Microcomputer, Project Laboratory

Programme course

8 credits

Konstruktion med mikrodatorer, projektkurs

TSEA29

Valid from: 2017 Spring semester

Determined by
Board of Studies for Computer Science and Media Technology

Date determined
2017-01-25

Main field of study
Computer Science and Engineering, Electrical Engineering

Course level
First cycle

Advancement level
G2X

Course offered for
- Computer Science and Engineering, M Sc in Engineering
- Computer Engineering, B Sc in Engineering
- Engineering Electronics
- Information Technology, M Sc in Engineering

Entry requirements
Note: Admission requirements for non-programme students usually also include admission requirements for the programme and threshold requirements for progression within the programme, or corresponding.

Prerequisites
Basic knowledge in switching theory, electronics and computer hardware

Intended learning outcomes

The course aim is to give practical knowledge about how to use microprocessors in digital systems. The course will give experience in the design process, in how to work in a project and how to present the results of a project. After the course the student shall be able to:

- design a computer controlled machine
- analyse and structure problems in digital design
- use methods for structured design of complex digital systems
- write a requirement specification
- use knowledge from other courses
- take initiative to find and learn complementary knowledge
- execute a project according to a project model
- plan a project and to document this in project- and time plans
- follow up and modify project- and time plans
- actively support that the internal work in the project group works well.
- take initiative and find creative solutions
- present the project results orally and in written form
- use modern deveopment tools for design of hardware and software, and be aware of the abilities and limitations of these systems
- find errors in digital systems by use of modern measurement tools
- make a project reflection document and propose changes

A broader goal for the course is to develop the creativity and to give training in experimental thinking. The projects are run as realistic as possible in order to train the student for the situations that will appear in industrial projects.

The result of the project work shall:

- have good technical quality and be based on modern knowledge and design methods for digital systems.
- be documented in a project- and time plan,a requirement specification,a design specificationon and in a technical dokumentation
- be presented at a seminar
- be demonstrated
- be followed up in a project reflection document

Course content

A computer controlled machine (both hardware and software) is designed from requirement specification to a working prototype. Seminars, labs and project includes:

- Project work: plans, roles, organization, specifications, documents, the LIPS-model.
- System teory: specification, modeling, design, implementation methods.
- Digital design
- Development tools
- Measurement: logic analyser
- (Contents as described by CDIO syllabus: 2.1-2.4, 3.1, 3.2, 4.3-4.6.)

Teaching and working methods

This is a project course where the students work in groups of about six students. Each group designs and builds a digital system controlled by a number of microprocessors. The project design includes construction of both hardware and software. The project work shall follow the LIPS project model and be specified in a project plan.
The course runs over the entire autumn semester.

Examination

PRA1	Project, written and oral presentation	8 credits	U, G

Grades are given as 'Fail' or 'Pass'.

Grades

Two-grade scale, U, G

Department

Institutionen för systemteknik

Director of Studies or equivalent

Tomas Svensson

Examiner

Tomas Svensson

Course website and other links

http://www.da.isy.liu.se/undergrad/

Education components

Preliminary scheduled hours: 194 h
Recommended self-study hours: 19 h

Course literature

Additional literature

Books

Sven Eklund, *Arbeta i projekt* studentlitteratur
Tomas Svensson/Christian Krysander, *Projektmodellen LIPS* Studentlitteratur

Common rules

Regulations (apply to LiU in its entirety)

The university is a government agency whose operations are regulated by legislation and ordinances, which include the Higher Education Act and the Higher Education Ordinance. In addition to legislation and ordinances, operations are subject to several policy documents. The Linköping University rule book collects currently valid decisions of a regulatory nature taken by the university board, the vice-chancellor and faculty/department boards.

LiU's rule book for education at first-cycle and second-cycle levels is available at http://styrdokument.liu.se/Regelsamling/Innehall/Utbildning_pa_grund-_och_avancerad_niva.