

## 60937 - Machine learning in multimedia data

### Información del Plan Docente

Academic Year	2017/18
Subject	60937 - Machine learning in multimedia data
Faculty / School	110 - Escuela de Ingeniería y Arquitectura
Degree	533 - Master's Degree in Telecommunications Engineering
ECTS	2.5
Year	2
Semester	First semester
Subject Type	Optional
Module	---

### **1.General information**

#### **1.1.Introduction**

#### **1.2.Recommendations to take this course**

#### **1.3.Context and importance of this course in the degree**

#### **1.4.Activities and key dates**

### **2.Learning goals**

#### **2.1.Learning goals**

#### **2.2.Importance of learning goals**

### **3.Aims of the course and competences**

#### **3.1.Aims of the course**

#### **3.2.Competences**

### **4.Assessment (1st and 2nd call)**

#### **4.1.Assessment tasks (description of tasks, marking system and assessment criteria)**

### **5.Methodology, learning tasks, syllabus and resources**

#### **5.1.Methodological overview**

The methodology followed in this course is oriented towards achievement of the learning objectives. A wide range of teaching and learning tasks are implemented, such as Lectures (M1), practice sessions (M8), lab sessions (M9), mini-projects (M4), tutorials (M10), and assessment (M11).

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### 5.2.Learning tasks

The course includes the following learning tasks:

- **A01 Lectures** (12 hours). The teacher presents the theory and students participate actively. This activity will take place in the classroom. This methodology is designed to provide students with the theoretical aspects of the course and requires student's autonomous work.
- **A02 Practice sessions** (5 hours). The teacher proposes problems to be solved using the concepts presented in the lectures, with the possibility of students presenting them individually or in groups. This activity will take place in the classroom.
- **A03 Lab sessions** (8 hours). There will be 4 sessions of 2 hours held in the Signals and Systems Laboratory L2.02 (Ada Byron building). The students are provided with a series of problems to solve, which include the main blocks of a machine learning system for multimedia data, to consolidate the theoretical concepts from the lectures.
- **A05 Mini-project** (15 hours). The students implement some of the theory concepts using a multimedia dataset. Then they write a report and make an oral presentation.
- **A07 Tutorials**. Teacher's office hours to answers questions with the aim of reviewing and discussing the materials and topics presented in both lectures and practice sessions.
- **A08 Assessment**. A set of reports, the project and the final test.

### 5.3.Syllabus

The course will address the following topics:

1. Introduction to pattern recognition
2. Feature extraction multimedia signals
3. Supervised and unsupervised systems

### 5.4.Course planning and calendar

Further information concerning the timetable, classroom, office hours, assessment dates and other details regarding this course, will be provided on the first day of class or please refer to the EINA website.

### 5.5.Bibliography and recommended resources

- Bishop, Christopher M.. Pattern recognition and machine learning / Christopher M. Bishop New York : Springer, cop. 2006
- Duda, Richard O.. Pattern classification / Richard O. Duda, Peter E. Hart, David G. Stork . - 2nd ed. New York [etc.] : John Wiley and Sons, cop. 2001
- Murphy, K.P. Machine Learning: A Probabilistic Perspective / Murphy K.P. MIT Press, 2012.
- Mackay, D.J.C. Information Theory, Inference, and Learning Algorithms / MacKay D.J.C Cambridge University Press 2003.