

Syllabus

for course at first level

Programming Paradigms
Programmeringsparadigm

7.5 Higher Education
Credits
7.5 ECTS credits

Course code:	DA3012
Valid from:	Spring 2013
Date of approval:	2012-10-08
Department	Department of Mathematics (incl. Math. Statistics)
Main field:	Computer Science
Specialisation:	G1F - First cycle, has less than 60 credits in first-cycle course/s as entry requirements

Decision

This syllabus has been approved by the Board of the Faculty of Science at Stockholm University, October 8, 2012.

Prerequisites and special admittance requirements

For course admission knowledge equivalent to the following is required: Computer Science II, 15 HECs (DA3001)(the Object Oriented part) or Object Oriented programming, 7.5 HECs (DA3002).

Course structure

Examination code	Name	Higher Education Credits
THEO	Theory	3
LABO	Practical Exercises	4.5

Course content

a. The course covers:

- Logic programming: unification, backtracking, negation and cuts as well as non-deterministic programming and block diagram.
- Functional programming: concept of function, higher-order functions, currying, strategies of evaluation, streams, pattern matching, overloading, polymorphism, interpreting and type classes.
- Imperative programming: memory management and compilation and linking.
- Internet programming.
- Language definition: syntax and semantics.
- The principles of language design: generality, orthogonality and uniformity.
- Language Translation: interpreting, compilation and linking.
- Programming principles: modularity and programming style.

b. The course consists of the following items:

- Theory, 3 HECs
- Practical Exercises, 4.5 HECs

Learning outcomes

It is expected that the student after taking the course will be able to:

- implement, use and explain unification, negation and sections, non-deterministic programming (especially within the logical paradigm),
- implement, use and explain the higher-order functions, currying, lazy evaluation, recursion, pattern matching, interpreting and type classes (especially within the functional paradigm),
- implement, use and explain memory management, and compilation and linking (especially in the imperative paradigm),
- write own client-server programs and use protocols and explain how they are interpreted and written,
- use and explain regular expressions and syntax analysis using recursive descent

Education

The education consists of lectures and practical exercises.

Participation in the practical exercises is compulsory. An examiner may rule that a student is not obliged to participate in certain compulsory education, if there are special grounds for this, after consultation with the relevant teacher.

Forms of examination

a. Examination for the course is in the following manner: measurement of knowledge of the element Practical Exercises takes place through written and oral presentations.

b. Grading is carried out according to a 7-point scale related to learning objectives:

A = Excellent
 B = Very Good
 C = Good
 D = Satisfactory
 E = Sufficient
 Fx = Fail
 F = Fail

c. Grading criteria for the course will be distributed at the start of the course.

d. A minimum grade of E is required to pass the course, together with completion of the element Theory, and participation in all compulsory education.

e. Students who receive a failing grade on a regular examination are allowed to retake the examination as long as the course is still provided. The number of examination opportunities is not limited. Other mandatory course elements are equated with examinations. A student who has received a passing grade on an examination may not retake the examination to attain a higher grade. A student who has failed the same examination twice is entitled to have another examiner appointed. Such requests should be made to the departmental board. The course has at least two examinations for each academic year in the years in which instruction is provided. Intervening years include at least one examination.

f. Students awarded the grade Fx are given the opportunity to improve their grade to E. The examiner decides the supplementary assignments to be performed and the pass mark criteria. The supplementary assignments will take place before the next examination session.

Interim

Students may request that the examination is carried out in accordance with this syllabus even after it has ceased to apply. This right is limited, however, to a maximum of three times during a two year period after course instruction has ended. Requests must be made to the departmental board. The provision also applies in the case of revisions to the course plan.

Limitations

The course may not be included in a degree together with the course Programming Paradigms, Advanced Course, 7.5 HECs (DA7002), Programming Paradigms, Advanced Course, 7.5 HECs (DA7042), or the equivalent.

Misc

The course is a component of the Master's Programme in Computer Science, and it can also be taken as an individual course.

Required reading

Course literature is decided by the departmental board and is described in an appendix to the syllabus.