Syllabus

for course at advanced level

Programming and Computer Science for Physicists
Programmering och datalogi för fysiker

7.5 Higher Education Credits
7.5 ECTS credits

Course code:	DA7011
Valid from:	Autumn 2007
Date of approval:	2006-09-27
Department	Department of Mathematics (incl. Math. Statistics)
Subject	Informatics/Computer and Systems Sciences
Specialisation:	A1N - Second cycle, has only first-cycle course/s as entry requirements

Decision

This syllabus has been approved by the Board of the Faculty of Science at Stockholm University, September 27, 2006.

Prerequisites and special admittance requirements

For course admission knowledge equivalent to Experimental Methods in Physics, FL, 12 HECs (FK3001) is required. English B, or the equivalent.

Course structure

Examination code	Name	Higher Education Credits
THEO	Theory	3
PROJ	Project	1.5
LABO	Practical Exercises	3

Course content

a. The course covers structured programming in a couple of modern programming languages e.g. Python and C. Program quality. Testing and error search. Use of library functions. Datatypes, e.g. stack, queue, tree. Computer Science algorithms, e.g. searching, sorting, recursion.

b. The course consists of the following items:
• Theory, 3 HECs
• Project, 1.5 HECs
• Practical Exercises, 3 HECs

Learning outcomes

It is expected that the student after taking the course will be able to:
• write structured programs in modern programming languages
• use abstraction as a tool to simplify programming
• describe and select an appropriate algorithm for a certain problem
• implement different datatypes
• test and debug programs

Education

The education consists of lectures, exercises, submitted work, practical exercises, project task, and

presentations.

Participation in practical exercises, submitted work, and project task 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 takes place through written and/or oral examination, written and oral group presentation of project task.

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 all practical exercises and all other compulsory education, followed by its presentation and award of a "Sufficient" grade.

e. Students who fail to achieve a pass grade in an ordinary examination have the right to take at least further four examinations, as long as the course is given. The term "examination" here is used to denote also other compulsory elements of the course. Students who have achieved a pass grade on an examination may not retake this examination in order to attempt to achieve a higher grade. Students who have failed to reach a pass grade on two occasions have the right to request that a different teacher be appointed to set the grade of the course. A request for such appointment must be sent to the departmental board.

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 occasions during a two-year-period after the end of giving the course. A request for such examination must be sent to the departmental board.

Limitations

The course may not be included in a degree together with the course Computer Science, Basic Course I (NA1030), Computer Science I, FL (DA2001).

Misc

The course is a component of the Master's Programme in Physics, the Master's Programme in Theoretical Physics, and the Master's Programme in Computational Physics, 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.