UNIVERSIDAD DE CASTILLA - LA MANCHA

GUÍA DOCENTE

1. General information

Course: AUDIO AND VIDEO EQUIPMENTS AND STUDIOS
Code: 59628
Type: CORE COURSE
ECTS credits: 6
Degree: 385 - DEGREE IN TELECOMMUNICATI TECHNOLOGY ENGINEERING
Academic year: 2022-23
Center: 308 - SCHOOL POLYTECHNIC OF CUENCA
Group(s): 30
Year: 3
Duration: C2
Main language: Spanish
Second language:
Use of additional languages:
English Friendly: Y
Web site:
Bilingual: N

Lecturer: **JOSE ANTONIO BALLESTEROS GARRIDO** - Group(s): **30**

Building/Office	Department	Phone number	Email	Office hours
E. Politécnica Cuenca (2.16)	INGENIERÍA ELÉCTRICA, ELECTRÓNICA, AUTOMÁTICA Y COMUNICACIONES	4816	josea.ballesteros@uclm.es	Office hours will be published and the beginning of the course

2. Pre-Requisites

It is advisable to study previously the courses:

- Transmission Means: Acoustic Transmitters and Receivers.
- Communication Networks I: TCP/IP and interconection devices.
- Communication Networks II: routing protocols.
- Acoustic Engineering: Transducers, electroacoustics, physiological acoustics and psychoacoustics.
- Audiovisual Signal Processing: Digitization, compression and filtering of audio and video signals; audio and video formats and media.

It is also advisable to study at the same time or previously Architectural Acoustics, specifically those topics related to fundamentals of room acoustics, room acoustic characterization, sound reinforcement and

Es recomendable que la asignatura Acústica Arquitectónica se esté cursando simultáneamente o que ya se haya cursado, en concreto lo relativo a fundamentos de acústica arquitectónica, caracterización acústica de salas, sound reinforcement systems and sound conditioning and isolation.

3. Justification in the curriculum, relation to other subjects and to the profession

Audiovisual technology is one of the working areas of telecommunication engineers.

Basic concepts of multimedia systems are studied previously in the course Audiovisual Signal Processing. This course is complemented by Architectural Acoustic.

This course is advisable to study the courses Audiovisual Systems, Recording and Edition Audiovisual Events, Digital Animation and Audiovisual Production and Communication.

4. Degree competences achieved in this course

Course competences

Code	Description
E21	The ability to build, use and manage telecommunications services and applications, defined as capture, analogue and digital processing, coding, transport, representation, processing, storage, reproduction, management and presentation of audiovisual services and information multimedia systems.
E22	The ability to analyse, specify, perform and maintain systems, equipment, headers and television, audio and video installations, in both fixed and mobile environments.
E23	The ability to carry out projects in premises and installations for the production and recording of audio and video signals.
E25	The ability to create, codify, manage, disseminate and distribute multimedia contents, according to usability criteria and accessibility of audiovisual, broadcast and interactive services.
G02	Correct, oral and written, communication skills.
G06	Knowledge of basic subjects and technologies, enabling students to learn new methods and technologies, as well as providing great versatility to adapt to new situations
G07	The ability to tackle problems with initiative, making decisions, creativity, and to communicate and transmit knowledge, skills and abilities, including the ethical and professional responsibility of the activity of a Technical Telecommunications Engineer
G10	The ability to analyse and assess the social and environmental impact of technical solutions
G12	The ability to work in a multidisciplinary group and in a multilingual environment and to communicate, both in writing and orally, knowledge, procedures, results and ideas related to telecommunications and electronics
G13	The ability to look for and understand information, wether technical or commercial in different sources, to relate and structure it to integrate ideas and knowledge. Analysis, synthesis and implementation of ideas and knowledge.
G14	Leadership for the treatment of conflicts and abilities in negotiation and personal relationships, as well as to recognize and respect diversity and multiculturalism.

5. Objectives or Learning Outcomes

Course learning outcomes

Description

Making of recordings and measurements to characterize the operation of a device or a configuration using the mixer, transducers, players, processors and audio recorders.

