

Syllabus

for course at advanced level

Principles and foundations of Artificial Intelligence
Principer och grunder inom artificiell intelligens

**7.5 Higher Education
Credits**
7.5 ECTS credits

Course code:	ML270N
Valid from:	Autumn 2021
Date of approval:	2021-03-31
Department	Department of Computer and Systems Sciences
Main field:	Computer and Systems Sciences
Specialisation:	A1N - Second cycle, has only first-cycle course/s as entry requirements

Decision

This syllabus was approved by the Head of the Department 2021-03-31.

Prerequisites and special admittance requirements

15 ECTS Object-Oriented Programming and 7.5 ECTS Databases (or equivalent knowledge).
English 6.

Course structure

Examination code	Name	Higher Education Credits
PAII	Principles and Foundations of AI, assignment	3.5
PAIT	Principles and Foundations of AI, written exam	4

Course content

The course gives an introduction to AI (artificial intelligence) its principles and fundamental concepts, such as:

- search algorithms
- logic
- planning algorithms
- knowledge representation
- probability
- machine learning
- natural language processing (NLP)

Learning outcomes

Upon successful completion of the course, the student should be able to:

- describe the key concepts and principles in AI
- apply these AI concepts and principles to solve AI-problems
- describe the pros and cons of a particular solution given an AI-problem
- process complex data sets using advanced data management and data representation techniques

Education

The teaching activities in the course are: lectures and supervision sessions.
The language of instruction is English.

Forms of examination

- a. The course is examined through a written examination and assignments. The assignments must be completed and submitted by the deadlines listed in the course schedule. A missed or incomplete assignment can be re-submitted at a scheduled time window. Alternatively, the student will have to follow the schedule of next instance of the course.
- b. The final grading of the course is based on the following grading scale related to the learning outcomes of the course: A = Excellent, B = Very Good, C = Good, D = Satisfactory, E = Sufficient, Fx = Fail, F = Fail.
- c. The grading criteria are communicated to the students at the start of the course.
- d. In order to complete the whole course segment the student must obtain at least grade E (or P with Pass/Fail grades) in all course components/examinations.
If there are multiple examinations with grading A to F, the average of the grades is calculated by converting letters into numbers in the following way: A = 4, B = 3, C = 2, D = 1, E = 0. The average is calculated relatively to the number of credits of the various components/examinations and the number of credits of the course. The final grade of the course is thus a weighted average of the course components/examinations. If the average is in between two grades, 2/3 parts of the higher grade are required in order to round up the average.
- e. In addition the following regulations also apply:
 - Students who obtain grade Fx in a written examination task are allowed to complete a supplementary assignment in order to elevate the grade to E.
The examiner informs the concerned students when the results of the written examination are published. The supplementary assignment has to be submitted within a given deadline and can only be utilized to elevate the grade of the actual examination task.
 - Students who obtained grade E in an examination task are not allowed to re-write the examination or resubmit the assignment in order to obtain a higher grade.
 - Students who have failed the same examination task twice are allowed to have another examiner appointed, unless there are special reasons to the contrary.

Interim

When a course is discontinued, or its contents are substantially altered, the following applies:

- Failed examination tasks are replaced with other similar examination tasks according to a specific plan.
- If no similar examination tasks can be provided, at least three examination opportunities per examination task should be offered during a period of at least three terms from the date of the decision. After this period, no examinations should be carried out on the course.

Limitations

This course may not be included in a degree together with a course, taken in Sweden or elsewhere, of identical or partially similar content.

Required reading

Information about course literature is available on the department's website - www.dsv.su.se - at least two months before the start of the course.