

Course guide

300118 - DEEPL - Pattern Recognition and Deep Learning

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:** 6.0 **Languages:** English

LECTURER

Coordinating lecturer: Friedhelm Schwenker (Univ. Ulm)

Others: Friedhelm Schwenker (Univ. Ulm)

PRIOR SKILLS

Machine Learning

REQUIREMENTS

Machine Learning

TEACHING METHODOLOGY

Lectures, assignments, lab

LEARNING OBJECTIVES OF THE SUBJECT

Students acquire knowledge about different methods and algorithms of pattern recognition and deep artificial neural networks. In exercises, students are able to implement the basic algorithms, will apply pattern recognition principles to technical applications, and learn how to evaluate the performance of classifiers.

STUDY LOAD

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

Total learning time: 150 h



CONTENTS

Pattern Recognition and Deep Learning

Description:

In this course the basic topics on statistical pattern recognition and deep neural networks are introduced:

Introduction to statistical and neural pattern recognition

Linear and nonlinear classifiers

Kernel methods and learning deep neural network

Feature extraction, selection, and reduction

Applications and system performance evaluation

Full-or-part-time: 150h

Theory classes: 54h

Self study : 96h

GRADING SYSTEM

Oral exam