Program	09AQ-Master in Telecommunication Engineering

Course number and name	
Number	93000799
Name	Integration of Networks, Applications and Contents Integración de redes, aplicaicones y contenidos
Semester	Y1-S2

Credits and contact hours	
ECTS Credits	6
Contact hours	60

Coordinator's name	Joan Vinyes Sanz

Specific course information

Description of course content

A course on techniques required for the design, development, integration, and implementation of multimedia services over IP networks. The course brings a comprehensive overview of current systems and technologies to meet the fundamental knowledge that any graduate should have on integration of multimedia contents over IP networks including traffic engineering and analysis.
Two case studies – VoIP and multimedia streaming - provide a hands-on opportunity for increasing learning and experimentation.

List of topics to be covered

1. Integration of telephony on IP networks: Protocol architecture and traffic analysis. 2. Multimedia streaming over IP networks. 3. Content delivery networks. 4. Traffic Engineering: DiffServ, MPLS. 4. Security of networks and services.

Prerequisites or co-requisites

None, but it will be assumed that students have knowledge on IP networks and basic traffic models.

Course category in the program

X R (required)	__ E (elective)	__ SE (selective elective)

Specific goals for the course

Specific outcomes of instruction

RA11 - The student is able to know the architecture of an IP telephony network, identify its segments, elements and quantify their performances.

RA13 - The student is able to understand the structure, elements and benefits of content delivery networks.
RA14 - The student knows and is able to quantify the main parameters defining the requirements for multimedia traffic, establishing a quality / cost compromise and is able to specify the requirements for the support networks.
RA15 - The student is able, working in team, to design, size and configure application support platforms.
RA17 - The student is able to understand the structure, features and capabilities of integration technologies of multimedia traffic in the IP / MPLS network and apply traffic engineering procedures to ensure the required performance.
RA18 - The student knows the corresponding security paradigms of network, applications and content architectures.

Student outcomes addressed by the course

CE6, CE7, CE8, CE9
CG2, CG4, CG5
CT1, CT3, CT4, CT5, CT6

Bibliography and supplemental materials

- J. Kurose, K. Ross. Computer Networking: A Top Down Approach, 6th. Ed., Addison-Wesley, 2012
- C. Cox. An introduction to LTE: LTE, LTE-Advanced, SAE and 4G Mobile Communications. Wiley, 2012.
- J.G. van Bosse, F.U. Devetak. Signalling in Telecommunication Networks, 2006.
- O. Hersent, J.P. Petit, D. Gurle. IP Telephony: Deploying Voice-over-IP Protocols, 2005.
- J.M. Pitts, J.A. Schormans. Introduction to IP and ATM Design and Performance, John Wiley, 2000
- I. Minei, J. Lucek. MPLS-Enabled Applications: Emerging Developments and New Technologies, 3rd Ed., Wiley, 2010
- R. Buyya et al. Content Delivery Networks, Springer-Verlag

Teaching methodology

X lectures	X problem solving sessions	X collaborative actions	__ laboratory sessions
Other:			