60922 - Heterogeneous networks

Syllabus Information

Academic Year: 2019/20
Subject: 60922 - Heterogeneous networks
Faculty / School: 110 -

Degree: 533 - Master's Degree in Telecommunications Engineering

ECTS: 5.0
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 methodology followed in this course is oriented towards achievement of the learning objectives. A wide range of teaching and learning tasks are implemented, such as lectures (M1), practice sessions (M8), lab sessions (M9), assessment (M11), tutorials (M10), autonomous work and study (M14 and M15).

4.2.Learning tasks

The course includes the following learning tasks:

- **A01 Lectures** (28 hours). classroom activity for instructors to present the theoretical contents.
- **A02 Practice sessions** (8 hours). Problem-solving and case studies will take place in the classroom and they may require previous work from the students.
- **A03 Laboratory sessions** (14 hours). Sessions of two hours that will take place in Lab 2.04 (Telematics Lab) in the Ada Byron building. It will be done in small groups and may require previous work from the students.
- **A06 Tutorials** (6 hours). Office hours adapted to the students with the objective of revising and discussing materials and concepts presented in both lectures and labs.

- **A07 Autonomous work** (66 self-learning hours). Preparation of the practice sessions, lectures, problem-solving exercises, and study.
- **A08 Assessment** (3 hours). A set of written tests (theoretical and practical) and submission of reports.

4.3.Syllabus

The course will address the following topics:

1. General concepts and architecture paradigms   .
      Heterogeneity in current wireless systems.
      Architecture of wireless networks.
      Multi-hop wireless networks: routing.
      Wireless sensor, mesh and vehicular networks. Applications and services.
3. Case study: wireless sensor networks.
      Hardware considerations.
      Medium Access control: IEEE 802.15.4 standard.
      Zigbee and 6LowPAN
      COAP
5. Planning and optimization in heterogeneous networks.
      Optimization: linear, integer lineal and non-linear programing (LP, ILP, NLP). Uses cases.
      Game theory: applications in Wireless networks, non-cooperative games.

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

http://psfunizar7.unizar.es/br13/egAsignaturas.php?codigo=60922&Identificador=4882