

# Syllabus

for course at first level

**Low Level Programming and Computer Architecture**  
**Maskinnära programmering och datorarkitektur**

**6.0 Higher Education  
Credits**  
**6.0 ECTS credits**

<b>Course code:</b>	DA3020
<b>Valid from:</b>	Spring 2019
<b>Date of approval:</b>	2018-05-14
<b>Department</b>	Department of Mathematics (incl. Math. Statistics)
<b>Main field:</b>	Computer Science
<b>Specialisation:</b>	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, May 14, 2018.

## Prerequisites and special admittance requirements

For course admission knowledge equivalent to Computer Science for Mathematicians, FL, 7.5 HEC (DA3018) or Object Oriented Programming, FL, 7.5 HEC (DA3002) is required.

## Course structure

Examination code	Name	Higher Education Credits
LABO	Practical Exercises	4.5
THEO	Theory	1.5

## Course content

- a. The course covers:
- Different forms of data and how they are represented in the computer: numbers, text and computer programs.
  - Machine code and assembler programming.
  - The architecture of computers.
  - CISC and RISC.
  - Execution, Pipelining.
  - The memory hierarchy from register to hard disk.
- b. The course consists of the following items:
- Theory 1.5 HECs
  - Practical Exercises 4.5 HECs

## Learning outcomes

Expected learning outcomes for part 1 Practical Exercises, and part 2 Theory: It is expected that the student after taking the course will be able to describe how:

- data and computer programs are stored on the computer,
- computer programs are executed on different levels,
- computers interpret and execute machine code,

- computers are constructed.

The student shall also be able to read, understand, and write assembler programs.

### **Education**

The education consists of lectures.

### **Forms of examination**

a. Examination for the course is in the following manner: Measurement of knowledge of unit 1 Practical Exercises, takes place through written and oral presentations, and of unit 2 Theory, of written examination.

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. In order to pass the course, students must receive a passing grade on all course units. The final grade on the course is determined by weighting the grades from all course units, where each grade is weighted in relation to the scope of the course unit.

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 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 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. 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 Computer Architecture and Low Level Programming, Advanced Course (DA7009).

### **Misc**

The course is an individual course. Instruction is provided by KTH EECS (the School of Electro Technology and Computer Science).

### **Required reading**

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