



UNIVERSIDADE LUSÍADA
LISBOA

Course Unit Program
Artificial Intelligence

Academic Year 2024/2025

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 order logic, using structured methods and monte-carlo techniques for automated decision processes, with probabilistic models and the resulting inferences.

16. Skills to be acquired

Identification of the various types of intelligent agents.
Get to know the main search algorithms
Most relevant knowledge representation methods
Decisions taken in an uncertainty situation
Learning through experience

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 taken in and uncertainty environment
 - 5.2 Probabilities theory
 - 5.3 Bayes rule and its applications
 - 5.4 Inference in and uncertainty situation
6. LEARNING
 - 6.1 Learning methods
 - 6.2 Inductive learning
 - 6.3 Decision trees
 - 6.4 Introduction to the statistical 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

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 weighted average of the grades achieved in the frequency test and the continuous component.

20. Didactic Resources

21. Sustainability Objectives

4. Quality Education
5. Gender Equality
9. Industry, Innovation and Infrastructure
11. Sustainable Cities and Communities



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22. Keywords

Intelligent agents
Search
Uncertainty
Learning

23. Main Bibliography

Author(s): Stuart Russell & Peter Norvig
Title: Artificial Intelligence - A modern approach
Edition: 4 Year: 2021
Local:
Publisher: Pearson Education

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

Author(s): Kevin Murphy
Title: Machine Learning: A Probabilistic Perspective
Edition: 1^a Year: 2012
Local:
Publisher: MIT Press

24. Complementary Bibliography

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

Author(s): Michael Negnevitsky
Title: Artificial Intelligence: A Guide to Intelligent Systems
Edition: 3 Year: 2011
Local:
Publisher: Addison Wesley



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Ficha técnica MIP / MIP Datasheet	
Título / Title	Course Unit Program 'INTELIGÊNCIA ARTIFICIAL': Academic Year 2024/2025
Autor / Author	Prof. Doutor JOAQUIM MESQUITA DA CUNHA VIANA
Classificação / Classification	-
Descritores / Descriptors	-
Colaborador(es) / Colaborator(s)	-
Data Hora / Date Time	
Formato de dados / Data Format	Texto / Text, PDF
Estatuto de utilização / Usage	Acesso público / Public Access
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