320104 - ISA - Implementation of Audiovisual Systems

**Coordinating unit:** 320 - EET - Terrassa School of Engineering  
**Teaching unit:** 710 - EEL - Department of Electronic Engineering  
**Academic year:** 2015  
**Degree:** BACHELOR'S DEGREE IN AUDIOVISUAL SYSTEMS ENGINEERING (Syllabus 2009). (Teaching unit Compulsory)  
**ECTS credits:** 6  
**Teaching languages:** Catalan

### Teaching staff

**Coordinator:** Antonio Calomarde  
**Others:** NESTOR BERBEL ARTAL

### 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.
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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>Total learning time: 150h</th>
<th>Theory classes: 15h</th>
<th>10.00%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Practical classes: 0h</td>
<td>0.00%</td>
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<tr>
<td></td>
<td>Laboratory classes: 45h</td>
<td>30.00%</td>
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<tr>
<td></td>
<td>Guided study: 0h</td>
<td>0.00%</td>
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<tr>
<td></td>
<td>Self study: 90h</td>
<td>60.00%</td>
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</tbody>
</table>
### Content

<table>
<thead>
<tr>
<th>Topic</th>
<th>Learning time</th>
<th>Large group/Theory</th>
<th>Small group/Laboratory</th>
<th>Self study</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>TOPIC 1: MULTIMEDIA SYSTEMS</strong></td>
<td>9h</td>
<td>2h</td>
<td>3h</td>
<td>4h</td>
</tr>
<tr>
<td><strong>TOPIC 2: DSP ALGORITHM REPRESENTATION</strong></td>
<td>8h</td>
<td>1h</td>
<td>3h</td>
<td>4h</td>
</tr>
<tr>
<td><strong>TOPIC 3: DISCRETE FILTER DESIGN</strong></td>
<td>48h</td>
<td>4h</td>
<td>12h</td>
<td>32h</td>
</tr>
<tr>
<td><strong>TOPIC 4: FILTER IMPLEMENTATION</strong></td>
<td>54h</td>
<td>4h</td>
<td>18h</td>
<td>32h</td>
</tr>
<tr>
<td><strong>TOPIC 5: TECHNIQUES FOR OPTIMISING MULTIMEDIA SYSTEMS</strong></td>
<td>31h</td>
<td>4h</td>
<td>9h</td>
<td>18h</td>
</tr>
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### Qualification system

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

Basic:

