Course guide
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 TELECOMMUNICATIONS TECHNOLOGIES AND SERVICES ENGINEERING (Syllabus 2015). (Optional subject).
BACHELOR'S DEGREE IN DATA SCIENCE AND ENGINEERING (Syllabus 2017). (Optional subject).
Academic year: 2022
ECTS Credits: 6.0
Languages: Catalan, Spanish, English

LECTURER

Coordinating lecturer: Consultar aquí / See here:
https://telecos.upc.edu/ca/estudis/curs-actual/professorat-responsables-coordinadors/responsables-assignatura

Others: Consultar aquí / See here:
https://telecos.upc.edu/ca/estudis/curs-actual/professorat-responsables-coordinadors/professorat-assignat-idioma

PRIOR SKILLS
Knowledge of Audiovisual Signal Processing
Fundamentals of Communications
Acoustics & Electroacoustics

REQUIREMENTS
ACOUSTICS AND ELECTROACOUSTICS - Precorequisite

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 acquainting students with 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>
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</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. Physiological Acoustics and Psychoacoustics
2.2 Introduction to Audio Recording
2.3 Introduction to lighting
2.4 - 2.6 Basic elements of lighting. Lighting equipment.
2.7 - 2.9 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 Introduction to cameras. Types of cameras
3.2 Camera sensors and camera lens
3.3 Cameras' operation and configuration
3.4 Acoustic design of recording studios
3.5 Audio Recording techniques
3.6 Studio monitors (loudspeakers)
3.7 Integral design of Recording Studios

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

**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, tapeless, 3D video & audio, cinematic VR, format agnostic production
7.3 Studio visit (if available)

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

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

GRADING SYSTEM

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

ASSESSMENT = MAX( 0,15 CNT +0,40 EX +0,25 LAB +0,20 PROJ; 0,55 EX +0,25 LAB +0,20 PROJ ; 0,75 EX +0,25 LAB)

BIBLIOGRAPHY

Basic:
Complementary:

RESOURCES

Other resources:
Course slides, materials, links and previous exams available in Atenea.
Equipment of the AV Production Lab ETSETB/UPC: IP production environment LabMU, XDCam Sony PMW-.EX1 & EX-3, tripods, stabilizer & smooth shooter, lighting kit, Sennheiser 8355 microphones, Audiobox USB...