60921 - Next generation internet

Información del Plan Docente

Academic Year	2016/17
Academic center	110 - Escuela de Ingeniería y Arquitectura
Degree	533 - Master's Degree in Telecommunications Engineering
ECTS	5.0
Course	1
Period	First semester
Subject Type	Compulsory
Module	---

1.Basic info

1.1.Recommendations to take this course

1.2.Activities and key dates for the course

2.Initiation

2.1.Learning outcomes that define the subject

2.2.Introduction

3.Context and competences

3.1.Goals

3.2.Context and meaning of the subject in the degree

3.3.Competences

3.4.Importance of learning outcomes

4.Evaluation

5.Activities and resources

5.1.General methodological presentation

The learning process for this subject is based on the following:

1.- **Theoretical sessions and seminars** which main contents are organized in 5 units.

2.- **Problem solving sessions** . The student will be given a collection of problems which aims to help strengthen the concepts presented in the theoretical sessions. In addition, the sharing of problem solving commits the student to be critical in the presentation of the results, as well as the proposals made by other students. This activity combines a part of

personal study, in which each student presents solutions to the proposed problems, along with another part of work which brings together the responses of all the students.

3. Work in group tutored . They are aimed to solve practical questions about analysis, design, dimensioning, planning, deployment, installation and optimisation of IP networks and services, by the use of the techniques and procedures studied in the theoretical and problem-solving sessions. The evolution of the work will be periodically presented to the professor, and a final report will be presented, including the methodology employed by the student, and justifying the proposed solution.

3.- **Laboratory classroom sessions** . Their objective is the development of techniques and procedures seen in theoretical and problem sessions, and its application in the field of IP communications networks.

5.2.Learning activities

The course syllabus includes the following activities:

- **Classroom lectures (30 hours)** . Presentation by the teacher of the main contents of the subject, combined with the active participation of students. This face-to-face activity will take place in the classroom. The methodology, supported with the student's personal study, is designed to provide students with the theoretical foundations of the subject.
- **Exercises resolution in the classroom (8 hours)** . Guided exercises and use cases resolution with the possibility of students presenting them individually or in groups, authorized by the teacher. This face-to-face activity will take place in the classroom, and may require some preparatory work by the students.
- **Work in group tutored (10 hours)** . Development and presentation in the classroom of a group project developed by a group of students, focused on any of the topics included in the subject. The objective is to check that the student is able to apply theoretical concepts.
- **Laboratory classes (12 hours).** Students will take six practice sessions of 2 hours. This face-to-face activity will take place at the Laboratory 2.03 (Telematics Laboratory) of the Ada Byron Building. These sessions allow students to address aspects related to the theoretical concepts presented in lectures, in a more practical manner **.**
- **Individual tutorial sessions** .
- **Evaluation on the course programme** . Theory and practice tests, as well as reporting or questionnaires used in the evaluation of student's progress tests. The details of the evaluation are in the "evaluation activities" section.
- **Personal work of the student** .

5.3.Program

Learning activities are organized in the following units:

Internet Architecture: limitations and trends . Organization. Peering models: problems and related costs. Network architecture: challenges and/or problems. New trends in network architectures.

IP multimedia communications . Architecture and protocols. Requirements and classification of multimedia applications. Multimedia transport. Multimedia sessions. Session control. IP Multimedia Subsystem.

Multicast communications . Protocols and services Routing. Tunneling: protocols and mechanisms. Multicast and tunneling in design, planning and deployment of multimedia networks.

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

IP mobility . Problems and solutions. New trends in IP mobility.

5.4.Planning and scheduling

The timetable of the subject will be published by the EINA in the academic calendar of the corresponding course.

Scheduled dates of the activities will be indicated well in advance by the teacher.

5.5.Bibliography and recomended resources
- As own subject material is provided:
o Notes (slides).
o Laboratory Notes.
o Collection of problems.
- As basic bibliography is recommended:
o James F. Kurose, "Computer networking a top-down approach featuring the Internet". Boston Pearson-Addison Wesley.
o Andrew S. Tanenbaum, David J. Wetherall, "Computer Networks". Prentice-Hall.
o Daniel Minoli, "IP Multicast with Applications to IPTV and Mobile DVB-H". Wiley Interscience.
o Sanjay Jha; Mahbub Hassan, "Engineering Internet QoS". Artech House
o Gonzalo Camarillo; Miguel A. García-Martín: The 3G IP multimedia subsystem (IMS), Wiley.
o *Request for Comments* (RFCs) from the IETF

The materials of the subject will be available in the web space of the subject (Note: the access will be limited to the students of the subject).