

COURSE SYLLABUS

Tillämpad artificiell intelligens Applied Artificiell Intelligens 6 credits (6 högskolepoäng)

Course code: DV2619 Main field of study: Computer Science, Technology Disciplinary domain: Technology Education level: Second cycle Specialization: AIN - Second cycle, has only first cycle course/s as entry requirements Language of instruction: English Applies from: 2023-08-28 Approved: 2023-01-30

I. Decision

This course is established by Dean 2021-12-03. The course syllabus is approved by Head of Department of Computer Science 2023-01-30 and applies from 2023-08-28.

2. Entry requirements

Admission to the course requires 12 completed credits in programming (Python or similar), as well as 6 completed credits in data structures and algorithms.

3. Objective and content

3.1 Objective

Artificial Intelligence (AI) exists in different forms in an increasingly bigger part of the computerized systems we use - AI techniques in optimisation techniques, decision support systems, imaging algorithms, and robots. The purpose of the course is to introduce students to the field of artificial intelligence and some of its applications.

3.2 Content

The course includes a historical overview of Al-field development, with emphasis on major milestones from an application perspective. Areas covered include:

- introduction to Al,
- knowledge representation,
- expert systems,
- graphs, search and heuristics,
- agent system,
- data mining and knowledge discovery,
- machine learning, including different learning paradigms such as deep learning, and
- modern applications of AI e.g., use of AI methods in NLP, machine vision and games.

4. Learning outcomes

The following learning outcomes are examined in the course:

4.1 Knowledge and understanding

On completion of the course, the student will be able to:

- individually explain AI and key subject areas
- understand real world applications of AI
- individually reason about the potential and limits of AI methods
- individually explain ethical and sustainability-related issues

4.2 Competence and skills

- On completion of the course, the student will be able to:
- in written form communicate strengths and weaknesses of the different AI methods
- propose suitable AI method(s) for a given problem
- · design, develop and implement Al solutions to relevant problems using a programming language

4.3 Judgement and approach

On completion of the course, the student will be able to:

- critically review the potential of different AI methods
- $\ensuremath{\cdot}$ evaluate the performance of basic AI applications

5. Learning activities

The course is taught in form of lectures given in hybrid fashion (mix of distance and on-campus) which provide a foundation in knowledge-related learning, objectives, exercises, and laboratory work carried out in smaller groups, which gives students the opportunity to train general abilities and skills and approaches (according to learning objectives).

6. Assessment and grading

Modes of examinations of the course

Code	Module	Credits	Grade	
2210	On-campus Examination	3 credits	AF	
2220	Written assignment I	l credits	GU	
2230	Written assignment 2	2 credits	AF	

The course will be graded A Excellent, B Very good, C Good, D Satisfactory, E Sufficient, FX Fail, supplementation required, F Fail.

The final grade is based on a weighting of the written examination's and assignment 2's grades where the extent (in credit points) affects how weight is given to a component.

The information before a course occasion states the assessment criteria and make explicit in which modes of examination that the learning outcomes are assessed.

An examiner can, after consulting the Disability Advisor at BTH, decide on a customized examination form for a student with a long-term disability to be provided with an examination equivalent to one given to a student who is not disabled.

7. Course evaluation

The course evaluation should be carried out in line with BTH:s course evaluation template and process.

8. Restrictions regarding degree

The course can form part of a degree but not together with another course the content of which completely or partly corresponds with the contents of this course.

9. Course literature and other materials of instruction

Main Book: Artificial Intelligence: A Guide to Intelligent Systems (3rd Edition) 3rd Edition Author: Michael Negnevitsky Publisher: Addison-Wesley Utgiven: 2011 ISBN: 9781408225745 Other Materials: Artificial Intelligence – A modern approach, 4th edAuthors: Stuart Russell & Peter Norvig Publisher: Prentice Hall Utgiven: 2020, Antal sidor: 1136 ISBN-10: 0-13-461099-7

10. Additional information

This course replaces the course DV2587