minimum knowledge:</p> <ul style="list-style-type: none"> <li>✓ <i>knowledge of basic terminology, objectives, and axioms of testing</i></li> <li>✓ <i>knowledge of test levels and test types</i></li> <li>✓ <i>knowledge of the stages of the testing process</i></li> <li>✓ <i>notions of the organization of the testing process (approach, planning, monitoring, control, incident and risk management)</i></li> <li>✓ <i>general knowledge of test design techniques (specification-based, structure-based, experience-based).</i></li> </ul> <p>Minimum competences:</p> <ul style="list-style-type: none"> <li>✓ <i>creating a test plan, a test report, an incident, and risk report.</i></li> </ul> <p><b>Quantitative level:</b></p> <ul style="list-style-type: none"> <li>✓ <i>performing all laboratory work</i></li> <li>✓ <i>obtaining at least half of the maximum score awarded in the exam (<math>E \geq 5</math>)</i></li> <li>✓ <i>obtaining at least half of the maximum score awarded in the laboratory (<math>L \geq 5</math>)</i></li> </ul>			

Date of filling in:	Responsible	Title Surname NAME	Signature
27.02.2023	Course	Lecturer Robert GROZA, PhD eng.	
	Applications	Lecturer Robert GROZA, PhD eng.	
		Lecturer Alexandru LODIN, PhD eng.	

Date of approval in the Department of Basis of Electronics

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Head of Department  
Prof. Sorin HINTEA, PhD eng

Date of approval in the Council of Faculty of Electronics,  
Telecommunications and Information Technology

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Dean  
Prof. Gabriel OLTEAN, PhD eng