Course guide
320104 - ISA - Implementation of Audiovisual Systems

Unit in charge: Terrassa School of Industrial, Aerospace and Audiovisual Engineering
Teaching unit: 710 - EEL - Department of Electronic Engineering.

Degree: BACHELOR’S DEGREE IN AUDIOVISUAL SYSTEMS ENGINEERING (Syllabus 2009). (Compulsory subject).

Academic year: 2022 ECTS Credits: 6.0 Languages: Catalan, Spanish

LECTURER

Coordinating lecturer: NESTOR BERBEL ARTAL

Others:

REQUIREMENTS

Students should have taken and passed the following subjects:
- Digital Electronics.
- Signals and Systems.

DEGREE COMPETENCES TO WHICH THE SUBJECT CONtributes

Specific:
1. AUD_COMMON: Knowledge and application of the basic concepts underpinning the languages used to describe hardware.

2. AUD: Ability to build, exploit and manage telecommunication services and applications, understood as capture systems, analogue and digital manipulation, coding, transport, representation, processing, storage, reproduction, management and presentation of audiovisual services and multimedia information.

Transversal:
3. SELF-DIRECTED LEARNING - Level 1. Completing set tasks within established deadlines. Working with recommended information sources according to the guidelines set by lecturers.
4. ENTREPRENEURSHIP AND INNOVATION - Level 1. Showing enterprise, acquiring basic knowledge about organizations and becoming familiar with the tools and techniques for generating ideas and managing organizations that make it possible to solve known problems and create opportunities.
5. TEAMWORK - Level 1. Working in a team and making positive contributions once the aims and group and individual responsibilities have been defined. Reaching joint decisions on the strategy to be followed.
6. TEAMWORK - Level 2. Contributing to the consolidation of a team by planning targets and working efficiently to favor communication, task assignment and cohesion.

TEACHING METHODOLOGY

Guided learning hours consist, on the one hand, of theory classes (large groups) in which a lecturer briefly presents the general learning objectives corresponding to the basic subject concepts.

Students are encouraged to actively participate in their own learning through practical exercises. Support material in the form of a detailed syllabus will be used via ATENEA: learning objectives according to content, concepts, examples, programmed evaluation and guided learning activities and reading lists. The last type of guided learning hours consists of laboratory practicals in pairs, aimed at developing basic teamwork skills and at introducing students to the application of the scientific method to the resolution of laboratory problems.

As a basis for the guided activities, before and after each session tasks will be proposed for individual or group study outside the classroom. Other autonomous study time is encouraged, such as time spent on guided reading and problem resolution.
LEARNING OBJECTIVES OF THE SUBJECT

Learn to understand the structure of a multimedia system, describe systems and develop new systems. Understand the problems associated with implementing multimedia systems. Understand and apply the steps for developing a multimedia system. Understand the different solutions for implementing algorithms based on digital signal processing.

STUDY LOAD

<table>
<thead>
<tr>
<th>Type</th>
<th>Hours</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hours large group</td>
<td>15,0</td>
<td>10.00</td>
</tr>
<tr>
<td>Self study</td>
<td>90,0</td>
<td>60.00</td>
</tr>
<tr>
<td>Hours small group</td>
<td>45,0</td>
<td>30.00</td>
</tr>
</tbody>
</table>

Total learning time: 150 h

CONTENTS

**TOPIC 1: MULTIMEDIA SYSTEMS**

- **Full-or-part-time:** 9h
- Theory classes: 2h
- Laboratory classes: 3h
- Self study: 4h

**TOPIC 2: DSP ALGORITHM REPRESENTATION**

- **Full-or-part-time:** 8h
- Theory classes: 1h
- Laboratory classes: 3h
- Self study: 4h

**TOPIC 3: DISCRETE FILTER DESIGN**

- **Full-or-part-time:** 48h
- Theory classes: 4h
- Laboratory classes: 12h
- Self study: 32h

**TOPIC 4: FILTER IMPLEMENTATION**

- **Full-or-part-time:** 54h
- Theory classes: 4h
- Laboratory classes: 18h
- Self study: 32h
**TOPIC 5: TECHNIQUES FOR OPTIMISING MULTIMEDIA SYSTEMS**

**Full-or-part-time:** 31h  
Theory classes: 4h  
Laboratory classes: 9h  
Self study: 18h

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**GRADING SYSTEM**

Final Mark = 0.25*(Partial Exam) + 0.25*(Final Exam) + 0.5*(Laboratory Mark)

For those students who meet the requirements and submit to the reevaluation examination, the grade of the reevaluation exam will replace the grades of all the on-site written evaluation acts (tests, midterm and final exams) and the grades obtained during the course for lab practices, works, projects and presentations will be kept. If the final grade after reevaluation is lower than 5.0, it will replace the initial one only if it is higher. If the final grade after reevaluation is greater or equal to 5.0, the final grade of the subject will be pass 5.0.

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**BIBLIOGRAPHY**

**Basic:**