



## SYLLABUS

#### **1**. Data about the program of study

1.1 Institution	Technical University of Cluj-Napoca
1.2 Eaculty	Faculty of Electronics, Telecommunications, and information
1.2 Faculty	Technology
1.3 Department	Basis of Electronics
1 4 Field of study	Electronic Engineering, Telecommunications, and Information
1.4 Field of Study	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		Techn	Technologies and test environments					
Th2.2 Subject areaMain		Theor Metho	Theoretical area Methodological area					
Analy			ic area					
2.3 Course responsib	.3 Course responsible Lecturer Robert GROZA, PhD eng. – <u>robert.groza@bel.utclu</u>			.ro				
2.4 Teacher in charge with seminar / laboratory / project			Le	cture cture	er Robert GROZA, PhD er Alexandru LODIN, Ph dru Jodin@bel utchui ro	eng. – 1D eng	<u>robert.groza@bel.utcluj</u> . –	<u>.ro</u>
2 E Vear of study 1 2 C Comest					2 7 Accossmont	Evam	2.9 Subject estagen	
2.5 rear of study	I 2.6 Semest			2	Z./ Assessment	EXdIII	2.6 Subject Category	UA/UI

### 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						
Supplementary study in the library, online specialized platforms and in the field						
Preparation for seminars / laboratories, homework, reports, portfolios, and essays						
Tutoring						
Exams and tests						
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

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.
C3.3 Solving concrete practical problems that include elements of data structures and algorithms, programming and using microprocessors or microcontrollers.
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.
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.
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
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
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
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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	Assimilation of theoretical knowledge on software testing. Acquiring the
7.2 Specific objectives	skills and abilities needed to carry out test cases for software
	applications.

#### 8. Contents

8.1 Lecture (syllabus)	Teaching methods	Notes
1. Testing: definition, principles, stages of the testing process		or,
2. Levels of testing, types of testing, maintenance testing	e K	ect
3. Testing techniques	acti	l
4. Analytical test methods	ter	0
5. Test design techniques	i.	vide
6. Managing the testing process	tyle	rd ird
7. Incident management and reporting	issi ng s	tior boa
	chir	nta ack
	ר, d tea	bla
	tion	pro
	nta	oint
	e S O	r Po
	L L L L L L L L L L L L L L L L L L L	wei
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Bibliographies		
1. Foundations of software testing - ISTQB certification, D. Graham		
2. Software testing - An ISTQB–ISEB Foundation Guide, B. Hambling	5	
3. Software testing, R. Patton		
4. The Art of software testing, G. Myers		
Bibliography on-line		
1. https://www.istqb.org/downloads/e-books.html	The set of	Nutur
8.3 Laboratory	leaching methods	Notes
1. Introduction to testing		
2. Familiarity with VueJS and Django Framework		are
<ol> <li>Familiarity with VueJS and Django Framework</li> <li>Setting up a frontend application (VueJS)</li> </ol>		tware
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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	10.3 Weight in
, ,,			the final grade
10.4 Course	The level of acquired theoretical knowledge and practical skills	Written exam (quiz) (theoretical topics and problem solving).	60% (E) 10 pt.
10.5 Seminar/ Laboratory	The level of acquired knowledge and abilities	Project defense at the end of the semester.	40% (L) 10 pt.

10.6 Minimum standard of performance

## Quality level:

Minimum knowledge:

- ✓ knowledge of basic terminology, objectives, and axioms of testing
- ✓ knowledge of test levels and test types
- ✓ knowledge of the stages of the testing process
- notions of the organization of the testing process (approach, planning, monitoring, control, incident and risk management)
- ✓ general knowledge of test design techniques (specification-based, structure-based, experiencebased).

Minimum competences:

✓ creating a test plan, a test report, an incident, and risk report.

## Quantitative level:

- ✓ performing all laboratory work
- ✓ obtaining at least half of the maximum score awarded in the exam ( $E \ge 5$ )
- ✓ obtaining at least half of the maximum score awarded in the laboratory (L ≥ 5)

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.	



Facultatea de Electronică, Telecomunicatți și Tehnologia Informației



Date of approval in the Department of Basis of Electronics

Head of Department Prof. Sorin HINTEA, PhD eng

Date of approval in the Council of Faculty of Electronics, Telecommunications and Information Technology Dean Prof. Gabriel OLTEAN, PhD eng

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