

Deep Learning

Course guide 2024-2025

Semester	Spring (semester 2)
Inholland location(s)	Amsterdam
Inholland faculty	Engineering, Design & Computing
Language of instruction	English
Cycle	Bachelor level
Number of ECTS	30

Subjects

Subject title	ECTS	Course code
Written exam	4	
Individual Assignments	8	
Individual presentation	3	
Group project	15	

Content subjects

Topics covered in lectures and assignments:

- Introduction to neural networks and deep learning
- Mathematical foundations of deep learning
- Building a basic deep learning model in Tensorflow/Keras
- Evaluating a model using Tensorflow/Keras
- Image recognition using convolutional neural networks
- Using pretrained networks
- Sequence learning using recurrent neural networks
- Text processing
- Generative deep learning

Aspects covered in the project:

- Preparing a data set for deep learning
- Selecting a model architecture and/or pretrained model
- Training a model using Tensorflow/Keras
- Optimizing a model using parameter tuning
- Evaluating the value of a model

Learning outcomes

After completing the minor the student is able to:

- Explain the working of a deep learning model
- Choose an appropriate deep learning architecture for a real-world problem
- Prepare data sets for deep learning using Python
- Train fully connected, convolutional, and recurrent deep learning models using Tensorflow/Keras
- Conduct experiments to evaluate deep learning models

Mode of delivery, planned activities and teaching methods

The Deep Learning minor spans over a period of 20 weeks, from February to June.

Contact hours: 4 days (maximum) per week at school

Prerequisites and co-requisites

The minor is open for 3rd and 4th year Bachelor students. The following skills are required:

- Python programming
- Basic statistics
- Basic algebra

Recommended or required reading and/or other learning recourses/tools

Francois Chollet, Deep Learning with Python, Manning Publications.

Assessment methods and criteria

Written exam, individual assignments, individual presentation and group project.

Lecturer(s)

To be decided.