

30223 - Artificial Intelligence

Syllabus Information

Academic year: 2023/24

Subject: 30223 - Artificial Intelligence

Faculty / School: 110 - Escuela de Ingeniería y Arquitectura
326 - Escuela Universitaria Politécnica de Teruel

Degree: 330 - Complementos de formación Máster/Doctorado
439 - Bachelor's Degree in Informatics Engineering
443 - Bachelor's Degree in Informatics Engineering

ECTS: 6.0

Year: 439 - Bachelor's Degree in Informatics Engineering: 3

443 - Bachelor's Degree in Informatics Engineering: 3

330 - Complementos de formación Máster/Doctorado: XX

Semester: First semester

Subject type: 439 - Compulsory

330 - ENG/Complementos de Formación

443 - Compulsory

Module:

1. General information

In this subject the student will learn the necessary techniques for the design of intelligent systems, software applications capable of perceiving the environment (real or computational), acting on it autonomously or advising the actions that allow to achieve the proposed objectives.

These approaches and goals are aligned with some of the Sustainable Development Goals, SDGs, of the 2030 Agenda (<https://www.un.org/sustainabledevelopment/es/>), specifically, contributing to the achievement of target 1.4 of Goal 1, target 8.2 of Goal 8 and target 16.5 of Goal 16.

2. Learning results

- To know the fundamentals, history, principles and applications of intelligent systems.
- Apply search techniques to solve problems and games with adversaries.
- Understand basic planning techniques and their practical application.
- Apply different techniques of knowledge representation and reasoning to solve problems.
- To know the design principles and architectures of multi-agent cooperative systems.
- Analyze which problems can be addressed by machine learning techniques, and apply them to simple cases.
- Know the different fields of real application of artificial intelligence and be able to develop simple practical applications in some of them.

3. Syllabus

- Introduction to Artificial Intelligence
- Search techniques
- Knowledge representation
- Probabilistic reasoning
- Automatic learning
- Planning and decision making
- Applications: Natural language, computer vision, robotics, information retrieval, Semantic Web, data mining, expert

4. Academic activities

- **Lectures** (type T1) (30 hours). Sessions of masterly presentation of theoretical and practical contents. The basic concepts, fundamentals and techniques of Artificial Intelligence And its application in different domains are presented.
- **Problem classes and case resolution** (type T2) (12 hours). Problems are developed and case studies with student participation.
- **Laboratory practicals** (type T3) (18 hours). The student will perform laboratory practices with the necessary computer tools.
- **Completion and defense of practical work/projects** (type T6) (24 hours). Practical work related to the contents of the subject.
- **Personal study** (type T7) (60 hours).
- **Evaluation tests** (type T8) (6 hours).

5. Assessment system

The assessment of this subject is global. In each call, the assessment will comprise three parts, each graded between 0 and 10 points:

Individual written test (E) (50%). It will take place during the exam period and will evaluate the student on the set of learning results from a theoretical and problem-solving point of view.

Practical work/projects (T) (20%): During this activity, students will be asked to do practical work related to the contents of the subject. The work must be delivered on the dates established by the teachers. A specific individual test will be held during the assessment period for students who have not passed it during the term.

Assessment of laboratory practices (P) (30%): The objective of these tests is to evaluate the knowledge and skills acquired by the students in the practical laboratory sessions.

It can be passed throughout the term or by means of a specific individual test on the date of the global exam.

If deemed necessary, teachers may call students for an interview to clarify issues related to the approach and development of the practices and work, demonstrating how the code works.

In order to pass the subject it is essential to obtain an E grade higher or equal than 4 points out of 10. Only in that case, the overall grade for the subject will be: $0.50 \cdot E + 0.2 \cdot T + 0.3 \cdot P$. Otherwise, the overall grade will be the minimum between 4 and the result of applying the formula above. The subject is passed with an overall grade of 5 out of 10.