Correct use of oral and written expression to convey ideas, technologies, results, etc.

Design of analog, digital and hard disk-based audio recording systems. Selection of equipment and connection.

Design and configuration of television studios.

Basic audio and video edition.

Understanding of the mechanisms associated with the recording of audio and video signals.

Identification of the fundamental elements for the digital television signal transmission in both fixed and mobile environments.

Knowledge of the operative processes in a mobile unit and interconnection with the header.

Knowledge and application of the different techniques used in professional video editing.

Knowledge and application of the basic lighting techniques.

Knowledge and practice of typical configurations and main audio recording techniques.

Knowledge and practical realization of sound shots using different configurations and techniques.

Connection and management of the equipment and elements involved in a television studio: lighting elements, cameras, control and measurement equipment, processing equipment and recorders.

Analysis, synthesis and compression of technical documentation and mastery of specific vocabulary.

Characterization of the main optical and magnetic recording systems of audio and video signals, as well as the signal processing equipment in a recording studio.

6. Units / Contents

Unit 1: Introduction

- **Unit 1.1** Equipment connection

Unit 2: Sound recording

- **Unit 2.1** Microphones types and characteristics
- **Unit 2.2** Sound recording techniques
- **Unit 2.3** Laboratory 1: Recording, edition and mixing based on HDD

Unit 3: Recording Techniques

- **Unit 3.1** Microphone techniques
- **Unit 3.2** Stereo techniques
- **Unit 3.3** Surround techniques
- **Unit 3.4** Wireless microphones

Unit 4: Sound processing systems

- **Unit 4.1** Frequency processing
- **Unit 4.2** Dynamic processing
- **Unit 4.3** Time processing
- **Unit 4.4** Multiefects
- **Unit 4.5** Laboratory 2: sound processing systems
- **Unit 4.6** Mixing console
- **Unit 4.7** Laboratory 3: Mixing console. Radio studio

Unit 5: Television illumination

- **Unit 5.1** Introduction
- **Unit 5.2** Practical background
- **Unit 5.3** Illumination measurement and control methods
- **Unit 5.4** Light description
- **Unit 5.5** Illumination techniques
- **Unit 5.6** Illumination control
- **Unit 5.7** Security measurements
- **Unit 5.8** Laboratory 4: Television illumination

Unit 6: Cameras

- **Unit 6.1** Human visual system
- **Unit 6.2** Theory and color codification
- **Unit 6.3** Television cameras
- **Unit 6.4** Sensors
- **Unit 6.5** Camera components
- **Unit 6.6** Laboratory 5: Cameras

Unit 7: Production equipment for television

- **Unit 7.1** Video mixer.
- **Unit 7.2** Video effects
- **Unit 7.3** Titler
- **Unit 7.4** Laboratory 6: Video mixer
- **Unit 7.5** Recording Systems
- **Unit 7.6** Laboratory 7: Non lineal edition

Unit 8: Studios

- **Unit 8.1** Signal routing
- **Unit 8.2** Radio studio
- **Unit 8.3** Recording studio
- **Unit 8.4** Television studio
- **Unit 8.5** Mobile Unit

ADDITIONAL COMMENTS, REMARKS

Software: ProTools y Premiere.

Television, radio and audio labs.

