

Academic Year/course: 2021/22

## 30386 - Multimedia services transport

### Syllabus Information

**Academic Year:** 2021/22

**Subject:** 30386 - Multimedia services transport

**Faculty / School:** 110 - Escuela de Ingeniería y Arquitectura

**Degree:** 581 - Bachelor's Degree in Telecommunications Technology and Services Engineering

**ECTS:** 6.0

**Year:** 4

**Semester:** Second semester

**Subject Type:** Optional

**Module:**

### 1. General information

### 2. Learning goals

### 3. Assessment (1st and 2nd call)

### 4. Methodology, learning tasks, syllabus and resources

#### 4.1. Methodological overview

The methodology followed in this course is oriented towards achievement of the learning objectives. It is based on participation and the active role of the student favors the development of communication and decision-making skills. A wide range of teaching and learning tasks are implemented, such as:

1. **Theory sessions** whose main contents are organized in 5 topics.
2. **Practice sessions.** The student will be given a set of problems which aims to help strengthen the concepts presented in the theory sessions. In addition, the student shares the solutions of problem-solving with the class. In this way, the student needs to be critical in the presentation of the results as well as in the proposals made by other students. This where all the students share their answers.
3. **Laboratory sessions.** Their objective is the development of techniques and procedures seen in theory and practice sessions, and its application in the field of IP multimedia communications.

Students are expected to participate actively in the class throughout the semester.

Classroom materials will be available via Moodle. These include a repository of the lecture notes used in class, the course syllabus, as well as other course-specific learning materials, including a discussion forum.

Further information regarding the course will be provided on the first day of class.

#### 4.2. Learning tasks

The course includes the following learning tasks This is a 6 ECTS course organized as follows:

- **Theory classes (30 hours).** Presentation by the teacher of the main contents of the course, combined with the

active participation of students. This methodology, supported with the student's autonomous work, is designed to provide students with the necessary theoretical foundations for the course.

- **Practice sessions (10 hours).** Guided exercises and case studies with the possibility of students presenting them, individually or in groups, under the teacher's supervision. This activity may require some previous work by the students.
- **Laboratory sessions (20 hours).** Students will take 10 sessions of 2 hours. These sessions allow students to address aspects related to the theoretical concepts presented in theory classes in a more practical manner.
- **Tutorials.**
- **Assessment.** A set of theory and practice tests, reports or questionnaires. The assessment criteria is detailed in the Assessment section.
- **Autonomous work.**

### 4.3. Syllabus

The course will address the following topics:

#### Theory sessions

**Topic 1.** Introduction to the audiovisual services transport.

- DVB (T, S, C) Technologies. IPTV vs. Internet TV. Requirements and classification of multimedia applications. Quality of Service (QoS): definition and parameters. Architecture and protocols in multimedia communications.

**Topic 2.** Multimedia Networking.

- Audio and video compression formats. MPEG-TS video containers. Multimedia Networking Applications. Content Delivery Networks (CDNs)

**Topic 3.** QoS in IP Networks.

- QoS provision for multimedia applications in IP networks. QoS Architectures and mechanisms.

**Topic 4.** Multimedia content distribution and transport. Multimedia transport: Real Time Protocol (RTP), Real Time Control Protocol (RTCP). Multicast communications: multicast addressing. group management and multicast routing.

**Topic 5.** Multimedia sessions.

- Multimedia session concept. IETF Protocols: Session Description Protocol (SDP), Session Initiation Protocol (SIP). ITU Protocols: H.323 recommendation. Video conferencing. IP Multimedia Subsystem (IMS): architecture.

#### Computer lab sessions

**Session 1.** Networks games. Network traffic measurement and QoS evaluation.

**Session 2.** Streaming multimedia. Multimedia communications: protocols. Network traffic measurement and QoS evaluation. Multicast transmission.

**Session 3.** VoIP communications: using Asterisk PBX. SIP communications. QoS evaluation. Bandwidth measurement: packetization. Using Asterisk PBX.

**Session 4.** Multicast communications: multicast services

### 4.4. Course planning and calendar

Further information concerning the timetable, classroom, office hours, assessment dates and other details regarding this course, will be provided on the first day of class or please refer to the EINA website

### 4.5. Bibliography and recommended resources

Course material is provided:

- Notes (slides).
- Laboratory Notes.
- Set of problems.

The course bibliography will be available on website:

<http://psfunizar10.unizar.es/br13/egAsignaturas.php?codigo=30386>

The course materials will be available on the course website (Note: the access will be limited to the students of the course).