Course syllabus

Datorteknik
Computer Organization

EITF70, 6 credits, G2 (First Cycle)

Valid for: 2023/24
Faculty: Faculty of Engineering, LTH
Decided by: PLED C/D
Date of Decision: 2023-04-18

General Information

Main field: Technology.
Compulsory for: D2, E3
Elective for: C4, F4, I4, Pi4
Language of instruction: The course will be given in Swedish

Aim

The course aims at giving an introduction to how a computer systems works on the machine language and hardware level.

Learning outcomes

Knowledge and understanding
For a passing grade the student must

- Understand the function of a computer system and its parts
- Understand the interconnection between hardware, machine language, and high-level language
- Understand the basic operating systems and how a computer system can communicate with the external world

Competences and skills
For a passing grade the student must

- Have some skills and experience in programming on a machine language level
- Be able to analyze simple designs of systems where computer systems are used as system components
- Be able to analyze and evaluate different solutions for programming on a machine

language level

Judgement and approach
For a passing grade the student must

• Show an insight into possibilities and limitations of computer organization

Contents

The course gives an introduction to the basic function of a computer system on a machine language level. Among the topics are data representation, basic computer arithmetic, the components and functions of a computer system, basic machine language level programming techniques, and the hardware support needed for these, for example, different addressing modes, stack, subroutines, and interrupts. Laboratory exercises allows practical investigations, for example of program execution, debugging, and different types of communication with the external world.

Examination details

Grading scale: TH - (U,3,4,5) - (Fail, Three, Four, Five)
Assessment: The examination is performed by practical exercises, online tests and written exam. To receive a pass, that is grade 3, it is required to pass a given set of practical exercises and the online tests which is executed during the course. For higher grades, that is 4 and 5, it is required, in addition to what is needed for grade 3, to pass additional practical exercises and the written test (at the end of the course).

The examiner, in consultation with Disability Support Services, may deviate from the regular form of examination in order to provide a permanently disabled student with a form of examination equivalent to that of a student without a disability.

Parts
Code: 0117. **Name:** Examination.
Credits: 3. **Grading scale:** TH. **Assessment:** Passing online tests during the course will give grade 3. For higher grades, it is required to pass the online tests and in addition pass additional excersises and examination.
Code: 0217. **Name:** Laboratory Work.
Credits: 3. **Grading scale:** UG. **Assessment:** Verbal examination as well as automatic **Further information:** All laboratory exercises are to be completed while the course is active and all laboratory exercises are to be completed within the same academic year.

Admission

Assumed prior knowledge: EDA011/EDAA50, EDA016, EDA017/EDAA55 Programming, First Course, or EDAA45 Introduction to Programming.
The number of participants is limited to: No
The course overlaps following course/s: EIT070

Reading list

• L. Hennessy, Computer Organization and Design – The Hardware/Software Interface, Morgan Kaufmann.
• Laboratory exercise manual and copies of lecture slides are available from the course portal page.

Contact and other information

Course coordinator: Per Andersson, per.andersson@eit.lth.se
Course homepage: http://www.eit.lth.se/course/eitf70