Course guides
230026 - TPA - Audiovisual Technology and Production

Unit in charge: Barcelona School of Telecommunications Engineering
Teaching unit: 710 - EEL - Department of Electronic Engineering.
Degree: BACHELOR’S DEGREE IN AUDIOVISUAL SYSTEMS ENGINEERING (Syllabus 2009). (Compulsory subject).
BACHELOR’S DEGREE IN TELECOMMUNICATIONS TECHNOLOGIES AND SERVICES ENGINEERING (Syllabus 2015). (Optional subject).
BACHELOR’S DEGREE IN DATA SCIENCE AND ENGINEERING (Syllabus 2017). (Optional subject).

Academic year: 2021 ECTS Credits: 6.0 Languages: Catalan, English

LECTURER
Coordinating lecturer: - CASAS PLA, JOSEP R. (TSC)
Others: - CARRIÓN ISBERT, ANTONI (TSC)
- MIREYA FERNANDEZ CHIMENO

PRIOR SKILLS
Audiovisual Signal Processing
Fundamentals of Communications
Acoustics & Electroacoustics

REQUIREMENTS
INTRODUCTION TO AUDIOVISUAL SIGNAL PROCESSING - Prerequisite
INTRODUCTION TO COMMUNICATIONS - Prerequisite
ACOUSTICS & ELECTROACOUSTICS - Prerequisite

DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES
Transversal:
06 URI N3. EFFECTIVE USE OF INFORMATION RESOURCES - Level 3. Planning and using the information necessary for an academic assignment (a final thesis, for example) based on a critical appraisal of the information resources used.

TEACHING METHODOLOGY
Theory sessions (3h/week) and lab sessions (2h/week).
Group assignments and individual assignments, exercises, oral presentations.
Tests, short answer and long answer questionnaires.
AV production project (term project)
LEARNING OBJECTIVES OF THE SUBJECT

The course covers basic technologies in audiovisual (AV) production from an engineering perspective. The basics of operation (operator view) in AV production scenarios are briefly introduced. The aim is introducing students to production environments while acquiring skills for the design, installation, configuration and maintenance of production rooms and equipment (engineering view). The contents follow the signal path through the production chain, departing from technical design of sets (acoustics, lighting), analyzing equipment and functions along the production path (sensors, channels, processing, recording, playback and monitoring) and ending up in AV display and monitoring.

STUDY LOAD

<table>
<thead>
<tr>
<th>Type</th>
<th>Hours</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Self study</td>
<td>85,0</td>
<td>56.67</td>
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<tr>
<td>Hours large group</td>
<td>39,0</td>
<td>26.00</td>
</tr>
<tr>
<td>Hours small group</td>
<td>26,0</td>
<td>17.33</td>
</tr>
</tbody>
</table>

Total learning time: 150 h

CONTENTS

1. Introduction. Production Path

Description:
Introduction to the audiovisual (AV) production chain. The various elements composing the AV production chain are introduced by following the signal flow in production facilities.

Specific objectives:
1.1 Introduction to audiovisual production
1.2 Production path: audiovisual sources and processing equipment
1.3 Production scenarios: sets, audio and lighting

Related activities:
Lab1: Lab Introduction
Lab2: LabMU Studio Introduction

Full-or-part-time: 17h
Theory classes: 3h
Laboratory classes: 4h
Self study: 10h
2. Acoustics and Lighting in Production Sets

Description:
Audio recording, Physiological/Psychoacoustics, Studio Acoustics. Lighting: intro, equipment, measurement and safety

Specific objectives:
2.1 Introduction to Acoustics
2.2 Introduction to Audio Recording
2.3 Physiological Acoustics and Psychoacoustics
2.4 & 2.6 Studio Acoustics: geometry, absorption, diffusion, isolation, noise & vibration control
2.7 Introduction to lighting
2.8 & 2.9 Basic elements of lighting. Lighting equipment.
2.10 & 2.12 Lighting equipment control. Gripology. Light measurement. Safety issues

Related activities:
Lab 5: Sets and Lighting

Full-or-part-time: 23h
Theory classes: 9h
Laboratory classes: 2h
Self study : 12h

3. AV Recording and Sensors

Description:

Specific objectives:
3.1 Studio microphones
3.2 Audio recording configuration: LEDE rooms, RFZ+diffusion rooms
3.3 Introduction to cameras
3.4 Camera sensors and camera lens
3.5 Types of cameras, Cameras' operation and configuration

Related activities:
Lab 6: Recording & Sensors: Cameras

Full-or-part-time: 17h
Theory classes: 5h
Laboratory classes: 2h
Self study : 10h
4. Studio Signals

Description:
Review of main signals present in a production studio. Professional video and audio signals.

Specific objectives:
4.1 & 4.2 AV signal concepts
4.3 & 4.6 Video & Audio signals
4.7 Image and graphics

Related activities:
Lab 7: AV Studio Signals: formats
Lab 8: AV Studio Signals: graphics

Full-or-part-time: 26h
Theory classes: 7h
Laboratory classes: 4h
Self study: 15h

5. Production Equipment and Processing

Description:
Studio processing stages and equipment.

Specific objectives:
5.1 Mixers and switching
5.2 & 5.3 Program scheduling. Control and monitoring
5.4 Recording and formats conversion
5.5 Graphics, effects, post-production
5.6 & 5.7 TV headers and TV production

Related activities:
Lab 9: Studio rooms: sets, switching and mixers
Lab 10: Studio rooms: scheduling and control

Full-or-part-time: 26h
Theory classes: 7h
Laboratory classes: 4h
Self study: 15h

6. Audiovisual Display Systems

Description:
Audiovisual monitoring and display

Specific objectives:
6.1 & 6.3 Video monitors and displays
6.4 Studio monitors (loudspeakers)

Related activities:
Lab 11: Displays, Monitoring and Postproduction

Full-or-part-time: 16h
Theory classes: 4h
Laboratory classes: 2h
Self study: 10h
7. Audiovisual Production Scenarios

**Description:**
Studio scenarios and new trends: tapeless production, digital convergence, 3D, format agnostic production...

**Specific objectives:**
7.1 Production scenarios
7.2 New trends: convergence, 3D video, 3D audio, format agnostic production
7.3 Studio visit

**Related activities:**
Lab 12: Complete production path (I)
Lab 13: Complete production path (II)

**Full-or-part-time:** 19h
Theory classes: 3h
Laboratory classes: 4h
Self study: 12h

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**Term project**

**Description:**
AV Production project

**Specific objectives:**
Produce a short clip working in a production team.
Steps to follow: idea selection, role assignment (producer, writer, director, cast, camera operators, assistants...), generate treatment, collaborative scriptwriting, planning (resources, schedule), production, postproduction and presentation

**Related activities:**
Lab 3: Term Project preparation (I)
Lab 4: Term Project preparation (II)

**Full-or-part-time:** 31h
Laboratory classes: 4h
Other activities: 15h
Assessment sessions: 2h
Self study: 10h

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**GRADING SYSTEM**

Control (CNT): 15%
Final exam (EX): 40%
Labs (LAB): 25% (attendance required + lab reports)
Term project (PROJ): 20%

\[ \text{ASSESSMENT} = \max(0.15 \times \text{CNT} + 0.40 \times \text{EX} + 0.25 \times \text{LAB} + 0.20 \times \text{PROJ}; 0.75 \times \text{EX} + 0.25 \times \text{LAB}) \]

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**BIBLIOGRAPHY**

**Basic:**
Complementary: