



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	Robot Control Systems						
2.2 Course Activities Holder	Conf. dr. ing. Bărbulescu Lucian-Florentin						
2.3. Practical Activities Holder							
2.4. Study Year	3	2.5. Semester	2	2.6. Evaluation type	V	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					14
Additional documentation in library, on specialized electronic platforms and field					7
Training seminars / labs, homework, portfolios and essays					7
Tutorial					-
Examinations					6
Other activities.....					10
Total hours per individual activities					44
3.8. Total hours per semester					100
3.9. Number of credits					4

4. PRECONDITIONS (where appropriate)

4.1. of curriculum	• Logical Design I, Logical Design II, Electronic Devices, System Theory
4.2. of competence	• Solving usual problems in the field of systems engineering by identifying adequate techniques, principles and methods and by applying mathematics, with emphasis on numerical computation methods,

5. CONDITIONS (where appropriate)

5.1. of the course	The course is taught using the video projector. The board is used for some explanations and answers to questions from the audience.
5.2. of seminar/ laboratory/project	Computing equipment allowing the compilation and execution of programs developed in the C language, using MPLab IDE. Equipment with USB interfaces connected to EasyPIC 7 boards

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

Knowledge	The student/graduate identifies and describes the operating and design principles of automatic control systems
Skills (Abilities)	The student/graduate selects and designs an automatic control system
Responsibility and autonomy	The student/graduate decides on the choice of the type of automatic control system to be implemented in certain applications and is responsible for its proper operation

7. CONTENT

7.1. Course	The method of implementation	Teaching methods	Allocated time (hours)
1. 1. Introduction to Robotics. Coordinate systems		The course is taught using the video projector. The board is used for some explanations and answers to questions from the audience. Course support, presentations and auxiliary bibliographic material are provided in electronic format	2
2. 2. Homogeneous transformations			2
3. 3. The direct geometric model			2
4. 4. The Denavit-Hartenberg method			2

5. 5. The inverse geometric model			2
6. 6. The kinematic model. The Jacobian matrix			2
7. 7. The dynamic model			2
8. 8. Robot programming			4
9. 9. Mobile robots			6
10. 10. Programming mobile robots			4
Bibliography:			
1. Philip J.Mc.Kerrow - Introduction to Robotics - Addison-Weslwy Publ.Co.,1995. 2. John J.Craig - Introduction to Robotics (Mechanics and Control) - CRC Press 2005. 3. Lazea Gh.,E.Lupu, P.Dobra- Sisteme de conducere a robotilor si fabricatie integrata. Ed.Mediamira, 1998			
2.			

7.2. Seminar/laboratory/project	The method of implementation	Teaching methods	Allocated time (hours)
1. Coordinate systems.			2
2. The direct geometric model / The inverse geometric model			2
3. The Denavit-Hartenberg method			2
4. The dynamic model of industrial robots			2
5. Design of control systems for industrial robots			2
6. Programming industrial robots			6
7. Industrial robot applications for object manipulation.			6
8. Mobile robot applications			6
Bibliography:			
1. Lazea Gh.,E.Lupu, P.Dobra- Sisteme de conducere a robotilor si fabricatie integrata. Ed.Mediamira, 1998. 2. Frank L. Lewis, Darren M. Dawson, Chaouki T. Abdallah, Robot Manipulator Control: Theory and Practice, CRC Press, 2003.			
2.			

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 topics cover the requirements of employers in the ICT field, especially those in the field of systems engineering.

9. EVALUATION

Activity Type	9.1. Evaluation criteria	9.2. Evaluation methods	9.3. Final mark weight
9.4. Course	Theoretical principles. The ability to solve applications. The capacity for analysis and synthesis.	Written exam with applications, with access to bibliography.	70%
9.5. Seminar/laboratory/project	S: L: - Completion of the laboratory works. The ability to finalize and interpret the data of the work. Pr:	Laboratory test	30%
9.6. Minimum standard of performance			
- Elementary knowledge related to robot dynamics standards. - Elementary knowledge related to robot programming. - Written exam grade at least 5, laboratory activity grade at least 5, final grade at least 5			

Date of Completion	Signature of the Course Activities Holder,	Signature of the Practical Activities Holder,
23.08.2025	Conf. dr. ing. Bărbulescu Lucian-Florentin	

Date of Approval in the Department	Signature of the Department Director,
25.08.2025	Ș.I.dr.ing. Nicolae ENESCU

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