Education plan

for

One Year Master's Programme in Artificial Intelligence
Magisterprogram i artificiell intelligens

60.0 Higher Education Credits
60.0 ECTS credits

Programme code:	SARIM
Valid from:	Autumn 2021
Date of approval:	2020-06-03
Department:	Department of Computer and Systems Sciences

Decision

This programme syllabus was approved by the Social Sciences Faculty Board 2020-06-03.

Prerequisites and special admittance requirements

A Bachelor degree with at least 180 ECTS.

Specific requirements: At least 22,5 ECTS of successfully completed studies in programming and at least 7,5 ECTS successfully completed studies in databases or equivalent.

Language requirements: English 6 or the equivalent.

Programme structure

The program consists of four parts with a full-time study rate for 1 year (Autumn Term and Spring Term).

The focus of the first part (Term 1a) is to give students an introduction to AI (Artificial Intelligence) principles and basic concepts such as
- AI algorithms
- machine learning
- natural language processing (NLP)
- what is intelligence
- ethics and AI, data science
- AI business applications

During the second part (Term 1b), students get to deepen their knowledge within the area of databases as well as management of big data with NoSQL databases. At the same time, they are provided with knowledge of research methodology in the subject of computer and systems sciences.

During the third part (Term 2a), students deepen their knowledge in AI. The students may choose two courses from a pool of relevant courses that both deepen and broaden their knowledge in the area.

The fourth part (Term 2b) consists of a thesis work.

Goals

In addition to the general learning goals stated in chapter 1, paragraph 9 of the Swedish Higher Education Act, the following goals according to Higher Education Ordinance are applied:

Knowledge and understanding
For a Degree of Master (60 credits) the student shall
- demonstrate knowledge and understanding in the main field of study, including both an overview of the field and specialised knowledge in certain areas of the field as well as insight into current research and development work, and
- demonstrate specialised methodological knowledge in the main field of study.

Skills and abilities
For a Degree of Master (60 credits) the student shall
- demonstrate the ability to integrate knowledge and analyse, assess and deal with complex phenomena, issues and situations even with limited information,
- demonstrate the ability to identify and formulate issues autonomously as well as to plan and, using appropriate methods, undertake advanced tasks within predetermined time frames,
- demonstrate the ability to clearly report and discuss both orally and in writing, own conclusions and the knowledge and argumentation which they are based on, in dialogue with different audiences in national and international contexts,
- demonstrate such skills that are required either for participation in research and development work or for conducting autonomous work within other qualified areas of activities.

Assessment ability and approach
For a Degree of Master (60 credits) the student shall
- demonstrate the ability to make assessments in the main field of study informed by relevant disciplinary, social and ethical issues and also to demonstrate awareness of ethical aspects of research and development work,
- demonstrate insight into the possibilities and limitations of research, its role in society and the responsibility of the individual for how it is used, and
- demonstrate the ability to identify the personal needs for further knowledge and take responsibility for own continuous learning.

In addition to the above mentioned goals, the following goals are applied:
For a Degree of Master (60 credits) the student shall
- have knowledge of basic AI principles such as machine learning, NLP and AI business applications
- be able to structure and analyze complex AI problems with the help of machine learning, NLP and programming
- be able to process complex data sets using advanced data management and representation techniques
- be able to assess the quality of AI models

Courses

All courses are in the main field of study: Computer and Systems Sciences.
The course Big Data with NoSQL Databases are a first cycle course. All the other courses are from the second cycle.

The courses described below are mandatory within the programme. The language of instruction is English.

First Semester
- Principles and foundations of Artificial Intelligence, 7,5 credits
- Data Mining in Computer and System Sciences, 7,5 credits
- Big Data with NoSQL Databases, 7,5 credits
- Empirical Research Methodology for Computer and Systems Sciences, 7,5 credits

Second Semester
- Elective courses with specialization in artificial intelligence, according to a list from the department, 15 credits
- Master's (one year) Thesis in Computer and Systems Sciences with specialization in AI, 15 credits

Degree

The programme leads to a Degree of Master of Science (60 credits) in the main field of study: Computer and Systems Sciences.
The specialization is in Artificiall Intelligence.

Misc

Admitted students, who have not completed their studies within the planned academic years, may complete the programme even after the programme syllabus has expired. In this case, the limitations stated in the syllabi for the courses included in the programme apply.