

230025 - CM - Multimedia Communications

Coordinating unit: 230 - ETSETB - Barcelona School of Telecommunications Engineering
Teaching unit: 744 - ENTEL - Department of Network Engineering
Academic year: 2019
Degree: BACHELOR'S DEGREE IN AUDIOVISUAL SYSTEMS ENGINEERING (Syllabus 2009). (Teaching unit Compulsory)
BACHELOR'S DEGREE IN TELECOMMUNICATIONS SCIENCE AND TECHNOLOGY (Syllabus 2010). (Teaching unit Optional)
BACHELOR'S DEGREE IN NETWORK ENGINEERING (Syllabus 2010). (Teaching unit Optional)
BACHELOR'S DEGREE IN TELECOMMUNICATIONS TECHNOLOGIES AND SERVICES ENGINEERING (Syllabus 2015). (Teaching unit Optional)
ECTS credits: 6 Teaching languages: Spanish

Teaching staff

Coordinator: Jorge Mata Díaz
Others: Juan José Alins Delgado

Prior skills

Basic understanding of IP protocols
TCP and UDP Socket Programming
Fundamentals of source coding, channel coding and cryptography
Fundamentals of digitization and quantification of sound and image

Requirements

Data Transmission - Prerequisite
Audiovisual Signal Processing and Communications - Prerequisite
Applications and Telematic Services - Prerequisite

Degree competences to which the subject contributes

Generical:

1. They will have acquired knowledge related to experiments and laboratory instruments and will be competent in a laboratory environment in the ICC field. They will know how to use the instruments and tools of telecommunications and electronic engineering and how to interpret manuals and specifications. They will be able to evaluate the errors and limitations associated with simulation measures and results.

230025 - CM - Multimedia Communications

Teaching methodology

Application class
Lectures
Laboratory classes
Group assignement
Individual assignment
Test with long answer
Lab Test
Laboratory

Learning objectives of the subject

The objective of this course is to train students in aspects of multimedia communications used by audiovisual services and applications. Starting from basics of capture and storage of audiovisual information, the student will acquire the skills needed to locate, request and transport multimedia information over IP networks. Related to the multimedia services to deploy the necessary metrics will be established in order to determine a level of quality experienced by the user.

The expected student learning outcomes are:

- a) Have ability to build, operate and manage services and telecom applications, particularly those related mutimedia audiovisual services and applications, including adquisition systems, analog and digital processing, coding, transport, representation, processing, storage, reproduction , management and presentation of these services and applications.
- b) Has ability to create, encode, manage, disseminate, distribute, multimedia content, based on criteria of usability and accessibility of audiovisual, broadcast and interactivity.
- c) Planning and use the necessary information for a project or academic work.
- d) Design experiments and steps to verify hypotheses or to validate the operation of equipment, process, systems or services in the ICT field. Select equipment and performs advanced data analysis with software tools.

Study load

Total learning time: 150h	Hours large group:	39h	26.00%
	Hours small group:	26h	17.33%
	Self study:	85h	56.67%

230025 - CM - Multimedia Communications

Content

<p>(ENG) Introduction to Multimedia Communications</p>	<p>Learning time: 47h Theory classes: 8h Laboratory classes: 11h Self study : 28h</p>
<p>Description: Multimedia definition. Multimedia applications and services. Requirements for multimedia communications. Fundamentals of audiovisual coding. Review of audiovisual coding standards.</p>	
<p>(ENG) Multimedia Data Transport over IP networks</p>	<p>Learning time: 65h Theory classes: 18h Laboratory classes: 13h Self study : 34h</p>
<p>Description: Characteristics of multimedia traffic. Encapsulation of audiovisual contents. Transport protocols. Transport protocols for real time communications. Real time control protocol for media transport.</p>	
<p>(ENG) Multimedia Content Delivery over IP networks</p>	<p>Learning time: 10h Theory classes: 3h Laboratory classes: 1h Self study : 6h</p>
<p>Description: IP routing multicast. Management multicast groups. Interconnection of multicast networks</p>	
<p>(ENG) Establishing and controlling multimedia sessions</p>	<p>Learning time: 13h Theory classes: 5h Laboratory classes: 1h Self study : 7h</p>
<p>Description: Multimedia session concept. Description multimedia sessions. Multimedia sessions announcements. Protocols for establishing multimedia sessions.</p>	

230025 - CM - Multimedia Communications

(ENG) Multimedia Services on IP networks	Learning time: 6h 30m Theory classes: 1h Laboratory classes: 0h 30m Self study : 5h
Description: Description multiservice architectures: Triple Play. Video delivery services. Voice services over IP. Videoconferencing. P2P streaming services.	

Qualification system

Evaluation:

Attendance: 10%

Individual and group: 10%

Quizzes: 45%

Practice tests: 35%

This course will assess generic skills:

- Knowledge of instrumentation and experimental (High Level)

Bibliography

Basic:

Kurose, J.F.; Ross, K.W. Computer networking: a top-down approach [on line]. 7th ed. Boston: Pearson, 2017 [Consultation: 25/10/2018]. Available on: <<https://ebookcentral.proquest.com/lib/upcatalunya-ebooks/detail.action?docID=5187270>>. ISBN 9781292153599.

Perkins, C. RTP: audio and video for the Internet. Boston: Addison-Wesley, 2003. ISBN 0672322498.

Complementary:

Minoli, D. IP multicast with applications to IPTV and mobile DVB-H. Hoboken, N.J.: Wiley, 2008. ISBN 9780470258156.

Shin, J.; Lee, D.C.; Kuo, C.C.J. Quality of service for internet multimedia. Upper Saddle River, NJ: Prentice Hall PTR, 2004. ISBN 0131414631.

Bing, B. Next-generation video coding and streaming. New Jersey: John Wiley & Sons Inc., 2015. ISBN 1118891309.