Faculty of Health, Science and Technology
Computer Science

Syllabus

Concepts for Quick Prototyping in Artificial Intelligence

Course Code:	DVAD94
Course Title:	Concepts for Quick Prototyping in Artificial Intelligence *Koncept för snabb prototypframställning inom artificiell intelligens*
Credits:	4.5
Degree Level:	Master's level
Progressive Specialisation:	Second cycle, has second-cycle course/s as entry requirements (A1F)

Major Field of Study:
DVA (Computer Science)

Course Approval
The syllabus was approved by the Faculty of Health, Science and Technology 2025-09-03, and is valid from the Spring semester 2026 at Karlstad University.

Prerequisites
Computer Science 60 ECTS credits (including Concepts for Machine Learning Practitioners 4.5 ECTS credits) or three years of work experience in the IT sector, plus upper secondary level English 6 or English level 2, or equivalent

Learning Outcomes
Upon completion of the course, students should be able to:
1. explain current trends in machine learning and artificial intelligence,
2. explain current basic deep learning algorithms,
3. apply current basic deep learning algorithms in neural networks,

4. adapt simple deep learning models,
5. develop prototypes for popular use cases,
6. document the development process of a prototype, and
7. interpret, justify, and document the results of a prototype.

Content
The course comprises two parts, a lecture component and a prototype development component.

In the first part, current trends in artificial intelligence are discussed and an introduction to deep learning is provided, with a focus on Convolutional Neural Networks and time series models. Then the course treats the tuning of existing deep learning models, with a focus on the possibilities for adaptation and available methods.

In the second part of the course, students develop a prototype to solve a problem, where the solution must be based on machine learning principles. Students are expected to interpret and document the development process and write a report on the results.

Reading List
See separate document.

Examination
Assessment is based on an individual project report and an oral presentation.

If students have a decision from Karlstad University entitling them to Targeted Study Support due to a documented disability, the examiner has the right to give such students an adapted examination or to examine them in a different manner.

Grades
One of the grades Distinction (VG), Pass (G), or Fail (U) is awarded in the examination of the course. For students in Engineering, one of the grades 5 (Pass with Distinction), 4 (Pass with Some Distinction), 3 (Pass), or U (Fail) is awarded in the examination of the course.

Quality Assurance
Follow-up relating to learning conditions and goal-fulfilment takes place both during and upon completion of the course in order to ensure continuous improvement. Course evaluation is partly based on student views and experiences obtained in accordance with current regulations and partly on other data and documentation. Students will be informed of the result of the evaluation and of any measures to be taken.

Course Certificate
A course certificate will be provided upon request.

Additional information
The local regulations for studies at the Bachelor and Master levels at Karlstad University stipulate the obligations and rights of students and staff.

The course DVAD94 cannot be included in the same degree programme as the course DVGC27.