



Course guides

230026 - TPA - Audiovisual Technology and Production

Last modified: 29/04/2020

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: 2020 **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

Type	Hours	Percentage
Hours small group	26,0	17.33
Self study	85,0	56.67
Hours large group	39,0	26.00

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 i 2.6 Studio Acoustics: geometry, absorption, diffusion, isolation, noise & vibration control
- 2.7 Introduction to lighting
- 2.8 i 2.9 Basic elements of lighting. Lighting equipment.
- 2.10 i 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:

Sensors in AV recording: audio sensors and video sensors. Microphones: types and configuration in studios. Cameras: types and studio configurations. Interaction among AV sensors.

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 i 4.2 AV signal concepts
- 4.3 i 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 i 5.3 Program scheduling. Control and monitoring
- 5.4 Recording and formats conversion
- 5.5 Graphics, effects, post-production
- 5.6 i 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 i 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

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 ; 0,75 EX +0,25 LAB)

BIBLIOGRAPHY

Basic:

- Gross, L.S.; Foust, J.C. Video production: disciplines and techniques. 10th ed. Scottsdale, Arizona: Holcomb Hathaway, 2009. ISBN 9781890871871.

- Alten, S.R. Audio in media. 9th ed. Belmont: Wadsworth/Thomson Learning, 2011. ISBN 053874362X.

- Poynton, C.A. Digital video and HD: algorithms and interfaces [on line]. 2nd ed. Waltham: Morgan Kaufman, 2012 [Consultation: 27/01/2015]. Available on: <http://site.ebrary.com/lib/upcatalunya/docDetail.action?docID=10537913>. ISBN 9780123919328.



Complementary:

- Brown, B. Motion picture and video lighting. 2nd ed. Boston: Focal Press (Elsevier), 2008. ISBN 9780240807638.
- Reese, D.E.; Gross, L.S.; Gross, B. Audio production worktext: concepts, techniques, and equipment. 6th ed. Burlington: Elsevier Focal Press, 2009. ISBN 978-0-240-81098-0.
- Huber, D.M.; Runstein, R.E. Modern recording techniques [on line]. 7th ed. Burlington, MA: Focal Press, 2009 [Consultation: 01/04/2020]. Available on: <https://ebookcentral.proquest.com/lib/upcatalunya-ebooks/detail.action?docID=535005>. ISBN 9780080928036.