

Academic Year: ( 2022 / 2023 )

Review date: 01/06/2021 08:51:47

Department assigned to the subject: Signal and Communications Theory Department

Coordinating teacher: MIAH , MD SIPON

Type: Electives ECTS Credits : 6.0

Year : 1 Semester : 1

## REQUIREMENTS (SUBJECTS THAT ARE ASSUMED TO BE KNOWN)

There are no specific requirements for this subject.

## OBJECTIVES

CB6, CB7, CB9, CB10

CG1, CG5

CE1, CE2, CE3, CE4, CE5, CE6, CE12

Additionally, the specific competences associated with this particular subject are indicated here:

- Know the main digital modulation schemes and radio access techniques
- Know how to carry out the high level design of a digital radio communications system and issue critical judgments about the suitability of each of the subsystems.

This subject will allow the student to know the following contents:

- Global vision of radio communication systems for terrestrial and space applications.
- Architectures and key technologies in radio communications systems.
- Modulation formats and most suitable receivers for different types of channels.

## DESCRIPTION OF CONTENTS: PROGRAMME

This subject presents a global vision of the radiocommunication systems, presenting the architectures and key technologies and how these are integrated into the new communication systems, both terrestrial and spatial.

Topic 1: Introduction to radiocommunication systems: link balance, architectures and quality of service.

Topic 2: Modulations and access techniques.

Topic 3: Terrestrial communication systems.

Topic 4: Space communication systems.

## LEARNING ACTIVITIES AND METHODOLOGY

The following training activities are included:

AF1 Theoretical practical classes

AF2 Laboratory practices

AF3 Tutorials

AF4 Group work

AF5 Individual student work

AF6 Partial and final exams

## ASSESSMENT SYSTEM

<b>% end-of-term-examination/test:</b>	0
<b>% of continuous assessment (assignments, laboratory, practicals...):</b>	100

The subject is evaluated from:

- Block-content exams
- Individual or group assignment carried out during the course
- Final exam

The assessment of the extraordinary evaluation is based on a final exam.

## BASIC BIBLIOGRAPHY

- Erik Dahlman Stefan Parkvall Johan Skold 5G NR: The Next Generation Wireless Access Technology, Academic Press, 2018
- G. Maral, M. Bousquet "Satellite communications systems: systems, techniques and technology", John Wiley & Sons, 1998
- H. Holma And A. Toskala ¿LTE for UMTS: Evolution to LTE-Advanced¿, John Wiley & Sons, 2011
- Rappaport, Theodore S "Wireless Communications", Prentice Hall, 1996

## BASIC ELECTRONIC RESOURCES

- . 3GPP Specifications: [http:// http://www.3gpp.org/specifications](http://www.3gpp.org/specifications)
- . 3GPP Releases: <http://www.3gpp.org/Releases>