



GÖTEBORG UNIVERSITY
The Board of the IT Faculty

DIT410, Artificial Intelligence, 7,5 higher education credits

Second Cycle/A1F

This syllabus in English is a binding document.

1. Confirmation

The syllabus was confirmed by the Faculty Board of IT Faculty/The Dean on 2006-11-17 and revised on 2009-10-15 to be valid from spring semester, 2010.

Field of education: Sciences.

Responsible department: Computer Science and Engineering.

2. Position in the educational system

The course is a part of the Computer Science Master's programme and a single subject course at the University of Gothenburg.

3. Entrance qualifications

The requirement for the course is to have successfully completed a first year studies within the subject Computer Science or equivalent. Good to very good programming skills. Knowledge of "traditional" AI language such as Lisp or prolog is not necessary. The course project can be done, for example, in C, C++, Java, Haskell, Lisp or Prolog. Having taken the course DIT600 Algorithms and DIT201 Logics in Computer Science is helpful but not mandatory.

4. Course content

Artificial intelligence (AI) is a field of Computer Science the studies how computers can accomplish tasks that were traditionally thought to require human intelligence. The aim of this course is to give a deepened understanding of the possibilities and the limitations of AI methods.

The course is done in a project –oriented way. In concrete terms, this means that in the beginning of the course there is a block of eight lectures that cover the most important AI methodologies.

Current topics are:

- Introduction to AI
- Uniformed search
- Informed search
- Game search
- Machine Learning and Information Retrieval
- Logic and Deduction
- Planning
- Natural Language Dialog Systems

Starting in the third course week (and overlapping with the lectures), students choose course project where they are required to design and implement an AI agent. They can choose one of three concrete projects, typically from the subareas Planning, Machine Learning, Deduction or Natural Language Dialog Systems. The project is done in groups of 4 or 5 students.

5. Learning outcomes

After successful completion of the course participants will have obtained the following skills:

- Awareness of the most important methodologies used in the field of AI, when to use them and when to not use them. You should be able to judge what can be achieved by AI technology and what is not possible.
- In-depth knowledge of the most important systematic and heuristic general search algorithms used in AI. You should be able to judge when to use which algorithm. You should be able to program these algorithms yourself.
- Basic knowledge in the specific AI subfields of Machine Learning, Language understanding, Automatic Reasoning and Planning. You are aware of the fundamental algorithms in these areas and how they are used.
- In-depth and active knowledge in at least one of the areas mentioned in the previous item gained by a supervised group project. You should be able to read and understand research literature in the area of your specialization. You should be able to design, program, document, and evaluate a small AI-based software system on your own so that it has acceptable performance. You should be able to apply your knowledge to a new problem.

6. Required reading

See separate literature list.

7. Assessment

The course is examined by a written report.

8. Grading scale

The grades are Pass, Pass with distinction or Fail.

9. Course evaluation

The course is evaluated through meetings both during and after the course between teachers and student representatives. Further, an anonymous questionnaire can be used to ensure written information. The outcome of the evaluations serves to improve the course by indicating which parts could be added, improved, changed or removed.

10. Additional information

The course is given in English.