



# DD2412 Deep Learning, Advanced Course 6.0 credits

Djupinläring, fortsättningskurs

This is a translation of the Swedish, legally binding, course syllabus.

## Establishment

The official course syllabus is valid from the autumn semester 2024 in accordance with the decision from the faculty board: J-2024-2663. Decision date: 2024-11-12

## Grading scale

A, B, C, D, E, FX, F

## Education cycle

Second cycle

## Main field of study

Computer Science and Engineering

## Specific prerequisites

Knowledge in deep learning, 6 credits, corresponding to completed course DD2424/DD2437.

Active participation in a course offering where the final examination is not yet reported in Ladok is considered equivalent to completion of the course.

Registering for a course is counted as active participation.

The term 'final examination' encompasses both the regular examination and the first re-examination.

# Language of instruction

The language of instruction is specified in the course offering information in the course catalogue.

# Intended learning outcomes

After passing the course, the students should be able to:

- explain and justify the subareas of deep learning,
- account for the theoretical background for advanced deep learning techniques,
- identify the directions in which additional research can be made to develop the field,
- implement methods based on recently published results,
- analyse advanced research in the area and critically evaluate the methods' weaknesses and strengths

in order to

- prepare for degree project/postgraduate studies in deep learning,
- become better trained to meet industry's need of key competence in the area.

# Course contents

- Deep networks.
- Probabilistic deep learning.
- Deep transfer and sharing of knowledge.
- Unsupervised deep representation learning.
- Higher order learning.
- Adversarial learning.

# Examination

- LAB1 - Laboratory work, 3.0 credits, grading scale: P, F
- PRO1 - Project assignment, 3.0 credits, grading scale: A, B, C, D, E, FX, F

Based on recommendation from KTH's coordinator for disabilities, the examiner will decide how to adapt an examination for students with documented disability.

The examiner may apply another examination format when re-examining individual students.

If the course is discontinued, students may request to be examined during the following two academic years.

## Ethical approach

- All members of a group are responsible for the group's work.
- In any assessment, every student shall honestly disclose any help received and sources used.
- In an oral assessment, every student shall be able to present and answer questions about the entire assignment and solution.