# Course guides

### 230204 - DRCAV - Description and Retrieval of Audiovisual Content

<table>
<thead>
<tr>
<th>Unit in charge:</th>
<th>Barcelona School of Telecommunications Engineering</th>
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<tbody>
<tr>
<td>Teaching unit:</td>
<td>739 - TSC - Department of Signal Theory and Communications.</td>
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<tr>
<td></td>
<td>701 - DAC - Department of Computer Architecture.</td>
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| Degree:               | BACHELOR'S DEGREE IN AUDIOVISUAL SYSTEMS ENGINEERING (Syllabus 2009). (Optional subject). |
|                      | BACHELOR'S DEGREE IN TELECOMMUNICATIONS TECHNOLOGIES AND SERVICES ENGINEERING (Syllabus 2015). (Optional subject). |

<table>
<thead>
<tr>
<th>Academic year:</th>
<th>2020</th>
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<tbody>
<tr>
<td>ECTS Credits:</td>
<td>6.0</td>
</tr>
<tr>
<td>Languages:</td>
<td>English</td>
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## LECTURER

<table>
<thead>
<tr>
<th>Coordinating lecturer:</th>
<th>RUBEN TOUS LIESA</th>
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<tr>
<td>Others:</td>
<td>RUBEN TOUS LIESA</td>
</tr>
<tr>
<td></td>
<td>CLIMENT NADEU CAMPRUBI</td>
</tr>
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<td></td>
<td>JAVIER RUIZ HIDALGO</td>
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## PRIOR SKILLS

Basic knowledge of programming, along with processing and coding of audio and video signals.

## REQUIREMENTS

Second year.

## DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

Transversal:

1. SELF-DIRECTED LEARNING - Level 3. Applying the knowledge gained in completing a task according to its relevance and importance. Deciding how to carry out a task, the amount of time to be devoted to it and the most suitable information sources.

## TEACHING METHODOLOGY

Theory + application classes: Development of concepts from examples and problems.
Laboratory classes: Development of practices based on a case to solve, using existing resources. Analysis of specific problems.

## LEARNING OBJECTIVES OF THE SUBJECT

Provide the necessary tools to analyze and describe audiovisual content, and for developing systems for storage and retrieval of audiovisual content.
STUDY LOAD

<table>
<thead>
<tr>
<th>Type</th>
<th>Hours</th>
<th>Percentage</th>
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</thead>
<tbody>
<tr>
<td>Hours small group</td>
<td>13.0</td>
<td>8.67</td>
</tr>
<tr>
<td>Self study</td>
<td>98.0</td>
<td>65.33</td>
</tr>
<tr>
<td>Hours large group</td>
<td>39.0</td>
<td>26.00</td>
</tr>
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</table>

Total learning time: 150 h

CONTENTS

Audiovisual databases

Description:
- Data and information retrieval: Structured vs. non-structured information; textual vs. audiovisual non-structured information.
- Data modelling, relational databases, XML and the Semantic Web.
- Non-SQL databases, scalable data storage and processing, big data.

Full-or-part-time: 16h
Theory classes: 6h
Laboratory classes: 10h

High-level description of audiovisual content

Description:
- Multimedia metadata, high-level vs. low-level description of audiovisual content.
- Multimedia metadata modeling, serialization and embedding (EXIF, MPEG-7, ontologies, etc.).

Full-or-part-time: 8h
Theory classes: 6h
Laboratory classes: 2h

Low-level description of audiovisual content

Description:
- Low-level descriptors of audiovisual content. Standards: MPEG7 and other.
- Extraction of low-level audio descriptors (pitch, timbre, rhythm, etc.).
- Extraction of low-level descriptors of image (color, shape, texture, etc.) and video (motion, localization, etc.).

Full-or-part-time: 8h
Theory classes: 4h
Laboratory classes: 4h
Retrieval and classification of audiovisual content

Description:
- Application to music information retrieval: fingerprinting, melody extraction, chord recognition, genre classification, etc.
- Application to face detection, recognition, verification, video retrieval, etc.

Full-or-part-time: 16h
Theory classes: 8h
Laboratory classes: 8h

GRADING SYSTEM

- Evaluation of part 1 (50%, topics 1 and 2):
  - Attendance and participation 10%
  - Laboratory assignments 20%
  - Project assignment 70%
- Evaluation of part 2:
  - Audio part (25%, topics 3 and 4):
    - Attendance and participation 10%
    - Laboratory assignments 20%
    - Project assignment 70%
  - Video part (25%, topics 3 and 4):
    - Attendance and participation 10%
    - Laboratory assignments 30%
    - Project assignment 60%

EXAMINATION RULES.

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BIBLIOGRAPHY

Basic: