Communication Systems, Project Course

Programme course

12 credits

Kommunikationssystem CDIO

TSKS05

Valid from: 2017 Spring semester

Determined by
Board of Studies for Electrical Engineering, Physics and Mathematics

Date determined
2017-01-25

Replaced by
TSKS23

Main field of study
Electrical Engineering

Course level
Second cycle

Advancement level
A1X

Course offered for
- Computer Science and Engineering, M Sc in Engineering
- Applied Physics and Electrical Engineering, M Sc in Engineering
- Communication Systems, Master's programme
- Information Technology, M Sc in Engineering
- Applied Physics and Electrical Engineering - International, M Sc in Engineering

Specific information
The Entrepreneurship part overlap with other CDIO courses and cannot be included more than once in a degree.

Exchange students may apply for the course after arrival to LiTH but before it starts. The international officer for exchange studies must be contacted before applying.

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
Signals and Systems, Signal theory, Digital Communication, and at least one or more more advanced level communication related courses, like for example Digital communication continuation course or Radio Communication. Basic computer programming skills is necessary, preferrably in an object oriented language.

Intended learning outcomes

The project shall be carried out using industrial practice, and it shall develop and consolidate competence in the following areas:

- Apply knowledge and methods from previous courses and when necessary new knowledge shall be developed.
- Integrate knowledge from different disciplines, such as communication systems, signal processing, computer programming, etc. and apply this knowledge in new contexts.
- Define requirements for the project based on preliminary specifications, and investigate the conditions under which the project work can be carried out.
- Present the project outcome for the customer and other students, whom are not expected to be experts within the fields of expertise of the students who carried out the work.
- Show the ability to, and in an independent way, manage the project work using a project model and with limited support in terms of supervision.
- Plan, implement and evaluate a project.
- Analyze and break down problems.
- Take initiative and find creative solutions.
- Actively contribute to the forming of a well functioning project group.

The result of the project work shall be:

- Of high technical quality and be based on state-of-the-art knowledge and methods in communication systems.
- Documented in terms of a project plan, a project schedule, and a technical report.
- Presented orally as well as with a poster.
- Evaluated in a review report.

A purpose for the course is also for the students to acquire knowledge and abilities within the general area of entrepreneurship, with particular focus on business planning for new ventures. After the course, students should be able to:

- account for models that describe what it takes for a new venture to have a stable basis for further development and to assess the level of development of ventures using such models; and
- account for the information and analyses needed to evaluate a development project from a business point of view and have the ability to collect and analyze relevant information for the purpose.

Course content

The project will be closely related to the ongoing research within the divisions of Communication Systems and Information Coding or to companies working in these areas. The contents of the projects will change from year to year. The two projects offered 2010 were:
1) "Peer-to-peer Video Telephony", where students built a software-defined radio communication system, consisting of programmable radio transmitters, receivers, and relays. The task was to build a communication system with as high performance as possible. A challenge is to obtain higher performance by using techniques that are not yet used in the present commercial communication standard.
2) "Receiver Models for a Java Based Radio Network", where the project group derived and implemented a receiver model in a Java based radio network simulator at Ericsson Research in Linköping.

The project members will use and apply knowledge and methods from other communication related courses.
More details about this year's project can be found on the course web page.

Teaching and working methods

Some initial lectures, followed by self studies and project work. Each project group, which is formed by 5–8 students, will be assigned a supervisor to support its work. The students also have limited help from technical experts.

Before the project work is started, the project group shall negotiate a requirement specification with the customer, and write a project plan and a time plan for the project. The project shall be carried out according to the LIPS project model. The project documents shall adhere to the templates that are part of the LIPS model.
The course runs over the entire autumn semester.

Examination

UPG1	Entrepreneurship assignements	3 credits	U, G
PRA1	Project work	9 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
Klas Nordberg

Examiner
Danyo Danev

Course website and other links
http://www.commsys.isy.liu.se/en/student/kurser/TSKS05

Education components
Preliminary scheduled hours: 12 h
Recommended self-study hours: 308 h

Course literature

Additional literature

Compendia

Other

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.