COURSE DETAIL

MACHINE LEARNING (MODULE II - DEEP LEARNING)

Country
Italy

Host Institution
University of Commerce Luigi Bocconi

Program(s)
Bocconi University

UCEAP Course Level
Upper Division

UCEAP Subject Area(s)
Computer Science

UCEAP Course Number
114

UCEAP Course Suffix

UCEAP Official Title
MACHINE LEARNING (MODULE II - DEEP LEARNING)

UCEAP Transcript Title
MACHINE LEARNING 2

UCEAP Quarter Units
6.00

UCEAP Semester Units
4.00

Course Description

This course focuses on Deep Learning (DL), with an emphasis on recent advances in Natural Language Processing (NLP). It is structured into lectures that cover the fundamental concepts of the field, complemented by practical tutorials and exercises, where these concepts are further expanded and practically implemented through live coding sessions (mainly in Python). The course is organized along the following themes: Recap of Machine Learning (ML) fundamentals; Introduction to Neural Networks and the connectionist paradigm: from the perceptron to Multi-Layer Perceptrons (MLPs), universality theorems, the backpropagation algorithm, and principles of Neural Network design; The rise of Deep Learning: Convolutional Neural Networks (CNNs), regularization techniques, and residual connections. Basics of Recurrent Neural Networks (RNNs), attention mechanisms, and Transformers; Introduction to Natural Language Processing (NLP): text preprocessing, static and contextual word embeddings, language modelling, and neural approaches to text processing—from neural machine translation to modern large language models (LLMs). Course prerequisites: solid understanding of calculus, linear algebra, probability, and statistics, along with basic prior programming experience in Python.

Language(s) of Instruction
English

Host Institution Course Number
30678

Host Institution Course Title
MACHINE LEARNING (MODULE II - DEEP LEARNING)

Host Institution Course Details
https://didattica.unibocconi.it/ts/tsn_anteprima.php?cod_ins=30678&anno=2026&Id...

Host Institution Campus
Bocconi University

Host Institution Faculty

Host Institution Degree

Host Institution Department
Computing Sciences

Course Last Reviewed
2025-2026

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