

SYLLABUS

1. Data about the program of study

1.1 Institution	The Technical University of Cluj-Napoca
1.2 Faculty	Faculty of Automation and Computer Science
1.3 Department	Computer Science
1.4 Field of study	Computer Science and Information Technology
1.5 Cycle of study	Bachelor of Science
1.6 Program of study / Qualification	Computer science / Engineer
1.7 Form of education	Full time

2. Data about the subject

2.1 Subject name	Practical Work in the Specialization			Subject code	44
2.2 Course responsible / lecturer	-				
2.3 Teachers in charge of seminars / Laboratory / project	Internship supervisors: Assoc. prof. dr. eng. Marița Tiberiu - Tiberiu.Marita@cs.utcluj.ro Assoc. prof. dr. eng. Tiberiu Marița - Tiberiu.Marita@cs.utcluj.ro Prof.dr.eng. Lemnaru Camelia - Camelia.LEMNARU@cs.utcluj.ro Prof.dr.eng. Hangan Anca - Anca.HANGAN@cs.utcluj.ro Assoc. prof. dr. eng. - Victor.BACU@cs.utcluj.ro Assoc. prof. dr. eng. Itu Răzvan - Razvan.Itu@cs.utcluj.ro S.L. dr.ing. Antal Marcel - marcel.antal@cs.utcluj.ro S.L. dr.ing. Cristina Feier - Cristina.Feier@cs.utcluj.ro Assist. dr. ing. Dan Mitrea - Dan.Mitrea@cs.utcluj.ro				
2.4 Year of study	III	2.5 Semester	6	2.6 Type of assessment (E - exam, C - colloquium, V – verification)	V
2.7 Subject category	Formative category: DF – fundamental, DS – speciality, DC – complementary				DS
	Optionality: DOB – mandatory, DOP – optional (alternative), DFA – optional (free choice)				DOB

3. Estimated total time

3.1 Number of hours per week	15	of which:	Course	-	Seminars	-	Laboratory	-	Project	15
3.2 Number of hours per semester	90	of which:	Course	-	Seminars	-	Laboratory	-	Project	90
3.3 Individual study:										
(a) Manual, lecture material and notes, bibliography										-
(b) Supplementary study in the library, online and in the field										-
(c) Preparation for seminars/laboratory works, homework, reports, portfolios, essays										-
(d) Tutoring										-
(e) Exams and tests										-
(f) Other activities:										10
3.4 Total hours of individual study (suma (3.3(a))...3.3(f)))					10					
3.5 Total hours per semester (3.2+3.4)					100					
3.6 Number of credit points					4					

4. Pre-requisites (where appropriate)

4.1 Curriculum	N/A
4.2 Competence	N/A

5. Requirements (where appropriate)

5.1. For the course	N/A
5.2. For the applications	N/A

6. Specific competence

6.1 Professional competences	C2 Designing hardware, software and communication components (2 credits) C2.3 Construction of hardware and software components of computing systems using design methods, languages, algorithms, data structures, protocols and technologies C2.4 Metric based evaluation of functional and non-functional characteristics of computing systems C2.5 Implementation of hardware, software and communication components C3 Problems solving using specific Computer Science and Computer Engineering tools (2 credits) C3.3 Applying solution patterns using specific engineering tools and methods C3.4 Comparatively and experimentally evaluation of the alternative solutions for performance optimization C3.5 Developing and implementing informatic solutions for concrete problems C5 Designing, managing the lifetime cycle, integrating and ensuring the integrity of hardware, software and communication systems (2 credits) C5.5 Creating a project including the problem's identification and analysis, its design and development, also proving an understanding of the basic quality requirements
6.2 Cross competences	CT1 - Honorable, responsible, ethical behavior in the spirit of the law to ensure the reputation of the profession CT2 Identifying, describing and conducting processes in the projects management field, assuming different roles inside the team and clearly and concisely describing, verbally or in writing, in Romanian and in an international language, the results from the activity field. (2 credits)

7. Expected Learning Outcomes

Knowledge	Describes, identifies, summarizes elementary concepts and methods regarding the design and testing of microcontroller or processor systems, operating systems, graphics processing systems, data acquisition systems, programming languages, programming environments, programming techniques, databases, artificial intelligence and software engineering and their application to concrete problems.
Skills	Specifies requirements, analyzes, elaborates, develops and tests programs in general-purpose programming languages (C, etc.) and/or object-oriented (C++, Java, etc.), applying the specific elements of software engineering Applies and designs integrated IT solutions, including databases, networks, software and hardware systems, distributed/parallel systems, security mechanisms and artificial intelligence, using analysis, design, implementation and documentation methods
Responsibilities and autonomy	Assumes responsibility for the quality, security and correctness of the solutions developed and demonstrates autonomy in organizing design and learning activities, collaborating effectively in teams and adapting to new requirements and technologies. Has honorable, responsible, ethical behavior, in the spirit of the law to ensure the reputation of the profession.

8. Discipline objective (as results from the *key competences gained*)

8.1 General objective	Application of fundamental and applied knowledge gained in the projects development within a specialized company or research team (theme set by the tutor or project manager)
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8.2 Specific objectives	Acquaintance and student involvement in every development stage of a hardware / software / communication project and connected aspects of design activities: - Design, implementation, testing and validation of the project - Preparation of documentations, technical reports - Team work and communication skills - Project management activities
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9. Contents

9.1 Lectures	Hours	Teaching methods	Notes
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Bibliography			
-			
9.2 Applications - Seminars / Laboratory / Project	Hours	Teaching methods	Notes
• analysis of the product • preparation of the project specifications • implementation and deployment of the hardware or software system • product testing and validation • product documenting		N/A	
Bibliography:			
For the project development, the draft bibliography is the one recommended by the project leader from the company or by the research team at which the implementation is performed and the one resulted in the documenting phase.			

**Se vor preciza, după caz: tematica seminarilor, lucrările de laborator, tematica și etapele proiectului.*

10. Bridging course contents with the expectations of the representatives of the community, professional associations and employers in the field

This discipline provides education and training of the students at the workplace site, with benefits for both sides. Students are familiarized with the working and professional requirements needed to work in a company, and companies have the opportunity to shape students to facilitate their employment after graduation (to reduce training expenses / training). Also it aims to increase cohesion between academia and employment in a priority area in terms of national and European level in order to improve the skills of employees and to prepare and maintain them in the labor market in a particularly dynamic and competitive domain (mainly existing competition with Eastern European countries and Asia - India and China).

11. Evaluation

Activity type	Assessment criteria	Assessment methods	Weight in the final grade
Course	N/A	N/A	N/A
Applications	Attendance (min 100 h), activity, tutor assessment, internship notebook	Oral colloquy	100%
Minimum standard of performance: Development of a hardware / software / communication engineering project.			

Date of filling in:	Responsible	Title First name Last name	Signature
30.04.2026	Course	-	
	Applications	Assoc.prof.dr.eng. Tiberiu MARIȚA	

Date of approval in the department

Head of department,
Prof.dr. eng. Rodica Potolea

Date of approval in the Faculty Council

Dean,
Prof.dr.eng. Vlad Mureșan