



DISCIPLINE ACADEMIC SHEET
ACADEMIC YEAR 2025 – 2026

1. PROGRAMME DATA

1.1. Higher Education Institution	UNIVERSITY OF CRAIOVA
1.2. Faculty	Automation, Computers and Electronics
1.3. Department	Computers and Information Technology
1.4. Field of Study	Computers and Information Technology
1.5. Study level	L(License / Undergraduate)
1.6. Organizational form	IF
1.7. Study Program (name/code) /Qualification	Computers / L2060101010

2. DISCIPLINE DATA

2.1 Discipline Name	Project IV Microcontrollers						
2.2 Course Activities Holder							
2.3. Practical Activities Holder	s.l. dr. ing. Enescu Nicolae						
2.4. Study Year	4	2.5. Semester	1	2.6. Evaluation type	V	2.7. Discipline regime	DOP

3. ESTIMATED TOTAL TIME (hours per semester of teaching activities)

3.1. Number of hours per week	2	in which: 3.2 course	0	3.3. sem./lab./pr.	2
3.4. Total hours of curriculum	28	in which: 3.5 course	0	3.6. sem./lab./pr.	28
3.7. Time distribution - hours/week					hours
Study after manual, course support, bibliography and notes					-
Additional documentation in library, on specialized electronic platforms and field					6
Training seminars / labs, homework, portfolios and essays					6
Tutorial					-
Examinations					8
Other activities.....					2
Total hours per individual activities					22
3.8. Total hours per semester					50
3.9. Number of credits					2

4. PRECONDITIONS (where appropriate)

4.1. of curriculum	Microprocessor Systems Design, Assembly Language Programming, System Theory and Automatic Control, Computer Programming, Data Communications
4.2. of competence	Microprocessor Systems Design, Assembly Language Programming, Computer Programming, Data Communications

5. CONDITIONS (where appropriate)

5.1. of the course	• •
5.2. of seminar/ laboratory/project	The project submission deadline is set by the holder together with the students. Requests for its postponement will not be accepted, except for objectively justified reasons.

6. COURSE OBJECTIVES – expected learning outcomes that are supported by completing and passing the course

Knowledge	The student/graduate describes, identifies and summarizes elementary concepts and methods regarding computer system architecture, microcontrollers, programming languages and techniques and the way they are applied to concrete problems.
Skills (Abilities)	The student/graduate evaluates, based on specific performance criteria, the type of computing system, its architecture and the way of using it required for efficiently solving concrete problems. The student/graduate specifies requirements, writes programs in general-purpose (C etc.) and/or object-oriented (C++, Java etc.) programming languages, runs, debugs and interprets the results of the created programs in order to solve a concrete problem. The student/graduate carries out projects of small/medium complexity involving the simultaneous use of hardware components (microprocessors or microcontrollers) and software components (the related programs).
Responsibility and autonomy	The student/graduate behaves honorably, responsibly and ethically, in the spirit of the law, to ensure the reputation of the profession.

7. CONTENT

7.1. Course	The method of implementation	Teaching methods	Allocated time (hours)
Bibliography:			
1.			
2.			

7.2. Seminar/laboratory/project	The method of implementation	Teaching methods	Allocated time (hours)
1. Using Arduino		Practical realization of a project using Arduino, ESP32 or Raspberry Pi and various types of components	2
2. Using Raspberry Pi			2
3. Using Esp32			2
4. Realization of a project using Arduino, LCD, buttons, LEDs, sensors			8
5. Realization of a project using Raspberry Pi, LCD, buttons, LEDs, sensors			8
6. Realization of a project using ESP32, LCD, buttons,			6

LEDs, sensors			
Bibliography:			
1. Banzi, M, Getting started with Arduino, O'Reilly, 2009 2. Tom Igoe, Making Things Talk: Using Sensors, Networks, and Arduino to see, hear, and feel your world, Published September 2011, O'Reilly 3. Karvinen, K, Make Arduino bots and gadgets, 2011, O'Reilly 4. Matt Richardson and Shawn Wallace: "Getting Started with Raspberry Pi", O'Reilly, December 2012 5. "Booting the Raspberry Pi for the first time", Raspberry Pi HQ, 21 September 2014. 6. Benchoff, Brian: "64 Raspberry Pis turned into a supercomputer", Hackaday, 30 March 2014. 7. Ozolins, Jason: "examples of Raspberry Pi composite output", Raspberrypi.org, 22 June 2012. 8. Pritchard, Stephen: "Raspberry Pi: A BBC Micro for today's generation", ITPRO, 15 March 2012. 9. KCS Murti, Design Principles for Embedded Systems, 978-9811632921, Springer, Singapore 2021 10. Raj Kamal, Embedded Systems - SoC, IoT, AI and Real-Time Systems, 978-9353168025, MC GRAW HILL, INDIA 2019 11. Jim Ledin, Architecting High-Performance Embedded Systems: Design and build high-performance real-time digital systems based on FPGAs and custom circuits, 978-1789955965, Packt Publishing 2021			
1.			

8. Correlating the content of the discipline with the expectations of representatives from the epistemic community, professional associations and representative employers in the field related to the program

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9. EVALUATION

Activity Type	9.1. Evaluation criteria	9.2. Evaluation methods	9.3. Final mark weight
9.4. Course			
9.5. Seminar/laboratory/project	Project:	Presentation	100%
9.6. Minimum standard of performance			
- The project grade must be at least 5			

Date of Completion	Signature of the Course Activities Holder,	Signature of the Practical Activities Holder,
23.08.2025		s.l. dr. ing. Enescu Nicolae

Date of Approval in the Department	Signature of the Department Director,
25.08.2025	Ş.l.dr.ing. Nicolae ENESCU

Date of Approval in the Faculty	Signature of the Dean,
	Prof.dr.ing. Dorin ŞENDRESCU