60944 - Electronic systems for access control and security

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, where the theoretical basis of electronic systems for access control and security is presented.

- Practice sessions, where representative problems and designs are solved.
- Laboratory sessions based on computer programing or experimental implementation

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

Classroom materials will be available via Moodle. These include a repository of the lecture notes used in class, task instructions, the course syllabus, as well as other course-specific learning materials.

5.2.Learning tasks

The course includes the following learning tasks:

Classroom activities (1.96 ECTS: 49 hours)

- A01 **Lectures** (20 hours). In this activity the main contents of the course will be explained and illustrated with a set of representative problems. This activity will take place in the classroom.
- A02 **Practice sessions** (10 hours). In this activity, a set of representative problems will be solved. This activity will take place in the classroom.
- A03 **Laboratory sessions** (15 hours). Representative examples will be developed in the laboratory. The instructions of the tasks will be available at Moodle. Work in the laboratory will be conducted in small groups up to two students per equipment.
- A06 **Assignment supervision** (2 hours) Supervision of assignments.
- A08 **Assessment** (2 hours).

Autonomous work (3.04 ECTS: 76 hours)

- A06 **Assignments** (51 hours). Students do individually or in pairs an assignment related to the laboratory sessions.
- A07 **Autonomous work and study** (25 hours). Study aimed at achieving adequate monitoring of the course, conducting practice sessions, exam preparation and tutorials.

5.3.Syllabus

The course will address the following topics:

Lectures

- Topic 1: Introduction to Machine Learning
- Topic 2: Introduction to Electronic systems for Access control
- Topic 3: Biometrics
- Topic 4: Traffic monitoring and vial security
- Topic 5: 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.

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5.5.Bibliography and recommended resources

Main references

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