



## COURSE SYLLABUS

### Tillämpad artificiell intelligens Applied Artificial Intelligence 7.5 credits (7,5 högskolepoäng)

**Course code:** DV2618

**Main field of study:** Computer Science

**Disciplinary domain:** Technology

**Education level:** Advanced level

**Specialization:** AIN - Second cycle, has only first-cycle course/s as entry requirements

**Language of instruction:** The language of instruction is English.

**Applies from:** 2022-08-29

**Approved:** 2022-03-01

#### 1. Decision

This course is established by Dean 2021-12-02. The course syllabus is approved by Head of Department of Computer Science 2022-03-01 and applies from 2022-08-29.

#### 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 AI-field development, with emphasis on major milestones from an application perspective. Areas covered include

- introduction to AI,
- 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 AI 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
- evaluate the performance of basic as well as advanced 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 outcomes).

### 6. Assessment and grading

Modes of examinations of the course

| Code | Module                | Credits     | Grade |
|------|-----------------------|-------------|-------|
| 2210 | On-campus Examination | 3 credits   | AF    |
| 2220 | Written assignment 1  | 1 credits   | GU    |
| 2230 | Written assignment 2  | 2 credits   | AF    |
| 2240 | Written assignment 3  | 1.5 credits | GU    |

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

Assignments 1 and 3 receive the grade G Pass, UX Insufficient, supplementation required, U 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 ed Authors: 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 DV2557