

60957 - Heterogeneous networks

Syllabus Information

Academic Year: 2020/21

Subject: 60957 - Heterogeneous networks

Faculty / School: 110 - Escuela de Ingeniería y Arquitectura

Degree: 623 - Master's Degree in Telecommunications Engineering

ECTS: 6.0

Year: 1

Semester: First semester

Subject Type: Compulsory

Module: ---

1.General information

1.1.Aims of the course

1.2.Context and importance of this course in the degree

1.3.Recommendations to take this course

2.Learning goals

2.1.Competences

2.2.Learning goals

2.3.Importance of learning goals

3.Assessment (1st and 2nd call)

3.1.Assessment tasks (description of tasks, marking system and assessment criteria)

4.Methodology, learning tasks, syllabus and resources

4.1.Methodological overview

The teaching-learning methodologies to be undertaken to achieve the proposed learning results are as follows:

Participatory lecture (46 hours). Presentation by the teacher of the main contents of the subject, combined with the active participation of students. This methodology, supported with the individual student's study is designed to provide students with the theoretical foundations of the subject content.

Problem-based learning sessions in the classroom (14 hours). Problem solving and practical cases proposed by the teacher, with the possibility of exposing them by students individually or in groups authorized by the teacher. This activity will take place in the classroom in person, and may require preparatory work by students.

Tutored practical works (20 hours). This activity will advance all proposed learning outcomes. Follow-up sessions will be conducted by the teacher in which each student will present their work.

Personalized attention to students through tutorials.

Assessment tests.

Personal work of the student.

4.2.Learning tasks

1. Theoretical/practical sessions in the classroom practices, whose main contents are organized is described in detail in the next section.
2. Tutored practical work aimed at solving practical cases analysis, design, dimensioning and planning of access networks by applying techniques and procedures seen in theoretical and problem sessions. The evolution of the work will be presented periodically to the teacher and an explanatory final report of solving methodology followed by the student and justification of the proposed solution will be delivered.

4.3.Syllabus

Block 0. Introduction.

- Presentation of the subject.
- Evolution of mobile and wireless communication sector. Principles and evolution of the air interface of cellular communication systems. Key features of 4G systems and new generation systems.
- Standardisation activities.

Block 1. Mobile networks

- Architecture reference models. Functional elements, interfaces and protocols.
- Basic procedures. Session management,, mobility management, multicast services management,....
- Radio interface. Overall functional split, radio protocol architecture. Services, functions and main procedures.
- Quality of service provision, radio resource management and radio spectrum management

Block 2. New scenarios of operation. Heterogeneous network deployments and evolution towards 5G

- Evolution of 4G mobile networks and adaptations to new service contexts. 5G evolution.
- New scenarios of integration, interoperation and coexistence of heterogeneous wireless networks.
- Deployments for IoT solutions.

4.4.Course planning and calendar

The schedule of the course will be defined by the EINA in the academic calendar of the corresponding course.

4.5.Bibliography and recommended resources

http://biblos.unizar.es/br/br_citas.php?codigo=60957&year=2020