Syllabus
2023 - 2024

GENERAL INFORMATION

Data of the subject	
Subject name	Multimedia Communications
Subject code	DTC-MIT-615
Mainprogram	Máster Universitario en Ingeniería de Telecomunicación por la Universidad Pontificia Comillas
Involved programs	Máster Universitario en Ingeniería de Telecomunicación [Second year]
Credits	4,5 ECTS
Type	Obligatoria
Department	Department of Telematics and Computer Sciencies

Teacher Information	
Teacher	
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Department	Department of Telematics and Computer Sciencies
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DESCRIPTION OF THE SUBJECT

Contextualization of the subject

Prerequisites

Knowledge on IP networking technology. Protocols IP, UDP, TCP.

Understanding of VoIP basic technology

Course contents

Contents
Unit-1. Introduction
Concept and Applications
Protocols and Standard Bodies
Review of SIP/SDP/RTP
NAT Traversal
Unified Communications and Collaboration Concept
Unit2. Multimedia Communications in the Web
HTTP

Evolution of HTTP
Websockets
WebRTC
WebConferencing
Unit-3. Streaming and IPTV
Basic Concepts
Video Streaming
HTTP Live Streaming
Content Delivery Networks
IP Television
Unit-4. Internet Multimedia Subsystem
Introduction and Services
IMS requirements
IMS Architecture
IMS Concepts
Unit-5. Multimedia in Wireless networks
4G/5G Introduction
4G/5G architecture for multimedia communications
EPC/5GC mobility and session management
QoS and policy control
EPC/5GC main traffic scenarios
VoLTE functionality
E2E signalling scenarios

EVALUATION AND CRITERIA

Evaluation activities	Evaluation criteria	Weight
1. Tests (practical/problem solving) (30 %). 2. Theoretical tests (multiple choice) (5 %). 3. Lab exams (25 %).	1. Both the procedure and the numerical results will be considered. 2. Identification of the correct response(s) across multiple choices 3. The student shall resolve questions related to the lab environment and practices	60 %
1. Good attitude in class,interactivity and	1. If these requirements are not fulfilled the student will not be evaluated	

proactivity 2. Practical-oriented tasks (challenges) (15 %). 3. Lab practice reports (25 %).	2. Challenges and practical activities shall be delivered in due time and content 3. Lab reports shall be delivered in due time and content	40 %

Grading

At the end of the course the student will get the following grades

Grade related to the work in class: **NC**

Final exam grade: **EF**

The final grade of the course (**NA**) is calculated as follows:

NA=MAX(0,6***EF**+0,4***NC ; EF**) (si **EF**>=4)

NA=**EF** (si **EF**<4)

Extraordinary exam

If the student did not pass the exams, the student shall take an extraordinary exam. In that case NA shall be calculated as follows:

NA=MAX(0,8***EF**+0,2***NC ; EF**) (si **EF**>=4).

Attendance to classes

Failing to attend class (15% or more) may cause the student to not be able to take the exams (final and extraordinary)

BIBLIOGRAPHY AND RESOURCES

Basic References

- IETF technical specs as indicated in each unit
- 3GPP technical specs as indicated in each unit
- Web links as indicated in each unit
- Internet Multimedia Communications Using SIP. Rogelio Martinez. Morgan-Kauffman
- The IMS. IP Multimedia concepts and services. Wiley. Poikselka and Mayer
- Voice over LTE. Poikselka. Holma and others
- High Performance Browser Networking. Grigorik.