

30386 - Multimedia services transport

Syllabus Information

Academic year: 2024/25

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

The purpose of this subject is to train the student in aspects related to audiovisual communications used by multimedia services. The subject will focus on the study of the technologies that allow the inclusion of IP networks as multimedia content distribution networks. Thus, starting from knowledge of audiovisual information capture and storage, the student will acquire the necessary knowledge to be able to transport multimedia information over IP networks and establish the necessary metrics to obtain an optimal level of QoS.

These approaches and objectives are aligned with the Sustainable Development Goals (SDGs) of the 2030 Agenda of United Nations (<https://www.un.org/sustainabledevelopment/es/>) and certain specific targets, such that the acquisition of the learning results of the subject will contribute to some extent to the achievement of target 8.2 of Goal 8, and targets 9.1, 9.5 and 9.c of Goal 9.

2. Learning results

- Knows and understands the problems of multimedia communications and, in particular, the transport, dissemination and distribution of multimedia services and applications on the Internet.
- Knows and understands the basic concepts associated with audio and video transmission. Knows how to apply the concept of packaging in the sizing of a multimedia system.
- Knows how network performance degradation (packet loss, delays) affects the performance of real-time applications (voice, video).
- Knows and understands both the architecture and the different transport, session and control protocols used for multimedia communications on the Internet.
- Knows and understand the multicast protocols and services used in multimedia communications.
- Knows how to identify and apply the most appropriate techniques in the planning and provision of QoS for multimedia services and applications, both on demand and broadcast in IP networks in specific scenarios, based on the QoS mechanisms learned.

3. Syllabus

Theory

Unit 1. Introduction to the transport of multimedia services.

Unit 2. Multimedia Networking.

Unit 3. Transport and control of multimedia sessions.

Unit 4. Multidestination broadcast.

Unit 5. Quality of Service (QoS) in IP networks.

Practices

Practice 1. Online network games.

Practice 2. Video Streaming (VoD and multidestination services).

Practice 3. VoIP communications.

4. Academic activities

- **Participative lectures (30 hours)** Presentation by the teacher of the main contents of the subject to provide students with the theoretical foundations of the subject.
- **Classroom problems (10 hours)**. Resolution of problems and practical cases proposed by the teacher.
- **Laboratory practices (20 hours)**. **The students will carry out 10 practical sessions of 2 hours duration at that will deal in a practical way with aspects related to the transport of multimedia information.**
- **Personalized attention to students through tutorials.**
- **Personal work of the student.**
- **Assessment tests (6 hours)**

5. Assessment system

- **Laboratory practicals (30% of the final grade, minimum of 4 out of 10)**. The assessment will consist of the resolution of questions and exercises raised in the laboratory sessions.
- **Intermediate tests (30% of the final grade, each test minimum of 4 out of 10, final average minimum of 5)**. will propose the completion of two multiple-choice tests (incorrect answers will be penalized as $1/N$ where N is the number of possible answers). These tests will be voluntary for the students and will be announced with well in advance during the term.
- **Final assessment (30% laboratory practices, 30% test with a minimum of 4 out of 10 for each test and an average of at least 5, and 40% problem test with a minimum of 5. Final average minimum of 5)**. Two tests are added to the evaluation, a theoretical test consisting of two tests (incorrect answers will be penalized as $1/N$ with N being the number of possible answers) and a second test consisting of a set of problems and/or practical cases. Those students who have taken and passed the intermediate assessment or part of it may keep the grades previously obtained and take only the test of problems and / or practical assumptions. If the practical assessment has not been passed during the term, a final test associated with the practices must be taken (minimum of 4).

6. Sustainable Development Goals

- 8 - Decent Work and Economic Growth
- 9 - Industry, Innovation and Infrastructure