

**1. General information****Course:** AUDIO AND VIDEO EQUIPMENTS AND STUDIOS**Code:** 59628**Type:** CORE COURSE**ECTS credits:** 6**Degree:** 385 - DEGREE IN TELECOMMUNICATIONS TECHNOLOGY ENGINEERING**Academic year:** 2021-22**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	926053863	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 'Audiovisual Signal Processing' and 'Acoustic Engineering' and to study 'Architectonic Acoustic' at the same time.

Specifically, it is necessary to know analogic-digital conversion, compression, acoustic transducers, electroacoustic transmitters and receivers.

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 with 'Architectural Acoustic'.

This course is advisable to study the courses 'Audiovisual Systems' and 'Audiovisual Events Recording'.

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, whether 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

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.

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.

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.

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.

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.

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 Multieffects

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 (only degrees before RD)	ECTS	Hours	As	Com	Description
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		822/2021)					
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. In-situ part will be retaken individually with another realization of the practical session, being necessary an appointment with the teacher.
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. Reports will be retaken individually with another realization of the practical session, being necessary an appointment with the teacher. 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. Activities will be retaken individually with another realization. If plagiarism is detected, the student will have a mark equal to 0 points.
Study and Exam Preparation [OFF-SITE]		E21 E22 E23 E25 G02 G06 G07 G10 G12 G13 G14	2.37	59.25	N	-	-Autonomous study
Individual tutoring sessions [ON-SITE]		E21 E22 E23 E25 G02 G06 G07 G10 G12 G13 G14	0.07	1.75	N	-	-Session for doubts and task review
Other on-site activities [ON-SITE]	Assessment tests	E21 E22 E23 E25 G02 G06 G07 G10 G12 G13 G14	0.15	3.75	Y	Y	1 or 2 test during the course Exams will be retaken with another realization. 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.
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 tests.
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 required 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:

The details to resit/retake each one of the recoverable activities are shown in table 7.

Specifications for the second resit / retake exam:

If the student passed the laboratory sessions in advance, the evaluation criteria will be 40% laboratory sessions and 60% writing test. In other case, the details to resit/retake laboratory sessions shown in table 7 will be applied 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][]	59.25
Individual tutoring sessions [PRESENCIAL][]	1.75
Other on-site activities [PRESENCIAL][Assessment tests]	3.75
General comments about the planning: Course calendar will be published at the beginning 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]	4.5
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
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
Other on-site activities [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][]	59.25
Individual tutoring sessions [PRESENCIAL][]	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	
	Light Bytes. Inside Art-Net and					

Howell, W.	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 Rodríguez Vázquez, J. L.	Ingeniería de vídeo en entornos digitales	Dpto. Publicaciones de la E.U.I.T.T de la U.P.M.	2013