320111 - PDA - Digital Audio Processing

Coordinating unit: 205 - ESEIAAT - Terrassa School of Industrial, Aerospace and Audiovisual Engineering
Teaching unit: 739 - TSC - Department of Signal Theory and Communications
Academic year: 2018
Degree: BACHELOR'S DEGREE IN AUDIOVISUAL SYSTEMS ENGINEERING (Syllabus 2009). (Teaching unit Compulsory)
ECTS credits: 6  
Teaching languages: Catalan

Teaching staff

Coordinator: IGNASI ESQUERRA LLUCIA

Opening hours

Timetable: Times to be agreed with students at the beginning of the semester.

Prior skills

Students are recommended to have successfully passed the course "Signals and Systems".

Degree competences to which the subject contributes

Specific:
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.
3. AUD: Ability to create, encode, manage, promote and distribute multimedia content, on the basis of the criteria of usability and accessibility of audiovisual services and interactive broadcasts.

Transversal:
1. TEAMWORK - Level 3. Managing and making work groups effective. Resolving possible conflicts, valuing working with others, assessing the effectiveness of a team and presenting the final results.

Teaching methodology

Supervised sessions
a) Classroom (large group). The lecturer explains topic contents to students, give practical demonstrations, set exercises and assignments and clarify doubts.
b) Laboratory (small group). The students carry out practical exercises on the laboratory with computers.
c) Assessment. Individual tests.

Unsupervised sessions
d) Individual or group study.
e) Preparation on exercises and assignments.

Learning objectives of the subject

On completion of the course, students should be able to:
Understand audio signal digitalisation, processing and coding.
Open, visualise, reproduce, edit and store audio files in a programming environment.
Use basic digital techniques to process audio signals.
Analyse and interpret the characteristics of audio signals in terms of time and frequency.
Identify the main voice and audio coding methods.
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Program basic functions and applications for processing real signals.

<table>
<thead>
<tr>
<th>Study load</th>
<th>Hours large group:</th>
<th>Hours medium group:</th>
<th>Hours small group:</th>
<th>Guided activities:</th>
<th>Self study:</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total learning time:</strong> 150h</td>
<td>45h</td>
<td>0h</td>
<td>15h</td>
<td>0h</td>
<td>90h</td>
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<td></td>
<td>30.00%</td>
<td>0.00%</td>
<td>10.00%</td>
<td>0.00%</td>
<td>60.00%</td>
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## Content

<table>
<thead>
<tr>
<th>Section</th>
<th>Learning time:</th>
<th>Description</th>
<th>Related activities</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1. DIGITAL AUDIO</strong></td>
<td>14h</td>
<td>Introduction to digital audio. Visualization of signals. File formats.</td>
<td>L1: Lecture of audio files</td>
</tr>
<tr>
<td><strong>2. DIGITALIZATION</strong></td>
<td>22h</td>
<td>Sampling. Quantization. Coding of samples. Resampling.</td>
<td>L2: Format conversion</td>
</tr>
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### Related activities:
- L1: Lecture of audio files
- L2: Format conversion
- L3: Analysis of characteristics of audio signals
### Qualification system

Exam 1 (35%), Exam 2 (35%), Laboratory (30%)

The second exam is scheduled on the last week of lectures. During the final exams period, all students have a chance to improve their qualifications of previous exams. The final mark is the best of the two for each part.

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

Complementary:

