



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	Industrial Software						
2.2 Course Activities Holder	Șef lucr. dr. ing. Maria-Geanina NICHÎȚELEA						
2.3. Practical Activities Holder	Șef lucr. dr. ing. Maria-Geanina NICHÎȚELEA						
2.4. Study Year	3	2.5. Semester	1	2.6. Evaluation type	E	2.7. Discipline regime	DFA

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

3.1. Number of hours per week	4	in which: 3.2 course	2	3.3. sem./lab./pr.	2
3.4. Total hours of curriculum	56	in which: 3.5 course	28	3.6. sem./lab./pr.	28
3.7. Time distribution - hours/week					hours
Study after manual, course support, bibliography and notes					5
Additional documentation in library, on specialized electronic platforms and field					4
Training seminars / labs, homework, portfolios and essays					5
Tutorial					-
Examinations					4
Other activities.....					1
Total hours per individual activities					19
3.8. Total hours per semester					75
3.9. Number of credits					3

4. PRECONDITIONS (where appropriate)

4.1. of curriculum	The student must possess specialized knowledge acquired in the following disciplines: Computer Programming and Programming Languages, System Theory I and II, Applied Informatics I and II, Electronics, Operating Systems and Real-Time Languages.
4.2. of competence	Not necessary.

5. CONDITIONS (where appropriate)

5.1. of the course	The course is taught online / using the video projector (depending on the decision of the University Senate and of the Faculty Council). The video system / the board is used for explanations and answers to questions. Course support in electronic format and access to up-to-date documentation are provided. The teaching process has the following structure: 70% theoretical presentation, based on the course support
5.2. of seminar/ laboratory/project	

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

Knowledge	The student/graduate: 1. Describes, identifies and summarizes fundamental concepts from automatic systems, embedded and intelligent systems, computer science and information technology and the way they are applied to concrete problems.
Skills (Abilities)	The student/graduate appreciates the quality and identifies the limits of the concepts, symbols and representations specific to the field. The student/graduate selects and applies concepts, principles and methods for solving particular problems in the elaboration of technical, economic and managerial documentation. The student/graduate applies health and safety standards in solving tasks specific to engineering and management. The student/graduate evaluates the advantages and limits of software applications for solving tasks specific to engineering and management.
Responsibility and autonomy	The student/graduate documents, describes and manages processes specific to engineering project management, taking on different roles in the team and presenting the results. The student/graduate develops working and communication skills for efficient collaboration in fulfilling tasks specific to engineering and management. The student/graduate initiates and manages actions for updating professional knowledge specific to the field. The student/graduate evaluates and capitalizes on business and entrepreneurial development opportunities. The student/graduate is aware of the aspects of social responsibility and professional ethics.

7. CONTENT

7.1. Course	The method of implementation	Teaching methods	Allocated time (hours)
1. General notions about industrial software. 1.1. Representation of mathematical models 1.2. Examples of software applications from the industrial environment and development models.	face to face	The course is taught using Google Classroom or the video projector:	2
2. Notions on the discretization of continuous systems. 2.1. Discretization of continuous signals 2.2. Discretization of continuous systems	face to face	- 70% theoretical presentation, based on the course support (slides).	4
3. Simulation of hybrid systems in Simulink. 3.1. Notions of modeling and simulation in Simulink 3.2. Examples of modeling and simulation of hybrid systems	face to face	- 30% interactive activity (discussions with the students).	4

4. Event-based systems 4.1. Modeling systems through state diagrams 4.2. Modeling and simulating systems in Simulink - Stateflow	face to face	The necessary materials are made available to students in electronic format.	4
5. Real-time software applications 5.1. The MATLAB/Simulink/RTW development environment 5.2. Examples of real-time applications created using the MATLAB environment	face to face		2
6. Real Time Workshop (RTW). Overview. 6.1. General notions 6.2. Creating executable programs	face to face		2
7. The SRV02 Quanser DC motor 7.1. The mathematical model of the motor	face to face		2
8. Modeling real-time experiments with the Quanser motor 8.1. Overview of the Quanser experiments 8.2. The mathematical model for controlling the speed of the Quanser motor 8.3. The mathematical model for controlling the position of the Quanser motor shaft 8.4. The mathematical model for the Ball and Beam experiment 8.5. The mathematical model for the Flexible Link experiment 8.6. The mathematical model for the Flexible Joint experiment 8.7. The mathematical model for the two-degrees-of-freedom Robot experiment 8.8. The mathematical model for the Inverted Pendulum experiment	face to face		8
Bibliography:			
1. Ionete, C., Selișteanu, D., Echipamente de Automatizare și Protecție, Reprografia Universității din Craiova, 2000. 2. Marin, C., Popescu, D., Petre, E., Selișteanu, D., Ionete, C., Sisteme de Reglare Automată. Lucrări Practice I, Ed. Sitech, Craiova, 1997. 3. Nachtingal, Chester L. (ed.), Instrumentation and Control. Fundamentals and Applications, John Wiley & Sons, Inc., New York, 1990. 4. Ionete C. Software Industrial. Note de curs. 5. MATLAB/Simulink/RTW. User Guide. 6. dSpace/TargetLink. User Guide. 7. Stateflow wikipedia. Stateflow MATLAB User Guide.			

7.2. Seminar/laboratory/project	The method of implementation	Teaching methods	Allocated time (hours)
1. Introduction to the MATLAB environment	face to face	The laboratory works are carried out using mock-ups and computer simulation programs. Students are provided with laboratory platforms containing a	2
2. Representation of systems. Controllability and observability.	face to face		2
3. Simulating systems in the Simulink environment.	face to face		2

4. Discretization of continuous signals. Discretization of continuous systems.	face to face	theoretical summary and the way of carrying out the work. Activities: - 70% carrying out the work - 30% interpretation of the results and discussions with the students.	4
5. Simulating hybrid systems in Simulink.	face to face		2
6. Stateflow – modeling and simulating event-based systems.	face to face		2
7. Modeling and simulating the SRV02 Quanser DC motor	face to face		2
8. Implementing the Quanser motor speed control experiment	face to face		2
9. Implementing the angular position control experiment for the Quanser motor shaft	face to face		2
10. Controlling the speed of the Quanser motor through state diagrams.	face to face		4
11. Implementing the ball and beam experiment.	face to face		2
12. Assessment of laboratory knowledge.	face to face		2
Bibliography:			
1. Ionete C. Software Industrial. Note de curs. 2. MATLAB/Simulink/RTW. User Guide. 3. LabVIEW User Guide.			

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

The course content was discussed with the representatives of: • SOFTRONIC Craiova • Forvia HELLA Craiova

9. EVALUATION

Activity Type	9.1. Evaluation criteria	9.2. Evaluation methods	9.3. Final mark weight
9.4. Course	- Understanding the theoretical fundamentals of discrete systems and information transmission. - The ability to make connections between the taught notions. - The capacity for	Written exam (questions / multiple choice and an application).	70%

	analysis and synthesis in a concrete situation.		
9.5. Seminar/laboratory/project	- Correct implementation and operation of the applications. - Interpretation of the results. - The obtained solutions are discussed within the group.	Ongoing assessment and final test.	30%
9.6. Minimum standard of performance			
• Obtaining at least 50% of the score of the ongoing assessments, laboratory tests and final exam. • The final grade is calculated by rounding the final score to a whole grade.			

Date of Completion	Signature of the Course Activities Holder,	Signature of the Practical Activities Holder,
23.08.2025	Şef lucr. dr. ing. Maria-Geanina NICHÎTELEA	Şef lucr. dr. ing. Maria-Geanina NICHÎTELEA

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