SYLLABUS

Computer and engineering science 7.5 credits D0015E

Datateknik och ingenjörsvetenskap

Course syllabus admitted: Autumn 2023 Sp 1 - Present

DECISION DATE
2023-02-15

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LULEÅ TEKNISKA UNIVERSITET

Computer and engineering science 7.5 credits D0015E

Datateknik och ingenjörsvetenskap

First cycle, D0015E

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

Main field of study

Computer Science and 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

This course provides an understanding of the vast area of Computer Science and Engineering and its role in the modern Information Society. We study its relation to Engineering Science and how it relates to and is used in business and academia. Integral parts focus in on problem solving and engineering. After the course, the student

1. can define the area of Computer Science and Engineering, in particular with relation to other engineering disciplines but also Engineering Science in general by demonstrating an ability to integrate knowledge critically and systematically;
2. is able to solve small technical problems by using computers based on proven experience;
3. can identify and handle computer components, programs, and common computer equipment, in order to change the performance and function of a computer;
4. knows about the main history of the area of Computer Science and Engineering and can discuss the consequence the area has on the development of modern technology, sustainability, integrity, the equality of opportunity between women and men, and internationalization by demonstrating an ability to make assessments informed by relevant disciplinary, social and ethical aspects;
5. can account for how engineers with a degree in the area of Computer Science and Engineering work, what their typical work tasks are and what methods they use in research, development, and administration, and show insight into current research and development work;
6. is familiar with and can make use of modern computer-based technology for both spoken and written communication and collaboration over computer networks, and demonstrating a capacity for teamwork and collaboration with various constellations;
7. can plan and use appropriate methods to complete his/her own studies as well as advanced tasks within predetermined parameters for a successful academic career within the broad area of Computer Science and Engineering.

Contents

Computer Science and Engineering as a subject area, its history, distinctive character, artifacts (like programs, programming languages, digital electronics etc but also theoretical models, problems, and solutions), use, and effects. Engineering Science. The role and toolbox of an engineer in Computer Science and Engineering. Computers. Programming. Problem, model, algorithm, analysis, implementation, verification. Study technique. Techniques for performing interviews. Information retrieval and how to report and present scientific work.

Realization

Each course occasion´s language and form is stated and appear on the course page on Luleå University of Technology's website.
The course consists of lectures, educational study visits, field trips, lab assignments, and project work. It is divided into the following 10 sections (A, C-J, K-L) each of which is devoted to a well-defined question and problems to solve in connection with that question:

A – The computer
C – Introduction to computer systems
D – Texts and LaTeX
E – The history of computers and computing
F – The web and HTML
G – Ongoing research at the department
H - Embedded systems
I – Some research topics in Computer Science
K – The future of Computer Science and Engineering
L – The professional engineer in the field of Computer Science

Some modules take place simultaneously. Some problems are investigative in nature while others involve problem solving with computers or pen and paper. Computers and various software are used throughout the course. The problems highlight various aspects of the area of Computer Science and Engineering as well as Engineering Science in general, and are carried out in connection with on-going research projects at the department of Computer Science, Electrical and Space Engineering.

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.

Continuous examination throughout the course involving theoretical as well as practical problems. Although some problems require students to work together in groups, grades are individual. Participation on presentations, field trips, visits and other joint activities is mandatory.

Examination take place as follows:

1. Written reports. Presentations based on interviews of researchers.
2. Written lab reports. Lab demonstrations.
3. Lab demonstrations.
4. Group presentations based on a) information acquired and analyzed by the group itself, and b) interviews of researchers. Written test.
5. Written reflection based on study visits at companies. Presentations based on interviews of researchers.
6. Written lab reports. Lab demonstrations.
7. Written reports.

The final grade is computed from the results obtained on the individual examinations.

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 D0015E is equal to R0007R, F0051T

Course offered by

Department of Computer Science, Electrical and Space Engineering

Modules

Code	Description	Grade scale	Cr	Status	From period	Title
0006	Laboratory work (CDF)	U G#	1.5	Mandatory	A11	
0008	Presentation (GK)	U G#	1.5	Mandatory	A11	
0009	Written exam (E)	G U 3 4 5	1	Mandatory	A11	
0010	Report (I)	G U 3 4 5	1	Mandatory	A11	
0012	Laboratory work and demonstration (AH)	U G#	1.5	Mandatory	A21	
0013	Reflection (L)	G U 3 4 5	1	Mandatory	A23	

Study guidance

http://www.sm.luth.se/csee/courses/d0015e/

Last revised

by Robert Brännström 2023-02-15

Syllabus established

by the Department of Computer Science and Electrical Engineering 2008-03-19