

SYLLABUS

Introduction to Artificial Intelligence 7.5 credits D0030E

Introduktion till artificiell intelligens

Course syllabus admitted: Autumn 2023 Sp 1 - Present

**DECISION DATE
2022-02-11**

Introduction to Artificial Intelligence 7.5 credits D0030E

Introduktion till artificiell intelligens

First cycle, D0030E

Education level	Grade scale	Subject	Subject group (SCB)
First cycle	U G#	Datateknik	Computer Technology

Entry requirements

In order to meet the general entry requirements for first cycle studies you must have successfully completed upper secondary education and documented skills in English language + Swedish upper secondary school courses Mathematics 3b or 3c, Mathematics C.

Selection

The selection is based on final school grades or Swedish Scholastic Aptitude Test.

Course Aim

Upon course completion, the student should have the ability to:

- Describe the most common AI methods, particularly in Reasoning, Machine Learning, and Robotics .
- List existing tools which implement AI methods.
- Categorize a given real-world problem using standard concepts for defining the problem situation.
- Choose appropriate AI methods for a given real-world problem.
- Discuss ethical and sustainability issues related to AI.

Contents

The topics covered are on an introductory level : introduction to AI, introduction to neuroscience concepts, fuzzy logic, regression (linear, logistic), classification (K-NN), support vector machines (SVM), clustering (K-means), decision trees, Bayesian learning, neural networks, deep neural networks (CNN, RNN and LSTM), data cleaning, models' evaluation, features selection, AI ethics and governance.

Realization

Each course occasion's language and form is stated and appear on the course page on Luleå University of Technology's website.

Lectures will be given online and there will be available also as recorder after the completion of each lecture. Course assignments in the form of multiple-choice questions or code completion will be given after each unit (collection of lectures) is complete. Before and after the assignments are solved, there will be lectures to present and discuss different solutions. At the end of the course, a panel discussion will be organized where invited speakers from the AI field and participants will discuss about the current progress and trends of AI, its applications and the future of AI.

Participants are expected to:

- have internet connection (minimum 0,5 Mbps), microphone, Web cam
- use their personal computers during the course. The participants need to guarantee they have all administration rights on their machines in order to install and use the necessary tools during the course.

Examination

If there is a decision on special educational support, in accordance with the Guideline Student's rights and obligations at Luleå University of Technology, an adapted or alternative form of examination can be provided.

Web based course assignments to assess student abilities in understanding AI algorithms and how these can be applied to solve real life problems. The assignments will be given through out the course in order to evaluate student's course understanding and feedback will be given for the continuation of the course.

Unauthorized aids during exams and assessments

If a student, by using unauthorized aids, tries to mislead during an exam or when a study performance is to be assessed, disciplinary measures may be taken. The term "unauthorized aids" refers to aids that the teacher has not previously specified as permissible aids and that may assist in solving the examination task. This means that all aids not specified as permissible are prohibited. The Swedish version has interpretative precedence in the event of a conflict.

Course offered by

Department of Computer Science, Electrical and Space Engineering

Modules

Code	Description	Grade scale	Cr	Status	From period	Title
0001	Compulsory assignments	U G#	7.5	Mandatory	S20	

Study guidance

Study guidance for the course is to be found in our learning platform Canvas before the course starts. Students applying for single subject courses get more information in the Welcome letter. You will find the learning platform via My LTU.

Last revised

by Jonny Johansson, HUL SRT 2022-02-11

Syllabus established

by Jonny Johansson, HUL SRT 2020-06-18