

Course guide

300123 - ADVPROJ - Advanced Experimental Projects in Connected Systems

Last modified: 04/07/2026

Unit in charge: Castelldefels School of Telecommunications and Aerospace Engineering
Teaching unit: **Degree:** MASTER'S DEGREE IN ARTIFICIAL INTELLIGENCE FOR CONNECTED INDUSTRIES (AI4CI) (Syllabus 2025). (Compulsory subject).

Academic year: 2026 **ECTS Credits:** 6.0 **Languages:** English

LECTURER

Coordinating lecturer: Luis Alomso-Zárate
Others: Luis Alomso-Zárate and other UPC professors

PRIOR SKILLS

IP routing and addressing.
SDN and NFV architectures.
Network security protocols.
Wireless mobile networks.

REQUIREMENTS

IP routing and addressing.
SDN and NFV architectures.
Network security protocols.
Wireless mobile networks.

TEACHING METHODOLOGY

Continuous reporting, oral exams and report evaluation.

LEARNING OBJECTIVES OF THE SUBJECT

Experiment and acquire novel network technologies using testbed and emulation platforms, technologies recently adopted in enterprise, data-center, personal, deployable and Internet network architectures.

STUDY LOAD

Type	Hours	Percentage
Hours large group	54,0	36.00
Self study	96,0	64.00

Total learning time: 150 h



CONTENTS

Advanced Experimental Projects on Connected Systems

Description:

The proposed projects consist in the design and experimentation of a software network application, in the emulation of an advanced realistic novel network setting, in the deployment of an experimental network platform. The projects are an opportunity for the participants to acquire team working experience, project management, technical report writing, oral presentation, and to acquire valuable experience on novel network technologies.

Every project is advised by a responsible and the evaluation is individualized by the evaluation committee. The participants can form groups and directly contact the course response and the tutors of the projects they are interested in, based on a published list.

The projects can cover, among others, the following subjects:

Connected robotics and automated industrial systems.

Software networks and virtualization: NFV (Network Functions Virtualization) protocols and architectures, Cloud IaaS (Infrastructure as a Service), SDN (Software Defined Networking), their orchestration and platforms.

IoT (Internet of Things) and embedded systems, protocols, orchestration and their network and cloud integration.

Network security: protocols, anomaly detection, attack emulation, evaluation of attack mitigation strategies.

Wireless and mobile networks: WiFi and its evolutions, cellular networks, sensor networks and protocols.

Full-or-part-time: 150h

Theory classes: 10h

Self study : 140h

GRADING SYSTEM

Continuous reporting, oral exams and report evaluation.