Satellite and space communications

Academic Year: (2019 / 2020) **Review date: 30-04-2019**

Department assigned to the subject: Signal and Communications Theory Department

Coordinating teacher: GARCIA ARMADA, ANA

Type: Compulsory ECTS Credits : 6.0

Year : 4 Semester : 1

REQUIREMENTS (SUBJECTS THAT ARE ASSUMED TO BE KNOWN)

There are no specific requirements for this subject.

OBJECTIVES

Competencies and learning outcomes:

- Choose the most appropriate architectures and platforms for a problem of satellite or space communications
- Design orbits and locate the satellite in them
- Analyze the coverage through link budgets
- Choose the most appropriate modulations and multiple access techniques
- Integrally design a space or satellite communications system

DESCRIPTION OF CONTENTS: PROGRAMME

This course provides an overview of satellite communication systems and the background to address the integral design of this type of systems. The specificities of space communication systems for space missions, within the solar system and in outer space, are also tackled.
The subject covers the following topics:

1. Introduction. Overview of the architecture and satellite and space communications platforms
2. Orbital concepts and angles
3. Satellite subsystems, link budget and planning
4. Modulation and multiple access for satellite and space communications
5. Satellite communications standards
6. Communications systems in space missions
7. Overview of emerging systems and technologies.

LEARNING ACTIVITIES AND METHODOLOGY

The subject is developed through lectures, problems and practical cases, illustration of the concepts through simulations and personal work of the students.

ASSESSMENT SYSTEM

Continuous evaluation and final assesment test

% end-of-term-examination:	60
% of continuous assessment (assigments, laboratory, practicals…):	40

BASIC BIBLIOGRAPHY

- G. Maral, M. Bousquet "Satellite communications systems: systems, techniques and technology, John Wiley & Sons, 1998