

SOUND AND IMAGE ENGINEERING

B. Eng.

SEMESTER 6

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Year 2015/16

Course Name:	Computer Networks	Course Code:	595000129
Year:	3	Semester:	6
Credits (ECTS):	4,5	Credit Hours:	3
Area:	Telecommunications Networks	Type:	Engineering Topic / Required
Term:	Spring	Language:	Spanish
Prerequisites / Co-requisites:		Telecommunication Networks and Services	
Coordinator:		Oscar Ortiz	
Bachelor Engineering Program:		Sound and Image Engineering Communications Electronics Engineering Telecommunications Systems Engineering Telematics Engineering	

Course Contents

1. Link layer and Local Area Networks
2. Internet Network Layer
3. Internet Transport Layer
4. Introduction to Internet Applications and Services

ABET Student Outcomes

- (b) An ability to design and conduct experiments, as well as to analyze and interpret data
- (c) An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability
- (e) An ability to identify, formulate, and solve engineering problems
- (g) An ability to communicate effectively
- (h) The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context
- (i) A recognition of the need for, and an ability to engage in life-long learning
- (j) A knowledge of contemporary issues
- (k) An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

Study Outcomes (according to the Spanish program definition)

- CG 04 Ability to abstract, analyze, and synthesize, and to solve problems.
- CG 05 Ability for teamwork in multidisciplinary environments..
- CG 06 Ability for adaptability, negotiation, conflict resolution and leadership

- CG 08 Ability to organize, plan and make decisions.
- CG 10 Ability to handle specifications, rules and regulations and to apply them in the practice of the profession.
- CG 13 Learning skills with a high degree of autonomy..
- CE TEL 13 Knowledge and use of the concepts of network architecture, protocols and communication interfaces.
- CE TEL 14 Ability to differentiate the concepts of access and transport network, packet and circuit switching network, fixed and mobile network, as well as distributed systems and networked applications, voice, data, audio, video, interactive and multimedia services.
- CE TEL 15 Knowledge of network interconnection and routing methods, and of the fundamentals of network planning and dimensioning based on traffic parameters.

Specific outcomes of instruction (according to the Spanish program definition)

- 1.- Contextualize the local area in the Internet architecture networks.
- 2.- Enumerate the physical media for the deployment of local area networks.
- 3.- Explain the problem and the classical solutions to the shared media access control.
- 4.- Describe the characteristics and operation of Ethernet.
- 5.- Identify local area networking devices.
- 6.- Describe the level of Internet protocols.
- 7.- Describe the different Internet routing algorithms and protocols.
- 8.- Indicate the structure of bodies involved in the Organization of Internet.
- 9.- Describe the level of Internet transport protocols.
- 10.- The relationship between the Internet level and the link layer protocols.
- 11.- Differentiate the Internet networking elements.
- 12.- Describe the main Internet services and applications.
- 13.- Set up an IP computers network.

Bibliography

“Redes de computadoras: un enfoque descendente”, Kurose, J.F., Ross, K.W., Pearson Addison Wesley, 2010

“Comunicaciones y Redes de Ordenadores” Stallings, Séptima Edición W., Prentice-Hall International, 2004.

“Redes de computadores e Internet”, Halsall, F., Pearson, Addison-Wesley, 2006

Year 2015/16

Course Name:	Room Acoustics	Course Code:	595000130
Year:	3	Semester:	6
Credits (ECTS):	6	Credit Hours:	4
Area:	Acoustic Engineering	Type:	Engineering Topic / Required
Term:	Spring	Language:	Spanish
Prerequisites / Co-requisites:	Waves Propagation Audiovisual Systems Sound and Image Fundamentals Acoustic Engineering		
Coordinator:	Francisco Javier Sánchez		
Bachelor Engineering Program:	Sound and Image Engineering		

Course Contents

1. Introduction to Room Acoustics
2. Study of the sound field by the statistic theory
3. Study of the sound field by the geometric theory
4. Study of the sound field by the wave theory
5. Behavior of acoustic materials
6. Airborne noise insulation

ABET Student Outcomes

- (a) An ability to apply knowledge of mathematics, science, and engineering
- (b) An ability to design and conduct experiments, as well as to analyze and interpret data
- (c) An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability
- (d) An ability to function on multidisciplinary teams
- (e) An ability to identify, formulate, and solve engineering problems
- (g) An ability to communicate effectively
- (i) A recognition of the need for, and an ability to engage in life-long learning
- (j) A knowledge of contemporary issues
- (k) An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

Study Outcomes (according to the Spanish program definition)

- CE SI04 Ability to carry out acoustic engineering projects on: acoustic isolation and acoustic conditioning, PA installations; specification, analysis and selection of electroacoustic transducers; measurement, analysis and noise and vibration control systems; environmental acoustics; underwater acoustics systems.
- CG 04 Ability to abstract, analyze, and synthesize, and to solve problems.
- CG 10 Ability to handle specifications, rules and regulations and to apply them in the practice of the profession.
- CG 13 Learning skills with a high degree of autonomy..

Specific outcomes of instruction (according to the Spanish program definition)

- 1.- Ability to analyze the sound field of a venue.
- 2.- Ability to analyze and solve acoustic deficiencies in a venue.
- 3.- Ability to analyze the needs of insulation of the limit surfaces of a venue.

