

# COURSE DETAIL

## ARTIFICIAL INTELLIGENCE

**Country**

Italy

**Host Institution**

University of Padua

**Program(s)**

Psychology and Cognitive Science, Padua

**UCEAP Course Level**

Upper Division

**UCEAP Subject Area(s)**

Psychology Computer Science

**UCEAP Course Number**

120

**UCEAP Course Suffix****UCEAP Official Title**

ARTIFICIAL INTELLIGENCE

**UCEAP Transcript Title**

ARTIFICIAL INTELLIG

**UCEAP Quarter Units**

5.00

**UCEAP Semester Units**

3.30

## Course Description

This course presents the theoretical and computational foundations of brain-inspired artificial intelligence. The focus is on machine learning based on artificial neural networks, from simple models up to state-of-the-art deep learning models. The final part of the course introduces the use of neural networks as models of perception and cognition. Laboratory classes introduce students to computer simulations with artificial neural networks. The course discusses topics including artificial neural networks: mathematical formalism and general principles; supervised learning: perceptron, delta rule, multi-layered networks, and error backpropagation; generalization and overfitting; supervised deep learning; recurrent networks; unsupervised learning: associative memories and Hopfield networks, latent variable models, and Boltzmann machines; unsupervised deep learning; reinforcement learning; computer simulation as a research method in cognitive science; and connectionist models of perception and cognition. This course requires basic knowledge of mathematics (high school level), including notions of linear algebra, calculus, and probability, as well as knowledge of statistics and neuroscience as prerequisites for the course. Computer literacy is required for the lab practices.

### Language(s) of Instruction

English

### Host Institution Course Number

PSP5070139

### Host Institution Course Title

ARTIFICIAL INTELLIGENCE

### Host Institution Campus

### Host Institution Faculty

Psychology

### Host Institution Degree

First Cycle Degree in Psychological Science

## Host Institution Department

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