7. Activities, Units/Modules and Methodology

Training Activity	Methodology	Related Competences	ECTS	Hours	As	Com	Description
Class Attendance (theory) [ON-SITE]	Lectures	E21 E22 E23 E25 G02 G06 G10	1.36	34	N	-	Lectures to explain the learning outcomes
Problem solving and/or case studies [ON-SITE]	Problem solving and exercises	E21 E22 E23 E25 G02 G06 G07 G12	0.18	4.5	N	-	Demos and exercises during the class
Laboratory practice or sessions [ON-SITE]	Practical or hands-on activities	E21 E22 E23 E25 G02 G06 G07 G10 G12 G13 G14	0.64	16	Y	N	During the laboratory sessions the process and results obtained will be evaluated.
Practicum and practical activities report writing or preparation [OFF-SITE]	Practical or hands-on activities	E21 E22 E23 E25 G02 G06 G07 G10 G12 G13 G14	0.54	13.5	Y	N	Reports will be presented in pdf format including comments to the questions specified in the statement. Moreover, results will also be sent (audio, illumination, video sessions, etc). In each one of the statements, specific requirements will be expound. If plagiarism is detected, the student will have a mark equal to 0 points.
Writing of reports or projects [OFF-SITE]	Self-study	E21 E22 E23 E25 G02 G06 G07 G10 G12 G13 G14	0.69	17.25	Y	N	During the course, some activities will be proposed. The answer to these activities will be presented in pdf format. If plagiarism is detected, the student will have a mark equal to 0 points.
Study and Exam Preparation [OFF-SITE]	Combination of methods	E21 E22 E23 E25 G02 G06 G07 G10 G12 G13 G14	2.37	59.25	N	-	Autonomous study
Individual tutoring sessions [ON-SITE]	Combination of methods	E21 E22 E23 E25 G02 G06 G07 G10 G12 G13 G14	0.07	1.75	N	-	Session for doubts and task review
Final test [ON-SITE]	Assessment tests	E21 E22 E23 E25 G02 G06 G07 G10 G12 G13 G14	0.15	3.75	Y	Y	Final test of the course. If plagiarism is detected, the student will have a mark equal to 0 points.
		Total:	**6**	**150**			
		Total credits of in-class work: 2.4					**Total class time hours: 60**
		Total credits of out of class work: 3.6					**Total hours of out of class work: 90**

As: Assessable training activity
Com: Training activity of compulsory overcoming (It will be essential to overcome both continuous and non-continuous assessment).

8. Evaluation criteria and Grading System

Evaluation System	Continuous assessment	Non-continuous evaluation*	Description
Laboratory sessions	40.00%	40.00%	The work carried out in the lab, the report writing and even the oral presentation will be taken into account.
Assessment of problem solving and/or case studies	10.00%	10.00%	Hands-on activities composed by exercises or sort projects.
Final test	50.00%	50.00%	Writing activities composed by questions and exercises. A mark higher than 4 points is mandatory to make the average with other evaluation activities.
Total:	**100.00%**	**100.00%**	

According to art. 4 of the UCLM Student Evaluation Regulations, it must be provided to students who cannot regularly attend face-to-face training activities the passing of the subject, having the right (art. 12.2) to be globally graded, in 2 annual calls per subject , an ordinary and an extraordinary one (evaluating 100% of the competences).

Evaluation criteria for the final exam:

Continuous assessment:

It is requiered a mark of 4 point or higher to make the average with other evaluation tests.
To pass the course, a mark of 5 point or higher is required

Non-continuous evaluation:

The same than in the continuous assessment.

Specifications for the resit/retake exam:

Activities will be retaken individually with another realization.
The final test will be retaken with another test.
The evaluation criteria will be those described in the 'evaluation system' table.

Specifications for the second resit / retake exam:

The final test will be retaken with another test.
If the student passed the laboratory sessions in advance, the evaluation criteria will be 40% laboratory sessions and 60% writing test. In other case, activities will be retaken individually with another realization and the evaluation criteria will be 40% laboratory sessions and 60% writing test

