

Academic Year/course: 2022/23

67245 - Electronic systems for access control and security

Syllabus Information

Academic Year: 2022/23

Subject: 67245 - Electronic systems for access control and security

Faculty / School: 110 - Escuela de Ingeniería y Arquitectura

Degree: 622 - Master's in Electronic Engineering

ECTS: 6.0

Year: 1

Semester: Second semester

Subject Type: Optional

Module:

1. General information

2. Learning goals

3. Assessment (1st and 2nd call)

4. Methodology, learning tasks, syllabus and resources

4.1. 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 programming 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.

4.2. Learning tasks

The course includes the following learning tasks:

- **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** (18 hours). Representative examples will be carried out in Laboratory sessions the laboratory. The instructions of the exercises will be available to students on the virtual platform.
- **Assignments** (A06) (36 hours). Individual or group assignments will be proposed, in the form of a course project. The assessment criteria include: difficulty, development, achieved results, quality of the written report and oral presentation.

- **Study (A07)** (60 hours). Study, preparation of laboratory work and time for preparing the final exam. Students can also attend tutorials to solve specific problems.
- **Evaluation activities (A08)** (6 hours). Assessment will be based on coursework (laboratory work and assignments) and final examination.

4.3. 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
- S5: Tracking: traffic monitoring application
- S6: Video-surveillance application

4.4. Course planning and calendar

For further information concerning the timetable, classroom, office hours, assessment dates and other details regarding this course, please refer to the EINA website <https://eina.unizar.es/> and Moodle <https://moodle.unizar.es/>

4.5. Bibliography and recommended resources

<http://psfunizar10.unizar.es/br13/egAsignaturas.php?codigo=67245>