UNIVERSIDADE LUSÍADA
LISBOA

Course Unit Program
Artificial Intelligence

Academic Year 2025/2026

1. Organic Unit

Faculty of Business and Economic Sciences

2. Course

Computer Engineering

3. Cycle

1st

4. Course Unit

Artificial Intelligence (L9027)

5. Scientific Area

6. Curricular Year

3rd

7. Type of Curricular Unit / Semester

1st Semester

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8. Class type and workload (work time)

Theoretical classes:	
Practical classes:	
Theoretical-Practical Classes	30,00
Tutorial Guidance:	20,00

9. ECTS Credits

6,00

10. Scientific Area Coordinator

11. Regent

Prof. Doutor JOAQUIM MESQUITA DA CUNHA VIANA

12. Assistants

13. Teaching Language

Portuguese

14. General Objectives

To teach the basic AI techniques, the problems they are applied to, as well as their limitations

15. Specific Objectives

This course goes through the most well known algorithms and their applications for problem solving. The main focus is on knowledge rationalization through propositional logic as well as 1st orde logic, using structured methods and monte-carlo techniques for automated decision processes, with probabilistic models and the resulting inferences.

16. Skills to be acquired

At the end of this course, students shall be able to:
- Identify and caracteryze various types of inteligent agents;
- Apply informed and non informed search algorithms to the resolution of problems;
- Model knowledge, using propositional and first order logic;
- Evaluate decisions in uncertainty contexts, based on probabilistic models;
- Implement basic automatic learning technics, including, decision trees and neural networks.

17. Teaching Methodology

Lectures will be based on the oral transmission of the information related to the subjects being studied, followed by the resolution of adequate problems.

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18. Course Unit Program

1. INTRODUCTION
2. AGENTS
   2.1 The nature of environments
   2.2 The structure of the agents
3. SEARCH
   3.1 Performance measures
   3.2 Non-informed search strategies
   3.3 Informed search and exploration
4. KNOWLEDGE AND REASONING
   4.1 Propositional logic
   4.2 1st order logic
   4.3 Inference
5. UNCERTAINTY
   5.1 Decision takin in and uncertanty environment
   5.2 Probabilities theory
   5.3 Bayes rule and its applications
   5.4 Inference in in and uncertanty situation
6. LEARNING
   6.1 Learning methods
   6.2 Inductive learning
   6.3 Decision trees
   6.4 Introduction to the statistic learning methods
   6.5 Introduction to Neural Networks

19. Assessment Methods

According to the school's internal regulations, grading Will have a continuous component, as well as a frequency test. The continuous component will consist of:
Class attendance
2 theoretical tests
1 practical assignment (optional)
In case the student gets benefit from it, the final grade will be limited to the grade obtained in the frequency test, otherwise it will be the waged average of the grades achieved in the frequency test and the continuous component.

20. Didactic Resources

21. Sustainability Objectives

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This course contributes to the following Sustainable Development Objectives(ODS):
-ODS 5 -Gender Equality: assuring an inclusive and fair transmission of knowledge related to technological areas;
-ODS 9 -Industry, innovation and infrastructure: by, more specifically, transmitting applied knowledge in the, rather up to date, field of Artificial Intelligence in order to contribute to the improvement of citizens life;
-ODS 11 -Sustainable Cities and Communities: By contributing for the efficienc

22. Keywords

Inteligent agents
Search
Uncertainty
Learning

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23. Main Bibliography

Author(s): Stuart Russell & Peter Norvig
Title: Artificial Intelligence - A modern approach
Edition: Global Edition Year: 2021
Local:
Publisher: Pearson Education
ISBN Code:

Author(s): Ernesto Costa e Anabela Simões
Title: Inteligência Artificial, Fundamentos e Aplicações
Edition: 2 Year: 2008
Local:
Publisher: FCA
ISBN Code:

Author(s): Kevin Murphy
Title: Probabilistic Machine Learning: An Introduction
Edition: 1ª Year: 2022
Local:
Publisher: MIT Press
ISBN Code:

24. Complementary Bibliography

Author(s): George Luger
Title: Artificial Intelligence: Structures and Strategies for Complex Problem Solving
Edition: 6 Year: 2008
Local:
Publisher: Pearson
ISBN Code:

Author(s): Michael Negnevitsky
Title: Artificial Intelligence: A Guide to Intelligent Systems
Edition: 4 Year: 2024
Local:
Publisher: Pearson
ISBN Code:

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Ficha técnica MIP / MIP Datasheet	
Título / Title	Course Unit Program 'INTELIGÊNCIA ARTIFICIAL': Academic Year 2025/2026
Autor / Author	Prof. Doutor JOAQUIM MESQUITA DA CUNHA VIANA
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Descritores / Descriptors	-
Colaborador(es) / Colaborator(s)	-
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Relação / Relation	Version 1,0

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