

# Syllabus

for course at first level

**Programming Techniques**  
**Programmeringsteknik**

**7.5 Higher Education**  
**Credits**  
**7.5 ECTS credits**

<b>Course code:</b>	DA2005
<b>Valid from:</b>	Autumn 2021
<b>Date of approval:</b>	2020-01-13
<b>Changed:</b>	2021-04-29
<b>Department</b>	Department of Mathematics (incl. Math. Statistics)
<b>Main field:</b>	Computer Science
<b>Specialisation:</b>	G1N - First cycle, has only upper-secondary level entry requirements

## Decision

This syllabus has been approved by the Board of the Faculty of Science at Stockholm University, January 13, 2020, and revised April 29, 2021.

## Prerequisites and special admittance requirements

Swedish upper secondary school courses English B and Mathematics C, or equivalent.

## Course structure

Examination code	Name	Higher Education Credits
INDU	Individual Assignment	3
LABO	Practical Exercises	3
THEO	Theory	1.5

## Course content

a. The course covers: Fundamental computer concepts. Programming in a modern programming language. Data structures and classes. Problem solving by dividing the problem into sub-problems. Program structuring. Several small programming exercises and one larger, individual programming exercise with emphasis on structuring and specification of the modules being used.

b. The course includes the following modules:

- Practical Exercises, 3 ECTS credits
- Individual Assignment, 3 ECTS credits
- Theory, 1.5 ECTS credits

## Learning outcomes

The expected learning outcomes are dealt with in all three course modules.

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

- follow the rules of the programming language syntax,
- apply and explain the rules of good programming style (such as user friendliness, comments, error handling, structuring, flexibility),
- detect and correct programming errors,
- modify a given program
- transfer data between files and programs,

- identify where control structures (conditionals and loops) are needed, and use these,
- split a large problem into manageable parts and construct functions for these,
- use built-in data structures and select data structures that are suitable for the current problem,
- use classes and construct new classes,
- review other people's programs,
- use other people's programs as building blocks in one's own projects,
- use tools to develop programs together with other developers,
- solve problems, independently and in groups, by designing programs of up to five hundred lines in a modern programming language.

## **Education**

The education consists of lectures and practical exercises.

The language of instruction is stated before each course opportunity and is shown in the digital education catalog.

## **Forms of examination**

a. The course is examined in the following manner:

Assessment of module Practical Exercises takes place through written and oral presentation.

Assessment of module Individual Assignment takes place through written and oral presentation.

Assessment of module Theory takes place through written examination.

The examiner can decide on adapted or alternative examination formats for students with disabilities.

Late submission of Individual assignment has consequences for the course's final grade, which is further described in the course's grading criteria. If the teaching is in English, examination may also be conducted in English.

b. For passing the final grade, participation in the examination of practical exercises is required and individual information on peer assessment is used. If special reasons exist, the examiner may, after consultation with the relevant teacher, grant the student exemption from the obligation to participate in certain compulsory teaching. Some campus presence may be required for presentation of practical exercises and individual assignment.

c. Grading: The course's final grade is set according to a seven-point criterion-referenced scale:

A = Excellent

B = Very Good

C = Good

D = Satisfactory

E = Sufficient

Fx = Failed, some additional work is required

F = Failed, much additional work is required

Grading of the module Practical Exercises is set according to a 2-point scale:

G = Pass

U = Fail

Grading of the module Individual Assignment is set according to the seven-point criterion-referenced scale.

Grading of the module Theory is set according to the seven-point criterion-referenced scale.

For a passing the course, a pass grade is required for all course modules. The final grade of the course is set by weighing the grades on the modules Theory and Individual Assignment, where the grades of the different parts are weighted in relation to their scope.

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

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, unless there are special reasons to the contrary. Such requests should be made to the department board. The course normally includes three examination opportunities per academic year the course is offered. For the academic years that the course is

not offered, at least one examination opportunity is offered.

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 be conducted in accordance with this course plan even after it has ceased to be valid. However, this may not take place more than three times over a two-year period after the course was discontinued. Requests must be made to the department board. The provision also applies in the case of revisions of the course syllabus and revisions of the required reading.

### **Limitations**

The course may not be included in a degree together with the course Computer Science I, 15 ECTS credits (DA2001), Programming Techniques for Mathematicians, 7.5 ECTS credits (DA2004), Programming Techniques, 7.5 ECTS credits (DA2003), Programming, Numerical Methods and Statistics for Physicists, 15 ECTS credits (FK4026), or the equivalent.

### **Misc**

The course is a single subject course.

### **Required reading**

Course literature is decided by the department board and published on the department's web site at least 2 months prior to course start.