Bibliography

Moodle Web Resources

Year 2015/16

Course Name:	Audio Engineering II	Course Code:	595000131
Year:	3	Semester:	6
Credits (ECTS):	6	Credit Hours:	4
Area:	Audio Engineering	Type:	Engineering Topic / Required
Term:	Spring	Language:	Spanish
Prerequisites / Co-requisites:		Audio Engineering I Sound and Image Fundamentals	
Coordinator:		Antonio Mínguez	
Bachelor Engineering Program:		Sound and Image Engineering	

Course Contents

1. Digitalization of the audio signal
2. Interconnection
3. Digital Audio Workstations (DAW)
4. Digital storage of audio signal
5. Optical audio storage media
6. Audio coding. Binary system reduction techniques

ABET Student Outcomes

- (d) An ability to function on multidisciplinary teams
- (g) An ability to communicate effectively
- (h) The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context
- (j) A knowledge of contemporary issues
- (k) An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

Study Outcomes (according to the Spanish program definition)

- CE SI01 Ability to construct, take advantage and manage services and telecom applications, understood these as systems of captation, analogical and digital treatment, codification, transmission, representation, processing, storage, reproduction, management and presentation of audiovisual services and multimedia information.
- CE SI02 Ability to analyze, specify, implement and support television, audio and video systems, equipment, headers and facilities, both in fixed and mobile environments.

- CE SI03 Ability to carry out projects for studios and facilities which will be used for audio and video signal production and recording.
- CE SI05 Ability to create, encode, manage, broadcast and distribute multimedia content, taking into account usability and accessibility criteria for audiovisual, broadcast and interactive services.
- CG 02 Ability to search and select information, develop critical thinking and produce and defend arguments within the area.
- CG 04 Ability to abstract, analyze, and synthesize, and to solve problems.

Specific outcomes of instruction (according to the Spanish program definition)

- 1.- Recognize devices and terminals of communication, data capture and playback of audio and video, and its main parameters.
- 2.- Understand and analyze the characteristics of the different environments in audio installations.
- 3.- Know and understand in detail the audio coding techniques that reduce the bit rate.
- 4.- Understanding the techniques used in the storage of the audio signal and the most important optical systems.
- 5.- Ability to understand and analyze the characteristics of different mixing consoles used in audio systems
- 6.- Understand and analyze the characteristics of different mixing consoles used in audio systems.
- 7.- Know the specific aspects in the digitalization of the audio signal.
- 8.- Analyze the characteristics and design of interconnection between audio equipment.
- 9.- Ability to understand and analyze the characteristics of the different equipment and processors used in audio engineering.
- 10.- Understanding and handling of audio and video signals (digitization, formats and coding systems).
- 11.- Understand and analyze the characteristics of the different equipment used in audio engineering for a specific use.

Bibliography

Pohlmann, Ken C. Principios de audio digital. McGraw Hill, 2002.

Watkinson, J. The Art of Digital Audio. Focal Press, 2001.

Bogh Brixen, Eddy. Audio Metering. Focal Press, 2011.

Year 2015/16

Course Name:	Video Engineering	Course Code:	595000132
Year:	3	Semester:	6
Credits (ECTS):	4.5	Credit Hours:	4
Area:	Video Engineering	Type:	Engineering Topic / Required
Term:	Spring	Language:	Spanish
Prerequisites / Co-requisites:	Microprocessors Communication Theory Operating Systems Audiovisual Systems Sound and Image Fundamentals Image and Video Technologies Electronics I Signals and Systems Digital Signal Processing		
Coordinator:	Luis Ignacio Ortiz		
Bachelor Engineering Program:	Sound and Image Engineering		

Course Contents

1. Video Equipment
2. Equipment Interconnection
3. Video instrumentation and measurement
4. Video systems and installations
5. Designing Tools

ABET Student Outcomes

- (a) An ability to apply knowledge of mathematics, science, and engineering
- (b) An ability to design and conduct experiments, as well as to analyze and interpret data
- (c) An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability
- (e) An ability to identify, formulate, and solve engineering problems
- (h) The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context
- (i) A recognition of the need for, and an ability to engage in life-long learning
- (j) A knowledge of contemporary issues
- (k) An ability to use the techniques, skills, and modern engineering tools necessary for

engineering practice.

Study Outcomes (according to the Spanish program definition)

- CE SI01 Ability to build, utilize and manage telecommunication services and applications for the purpose of acquiring, treating analogically and digitally, encoding, transporting, representing, processing, storing, reproducing, managing and presenting audiovisual services and multimedia information.
- CE SI02 Ability to analyze, specify, implement and support television, audio and video systems, equipment, headers and facilities, both in fixed and mobile environments.
- CE SI03 Ability to carry out projects for studios and facilities which will be used for audio and video signal production and recording.
- CE TEL01 Ability to independently learn new knowledge and skills adequate for the design, development or utilization of telecommunication systems and services.
- CE TEL16 Knowledge of telecommunication legislation and regulations at the National, European and International levels.
- CG 03 Ability to express oneself in oral and written form, and to convey information through documents and public presentations.

Specific outcomes of instruction (according to the Spanish program definition)

- 1.- Ability to understand and analyze the characteristics of different environments and equipment in video engineering, design facilities and interconnection of equipment, specially the studio.
- 2.- Capacity of basic handling of Autocad as a tool for design.
- 3.- Ability to understand the relationship between the video signal and others, such as audio and different types of data that are handled together.
- 4.- Ability to understand the different formats of the video signal, to the various resolutions used in initial format, uncompressed.

Bibliography

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