Course guide
300110 - STCAPAI - Applied Artificial Intelligence

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). (Optional subject).

Academic year: 2026 **ECTS Credits:** 3.0 **Languages:** English

LECTURER

Coordinating lecturer: Daniele Mioriandi (Affliant)

Others: Daniele Mioriandi (Affliant)

PRIOR SKILLS

Working knowledge of Python.
Working knowledge of standard Python ML/DL libraries (sklearn, pytorch).
Understanding of core ML/DL concepts (model, methods, training, performance evaluation, overfitting etc.).

REQUIREMENTS

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TEACHING METHODOLOGY

Lectures, assignment, autonomous work, project

LEARNING OBJECTIVES OF THE SUBJECT

This course introduces students to the practical applications of artificial intelligence (AI) across various industrial domains. Through a combination of lectures, hands-on projects, and case studies, students will gain the knowledge and skills necessary to develop and deploy AI solutions to solve real-world problems. Topics covered will include AI models and methods, practices for operating ML-powered solutions, usage of LLMs and ethical considerations in AI.

STUDY LOAD

Type	Hours	Percentage
Hours large group	27,0	36.00
Self study	48,0	64.00

Total learning time: 75 h

CONTENTS

Applied Artificial Intelligence

Description:
The course covers the following topics:

1- Introduction to Applied Artificial Intelligence
Overview of AI applications in different industries.
Ethical considerations and responsible AI practices.

2- Brief recap: Foundations of Machine Learning/Deep Learning
Supervised, unsupervised, and reinforcement learning.
Classification, regression, forecasting.
Training, fine tuning and overfitting.
Performance evaluation of ML/DL models.

3- Domains: computer vision, natural language processing, sequential data.
AI Deployment and Integration
Model deployment strategies.
Introduction to cloud-based AI services.
Integrating AI models into applications and systems.

4- Case Studies and Project Work
Analysis of real-world AI applications across industries.
Team project: Design and implementation of an AI solution for a specific use case.

5- Project Presentation and Wrap-Up.
Final project presentations by student groups.

6- Reflection on key learnings and future directions in applied AI.

Full-or-part-time: 75h
Theory classes: 27h
Self study : 48h

GRADING SYSTEM

Project work; a project assignment to perform after the STC execution will also be evaluated.