

## 62220 - Intelligent Systems

### Información del Plan Docente

Academic Year	2016/17
Academic center	110 - Escuela de Ingeniería y Arquitectura
Degree	534 - Master's in IT Engineering
ECTS	6.0
Course	1
Period	First semester
Subject Type	Compulsory
Module	---

### 1. Basic info

#### 1.1. Recommendations to take this course

#### 1.2. Activities and key dates for the course

### 2. Initiation

#### 2.1. Learning outcomes that define the subject

#### 2.2. Introduction

### 3. Context and competences

#### 3.1. Goals

#### 3.2. Context and meaning of the subject in the degree

#### 3.3. Competences

#### 3.4. Importance of learning outcomes

### 4. Evaluation

### 5. Activities and resources

#### 5.1. General methodological presentation

The learning process that is designed for this subject is based on the following: Teaching activities and classroom learning are based on: - Class attendance. Showroom by presentation or explanation by a teacher (possibly including demonstrations). - Expert talks. Showroom by presentation or explanation by an external expert at the University - Seminar. Period of instruction based on written or oral contributions of students. - Problem-based learning. Oriented educational approach to learning and instruction in which students address real problems in small groups under the supervision of a tutor. - Laboratory. Activities in special spaces with specialized equipment (laboratory, computer rooms). - Tutorial. Period instruction by a tutor to review and discuss the materials and topics presented in classes. - Evaluation. Set of written, oral tests, practices, projects, jobs, etc. used in the assessment of student progress Teaching activities and non-contact learning are based on: Practical work. Preparation of activities to post or deliver practical classes. Theoretical

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study. Study related to "lectures" content: study includes any activity that has not been computed in the previous section (study examinations, library work, further reading, doing problems and exercises, etc.)

### 5.2.Learning activities

The subject consists of 6 ECTS credits corresponding with a student dedication estimated at 150 hours (50 contact hours and 100 hours of personal) distributed as follows: 44 hours, approximately, of classroom activities (lectures including professional seminars, problem solving and cases, and laboratory practice). 70 hours of group work. 30 effective working hours and individual study. 6 hours devoted to various evaluation tests.

### 5.3.Program

Develop content The contents of the subject will deepen the analysis, synthesis and evaluation of intelligent systems that incorporate some of these techniques:

- Search algorithms
- Knowledge representation
- Knowledge Engineering
- Probabilistic reasoning
- Planning and decision making
- Machine learning
- Multi Agent systems
- Other outstanding technical

Program:

1. Models for Intelligent Systems 1.1 Graphical models 1.2 Hidden Markov Models 1.3 State -space Models 1.4 Application to scene recognition and tracking of objects using vision 2. Decision making: planning and learning 2.1 Motion Planning 2.2 Markov Decision Processes (MDP ) 2.3 Reinforcement learning: active and passive learning 2.4 Application to intelligent autonomous vehicles 3. Multi-Agent Systems 3.1 Theory of agents and multi - agent systems 3.2 Design Workshop SMA + JADE 3.2 Application exercises

### 5.4.Planning and scheduling

**Scheduling of sessions and presentation of works:** The educational organization of the sessions planned is as follows: Lectures Problems and cases resolution Lab practices The scheduling of all classes and dates of the practice sessions will be announced in advance through the websites of the center and the subject . The proposed projects will be delivered at the end of the semester. The dates will be announced by means the web page.

### 5.5.Bibliography and recommended resources