# Broadband mobile communications

**Academic Year: ( 2019 / 2020 )** **Review date: 02-05-2019**

**Department assigned to the subject:**

**Coordinating teacher: FERNANDEZ-GETINO GARCIA, MARIA JULIA**

**Type: Electives ECTS Credits : 6.0**

**Year : 1 Semester : 2**

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

Digital Communications

## OBJECTIVES

Knowledge of the different service classes defined for current broadband communication systems and the basic QoS parameters.
Knowledge of the alternatives for the design of high spectral efficiency modulation and access techniques.
Knowledge of the precoding schemes for MIMO systems based on Channel State Information.
Implementation of these precoding schemes in Massive MIMO.The role of Massive MIMO in the future cellular network

## DESCRIPTION OF CONTENTS: PROGRAMME

1. The new scenario of broadband communications. LTE
2. High spectral efficiency modulations and access techniques.
3. Channel estimation, correction and synchronization strategies for the network design.
4. Large scale antenna systems. Massive MIMO systems in the future cellular network.
5. Advanced Techniques for broadband mobile communications.

## LEARNING ACTIVITIES AND METHODOLOGY

Theoretical lectures, numerical examples, problem solving and laboratory simulation practical work.

## ASSESSMENT SYSTEM

Continuous assessment of theoretical and practical excercises and oral presentation of a final project.

The final grade in the extraordinary call will consist of an exam plus the presentation of the practical exercises and the final project.

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| **% end-of-term-examination:** | 0 |
| **% of continuous assessment (assigments, laboratory, practicals…):** | 100 |

## BASIC BIBLIOGRAPHY

- Harri Holma, Antti Toskala LTE for UMTS: Evolution to LTE-Advanced, Wiley, 2011

- Ye Geoffrey Li, Gordon L. Stuber Orthogonal Frequency Division Multiplexing for Wireless Communications, Springer US, 2006