9. Assignments, course calendar and important dates

Not related to the syllabus/contents	
Hours	**hours**
Writing of reports or projects [AUTÓNOMA][Self-study]	17.25
Study and Exam Preparation [AUTÓNOMA][Combination of methods]	59.25
Individual tutoring sessions [PRESENCIAL][Combination of methods]	1.75
Final test [PRESENCIAL][Assessment tests]	3.75
General comments about the planning: Course calendar will be published at the begining of the course	
Unit 1 (de 8): Introduction	
Activities	**Hours**
Class Attendance (theory) [PRESENCIAL][Lectures]	1.5
Unit 2 (de 8): Sound recording	
Activities	**Hours**
Class Attendance (theory) [PRESENCIAL][Lectures]	4
Laboratory practice or sessions [PRESENCIAL][Practical or hands-on activities]	3
Practicum and practical activities report writing or preparation [AUTÓNOMA][Practical or hands-on activities]	2
Unit 3 (de 8): Recording Techniques	
Activities	**Hours**
Class Attendance (theory) [PRESENCIAL][Lectures]	5
Unit 4 (de 8): Sound processing systems	
Activities	**Hours**
Class Attendance (theory) [PRESENCIAL][Lectures]	5
Problem solving and/or case studies [PRESENCIAL][Problem solving and exercises]	3.5
Laboratory practice or sessions [PRESENCIAL][Practical or hands-on activities]	5.5
Practicum and practical activities report writing or preparation [AUTÓNOMA][Practical or hands-on activities]	3
Unit 5 (de 8): Television illumination	
Activities	**Hours**
Class Attendance (theory) [PRESENCIAL][Lectures]	4.5
Problem solving and/or case studies [PRESENCIAL][Problem solving and exercises]	1
Laboratory practice or sessions [PRESENCIAL][Practical or hands-on activities]	1.5
Practicum and practical activities report writing or preparation [AUTÓNOMA][Practical or hands-on activities]	2
Unit 6 (de 8): Cameras	
Activities	**Hours**
Class Attendance (theory) [PRESENCIAL][Lectures]	4.5
Laboratory practice or sessions [PRESENCIAL][Practical or hands-on activities]	1.5
Practicum and practical activities report writing or preparation [AUTÓNOMA][Practical or hands-on activities]	2
Unit 7 (de 8): Production equipment for television	
Activities	**Hours**
Class Attendance (theory) [PRESENCIAL][Lectures]	4.5
Laboratory practice or sessions [PRESENCIAL][Practical or hands-on activities]	4.5
Practicum and practical activities report writing or preparation [AUTÓNOMA][Practical or hands-on activities]	4.5
Unit 8 (de 8): Studios	
Activities	**Hours**
Class Attendance (theory) [PRESENCIAL][Lectures]	5
Global activity	
Activities	**hours**
Final test [PRESENCIAL][Assessment tests]	3.75
Laboratory practice or sessions [PRESENCIAL][Practical or hands-on activities]	16
Problem solving and/or case studies [PRESENCIAL][Problem solving and exercises]	4.5
Practicum and practical activities report writing or preparation [AUTÓNOMA][Practical or hands-on activities]	13.5
Writing of reports or projects [AUTÓNOMA][Self-study]	17.25
Study and Exam Preparation [AUTÓNOMA][Combination of methods]	59.25
Individual tutoring sessions [PRESENCIAL][Combination of methods]	1.75
Class Attendance (theory) [PRESENCIAL][Lectures]	34
Total horas:	150

10. Bibliography and Sources

Author(s)	Title/Link	Publishing house	Citv	ISBN	Year	Description
Bartlett, Bruce.	Practical recording techniques : the step-by-step approach t	Routledge,		978-1-138-90442-2	2017	
Bermingham, Alan.	Location Lighting for Television	Focal Press		978-0-240-51937-1	2013	
Huber, David Miles	Modern recording techniques, 9th Ed.	Focal Press		9781138954373	2018	
Millerson, Gerald	Realización y producción en televisión	Omega		978-84-282-1467-4	2009	
Ward, P., Berminghan, A., Wherry, C.	Multiskilling for Television Production	Focal Press		978-0-240-51557-1	2003	
Izhaki, Roey.	Mixing audio : concepts, practices, and tools /			978-1-138-85978-4 (	2017	
Howell, W.	Light Bytes. Inside Art-Net and sACN	Artistic Licence			2016	

Howell, W.	Control-freak. A real world guide to DMX512 and Remote Device Management.	System Series	2012
Ortiz Berenguer, L. I. y Rodr¿¿guez Va¿zquez, J. L.	Ingenier¿¿a de v¿¿deo en entornos digitales	Dpto. Publicaciones de la E.U.I.T.T de la U.P.M.	2013