

## 60944 - Electronic systems for access control and security

### Syllabus Information

**Academic Year:** 2019/20

**Subject:** 60944 - Electronic systems for access control and security

**Faculty / School:** 110 -

**Degree:** 533 - Master's Degree in Telecommunications Engineering

**ECTS:** 5.0

**Year:** 2

**Semester:** First semester

**Subject Type:** Optional

**Module:** ---

### 1.General information

#### 1.1.Aims of the course

#### 1.2.Context and importance of this course in the degree

#### 1.3.Recommendations to take this course

### 2.Learning goals

#### 2.1.Competences

#### 2.2.Learning goals

#### 2.3.Importance of learning goals

### 3.Assessment (1st and 2nd call)

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

### 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, 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 programming 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.

#### 4.2.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.

### **4.3.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

### **4.4.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.

### **4.5.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>.

<http://psfunizar7.unizar.es/br13/egAsignaturas.php?codigo=60944&Identificador=C70304>