

SYLLABUS

Introduction to programming for engineers 7.5 credits D0017E

Introduktion till programmering för ingenjörer

Course syllabus admitted: Autumn 2023 Sp 1 - Present

**DECISION DATE
2023-02-15**

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Introduktion till programmering för ingenjörer

First cycle, D0017E

Education level	Grade scale	Subject	Subject group (SCB)
First cycle	G U 3 4 5	Datalogi	Computer Technology

Main field of study

Engineering Physics and Electrical Engineering

Entry requirements

In order to meet the general entry requirements for first cycle studies you must have successfully completed upper secondary education and documented skills in English language + Swedish upper secondary school courses Mathematics 3c or Mathematics D.

Selection

The selection is based on final school grades or Swedish Scholastic Aptitude Test.

Course Aim

After the course, the student will be able to

- Demonstrate knowledge of proven experience in design and construction of imperative programs and capacity to plan and carry out advanced tasks in the form of implementation of imperative programs designed to solve specific technical problems
- Demonstrate the ability to model problems and to identify and formulate solutions in a modern imperative language
- Demonstrate the ability to critically analyze and evaluate technical solutions in the form of existing programs in imperative languages, as well as predict and evaluate sequences of events in these

Contents

- Introduction to program development and development environments.
- Variables and program states, choice, iteration, recursion.
- Arithmetic and logic expressions, strings, text processing and memory management.
- Generalization, parameterization and function abstraction.
- Dynamic data structures, the file concept, standard libraries and error handling.
- References and pointers vs. values.
- Introduction to objects.
- Problem solving, program structure and documentation.

Realization

Each course occasion's language and form is stated and appear on the course page on Luleå University of Technology's website.

The teaching and learning activities in this course consist of lectures, tutorials, and laboratory work. All these activities happen at least once each week during the learning period.

Lectures deal with theoretical aspects of the subject. They are either delivered in class or online. The lectures maybe delivered as a recorded material too.

Tutorials are instructor guided practical sessions. During a tutorial session, few programming problems are given to the class, for each question 5 – 10 minutes is given for the class to try the solution (usually by writing in a notebook). After this, the instructor then shows how to solve the problem, linking it to the theory from the lectures. The tutorials are held in a classroom.

Laboratory work consists of actual programming done on a computer in a laboratory. The students will solve fixed chapter exercises from the course/literature book. The laboratory work is marked. Please see the Examination section for more details.

Optionally, during the course, a guest lecture may be held by a company in order to demonstrate how software development is performed in the industry.

Examination

If there is a decision on special educational support, in accordance with the Guideline Student's rights and obligations at Luleå University of Technology, an adapted or alternative form of examination can be provided. There will be two parts in the exam, Laboratory work and written exam.

Laboratory work consists of solving book exercises and solving two assignments with report writing. Both book exercises part and the assignment part may include an oral presentation to a lab supervisor.

Unauthorized aids during exams and assessments

If a student, by using unauthorized aids, tries to mislead during an exam or when a study performance is to be assessed, disciplinary measures may be taken. The term "unauthorized aids" refers to aids that the teacher has not previously specified as permissible aids and that may assist in solving the examination task. This means that all aids not specified as permissible are prohibited. The Swedish version has interpretative precedence in the event of a conflict.

Overlap

The course D0017E is equal to SMD180, D0019N, SMD134, D0014E, D0009E, SMD170, D0017D, D0028E, L0002B

The course is equal to the course D0009E and SMD180

Course offered by

Department of Computer Science, Electrical and Space Engineering

Modules

Code	Description	Grade scale	Cr	Status	From period	Title
0003	Written exam	G U 3 4 5	4.5	Mandatory	A21	
0004	Laboratory work	G U 3 4 5	3	Mandatory	A21	

Study guidance

Study guidance for the course is to be found in our learning platform Canvas before the course starts. Students applying for single subject courses get more information in the Welcome letter. You will find the learning platform via My LTU.

Last revised

by Robert Brännström 2023-02-15

Syllabus established

by Jonny Johansson, HUL SRT 2012-03-13