



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	Artificial Intelligence						
2.2 Course Activities Holder	Prof.dr.ing. Costin BĂDICĂ						
2.3. Practical Activities Holder							
2.4. Study Year	2	2.5. Semester	2	2.6. Evaluation type	E	2.7. Discipline regime	DOB

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					16
Additional documentation in library, on specialized electronic platforms and field					9
Training seminars / labs, homework, portfolios and essays					10
Tutorial					4
Examinations					5
Other activities.....					-
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	• Algorithm Design. Object-Oriented Programming.
4.2. of competence	• n/a

5. CONDITIONS (where appropriate)

5.1. of the course	• The course is taught using interactive lectures in the faculty's lecture rooms, equipped with video projector and board. The course material in digital format is distributed
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	through the online system. The teaching process is structured as follows: - 70% theoretical presentations, using the course support (slides), as well as examples of theoretical exercises, practical demonstrations and tutorials. - 30% interaction (discussions with the students) based on questions, exercises and
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. Identifies and describes fundamental concepts, principles and methods in the field of artificial intelligence. 2. Explains and interprets the theoretical and experimental results obtained in artificial intelligence. 3. Describes, identifies and synthesizes elementary concepts and methods regarding artificial intelligence and intelligent systems, as well as their application in solving specific problems.
Skills (Abilities)	The student/graduate selects and explains concepts specific to algorithm design, object-oriented programming, logic and functional programming. The student/graduate specifies requirements, analyzes, elaborates, develops and tests software systems in general-purpose (C etc.) and/or object-oriented (C++, Java etc.) programming languages, applying the elements specific to software engineering. The student/graduate designs, implements, develops and/or manages applications that include various types of databases. The student understands the main concepts underlying translation systems and source code compilation, and contributes to the development and improvement of tools specific to programming languages.
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)
1. Introduction to artificial intelligence. Brief history. Intelligent agents. Knowledge-based systems. Machine learning. Current trends in artificial intelligence.	face to face	Course lectures. Theoretical examples. Solved problems. Practical demonstrations. Interaction using questions and answers.	2
2. The logic of definite clauses. Syntax and semantics. Propositions, predicates with variables and function symbols.			2
3. Reasoning in the logic of definite clauses. Bottom-up proofs using the modus ponens rule. Top-down			2

proofs using the SLD resolution rule.			
4. Knowledge representation in the logic of definite clauses. The relational case. Recursion of rules. Recursion of terms.			2
5. Uninformed search. Breadth-first search. Depth-first search. Uniform cost search. Bounded and iterative deepening search.			2
6. Heuristic search. Heuristic functions. Heuristic depth-first search. Admissibility and monotonicity. A* search.			2
7. Solving problems represented through constraints. Constraint satisfaction algorithms. Local search algorithms. Consistency algorithms. Constraint-based logic programming.			2
8. Knowledge representation and reasoning with uncertainty. The Bayesian approach in probability theory. Syntax and semantics. Absolute and conditional probabilities. The laws of probability theory. Bayes' theorem. Conditional independence. Probability distributions.			2
9. Bayesian networks. The full probability distribution associated with a Bayesian network. Reasoning in Bayesian networks.			2
10. Knowledge graphs. Representation and reasoning in taxonomies and ontologies.			2
11. Introduction to machine learning. Linear models for classification and regression.			2
12. Multi-layer perceptron			2

neural networks. Architecture and training.			
13. Convolutional neural networks. Architectural elements. Standard architectures.			2
14. Review for the exam.			2
Bibliography:			
1. David Poole, Alan Mackworth, Artificial Intelligence: Foundations of Computational Agents (3rd edition), Cambridge University Press, 2023. Disponibilă online la: https://artint.info/ 2. Stuart Russell and Peter Norvig, Artificial Intelligence. A Modern Approach (4th edition), Prentice Hall, 2022 3. Costin Bădică, Inteligența artificială. Reprezentare și raționament. Editura Universitaria Craiova, 2006			

7.2. Seminar/laboratory/project	The method of implementation	Teaching methods	Allocated time (hours)
1. Knowledge representation using definite clauses. Syntax and semantics.	face to face	Tutorials. Solved problems. Interaction using questions and answers.	2
2. Reasoning in the logic of definite clauses.			2
3. Uninformed search algorithms			2
4. Heuristic search algorithms			2
5. Exercises with constraints			2
6. Probabilities and Bayesian networks			2
7. Algorithms for classification and regression			2
Laboratory			
1. The laboratory requirements and working procedure. Introduction to logic programming.	face to face	Tutorials. Practical demonstrations. Use of AI programming environments.	2
2. Recursion and compound terms in logic programming.			2
3. Experiments with uninformed search algorithms			2
4. Experiments with heuristic search algorithms			2
5. Constraint-based programming			2
6. Probabilistic reasoning experiments			2
7. Make-up sessions. Experiments with classification and regression			2

algorithms			
Bibliography:			
1. David Poole, Alan Mackworth, Artificial Intelligence: Foundations of Computational Agents (3rd edition), Cambridge University Press, 2023. Disponibilă online la: https://artint.info/ 2. Stuart Russell and Peter Norvig, Artificial Intelligence. A Modern Approach (4th edition), Prentice Hall, 2022 3. Costin Bădică, Inteligența artificială. Reprezentare și raționament. Editura Universitaria Craiova, 2006			
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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 lectures and the content of the applications correspond to similar courses at other national and international universities. The learning outcomes and acquired competences meet the requirements of major employers. These have been continuously developed and refined using the input obtained from representative local IT enterprises.

9. EVALUATION

Activity Type	9.1. Evaluation criteria	9.2. Evaluation methods	9.3. Final mark weight
9.4. Course	Understanding the fundamental theoretical notions. The ability to solve artificial intelligence exercises and problems. Understanding the principles of implementing, testing and evaluating artificial intelligence algorithms.	Written exam: artificial intelligence exercises and problems. Homework: technical report on the implementation, testing and evaluation of an artificial intelligence algorithm.	70 %
9.5. Seminar/laboratory/project	S, L: Solving exercises applying artificial intelligence methods (S), implementing, testing and evaluating artificial intelligence algorithms (L) proposed within the applied activities.	Periodic reports describing the solutions and practical achievements for the problems proposed in the seminar and the tasks assigned in the laboratory.	30 %
9.6. Minimum standard of performance			
Minimum grade 5.			

Date of Completion	Signature of the Course Activities Holder,	Signature of the Practical Activities Holder,
23.08.2025	Prof.dr.ing. Costin BĂDICĂ	

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

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