Course guide
230724 - AI5G - Artificial Intelligence-Enabled 5G Radio Networks

Last modified: 11/04/2025

Unit in charge:	Barcelona School of Telecommunications Engineering
Teaching unit:	739 - TSC - Department of Signal Theory and Communications.

Degree:	MASTER'S DEGREE IN TELECOMMUNICATIONS ENGINEERING (Syllabus 2013). (Optional subject). MASTER'S DEGREE IN ADVANCED TELECOMMUNICATION TECHNOLOGIES (Syllabus 2019). (Optional subject).

Academic year: 2025   **ECTS Credits:** 5.0   **Languages:** English

LECTURER

Coordinating lecturer: JOSE ORIOL SALLENT ROIG

Others:

PRIOR SKILLS

Fundamentals on radiocommunications

TEACHING METHODOLOGY

Use case-oriented

LEARNING OBJECTIVES OF THE SUBJECT

The main objective of this subject is to gain insight, understand the underlying technological foundations & market forces so that one can guess where 5G & AI will be in Gartner's Technology Forecast 2025.

STUDY LOAD

Type	Hours	Percentage
Self study	86,0	68.80
Hours large group	39,0	31.20

Total learning time: 125 h

CONTENTS

ARTIFICIAL INTELLIGENCE-ENABLED 5G RADIO NETWORKS

Description:
1. 5G ecosystem

2. 5G system design

3. 5G New Radio

4. Radio network management in NG-RAN

5. Radio resource management in NG-RAN

6. Telemetry and data analytics

Specific objectives:
1. 5G ecosystem

2. 5G system design

3. 5G New Radio

4. Radio network management in NG-RAN

5. Radio resource management in NG-RAN

6. Telemetry and data analytics

Full-or-part-time: 39h
Theory classes: 39h

GRADING SYSTEM

Practical use case (80%)
Participation (20%)
No final exam

BIBLIOGRAPHY

Basic:
- Wang, Jingjing... [et al.]. "Thirty Years of Machine Learning: The Road to Pareto-Optimal Wireless Networks". IEEE Communications Surveys & Tutorials, 2020 [on line]. [Consultation: 08/06/2022]. Available on: https://ieeexplore-ieee-org.recursos.biblioteca.upc.edu/stamp/stamp.jsp?tp=&arnumber=8957702.