Universidad Zaragoza

67232 - Electronic Systems for Access Control and Security

<u>**Información del Plan Docente**</u>

Academic Year	2017/18
Faculty / School	110 - Escuela de Ingeniería y Arquitectura
Degree	527 - Master's in Electronic Engineering
ECTS	5.0
Year	1
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, in which the theoretical contents of electronic systems for access control and security will be explained.
- Practice sessions, in which representative problems and designs will be solved.
- Laboratory sessions, based on computer programing or experimental implementation, will be conducted in small

groups up to two students per equipment.

Students are expected to participate actively in the class throughout the semester.

5.2.Learning tasks

The course includes the following learning tasks:

Classroom activities (1.96 ECTS: 49 hours)

- A01 **Lectures** (20 hours). The fundamental contents of the course will be presented and a set of representative problems will be made. This activity will take place in the classroom. The materials will be available to students on the virtual platform.
- A02 **Practice sessions** (10 hours). In this activity, a set of representative problems will be solved. This activity will take place in the classroom. The materials will be available to students on the virtual platform.
- A03 **Laboratory sessions** (15 hours). Representative examples will be carried out in the laboratory. The instructions of the exercises will be available to students on the virtual platform.
- A06 **Tutorials** (2 hours). Supervision of the work and assignments developed by the students.
- A08 **Assessment** (2 hours).

Autonomous work (3.04 ECTS: 76 hours)

- A06 **Assignments** (51 hours). Activity related to the lab and practice sessions contents. They can be done individually or in pairs.
- A07 **Study** (25 hours). This activity includes personal study aimed at monitoring the learning process, conducting assignments and course work, exam preparation and tutorials.

5.3.Syllabus

The course will address the following topics:

Theory

- T1: Introduction to Machine Learning
- T2: Introduction to Electronics systems for Access control
- T3: Biometrics
- T4: Traffic monitoring and vial security
- T5: Video-surveillance

Laboratory sessions

- S1: Face detection
- S2: Facial biometrics
- S3: Fingerprint recognition
- S4: Motion detection and tracking
- S5: Video-surveillance application

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

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Main references

- Slides available at http://moodle2.unizar.es.
- Lab statements available at http://moodle2.unizar.es.
- Materials for the personal work available at http://moodle2.unizar.es.

Books

- Anil K. Jain and others. *BIOMETRICS: Personal Identification in Networked Society*. Ed. Kluwer Academic Publishers. 2006

Complementary reading

- Christopher M Bishop. *Pattern Recognition and Machine Learning*. Ed. Springer. 2006.