IK2208 Communication System Design 24.0 credits

Kommunikationssystem

This is a translation of the Swedish, legally binding, course syllabus.

Establishment

Course syllabus for IK2208 valid from Autumn 2008

Grading scale

A, B, C, D, E, FX, F

Education cycle

Second cycle

Main field of study

Information Technology, Information and Communication Technology

Specific prerequisites

Language of instruction

The language of instruction is specified in the course offering information in the course catalogue.

Intended learning outcomes

The objective of the course is to offer students an opportunity to learn about advanced emerging technologies and the associated market and business development by working in teams together with other students from different programs and a few from different universities, an interdisciplinary teaching team and representatives from industry in projects where specialist knowledge from different disciplines is blended.
We will create an advanced, demanding, fast-paced, comprehensive, and inspiring learning environment. The course is for anyone who likes to work in a context where the rule is: Teach others and learn from others, fellow participants in the course as well as those that have done similar work previously in similar or other contexts. This course is not for those who like stability, predictability and pre-scheduled courses where the teachers have all the right answers.

Pedagogical model
The course implements problem based learning driven by projects. By solving "real-world" problems in project teams, the students will learn advanced technology issues and at the same time become aware of many other aspects than technical which are relevant to problem solving, design, teamwork, project management and to taking technology to the market. Besides the problem based, project driven approach, the course includes a set of methods facilitating learning, including peer learning, to learn from other team members, vicarious learning, to exploit experiences from earlier offerings of the course and bench learning, to learn from the best existing solutions to similar problems and the problem solvers behind them.

This is a 24 hp (credits) version of the Communication System Design family of courses.
Learning Objectives
The overall objective of the course is to enable the student to:
Acquire the skills to design, build and operate communication applications, services and networks in innovative ways

- wired and wireless
- triple play, data, voice, video
- Internet and mobile phone networks
- Learn how to lead, manage, communicate and how to become an entrepreneur
- Become a global citizen

At the end of this course the student will be able to:
1. Demonstrate their ability to solve a "real-world" problem

- Identify and select a relevant problem
- Define the project scope
- Evaluate possible solutions
- Implement a working prototype
- Present a "successful" business plan

2. Demonstrate independent learning skills

- Integrate learning from different sources into the proposed solution (e.g., past learning, course materials provided in the course, contact with teachers, external material, external contacts)
- Show self-assessment skills

- Handle the infinite/open-ended ("real-world") character of the project

3. Demonstrate effective project management

- Devise a realistic and structured project plan
- Carry out the project according to the plan
- Motivate and document deviations from the plan
- Meet deadlines
- Reinforce team credibility by being on time, within budget, and taking special care to insure quality in the details. These include correct grammar, spelling, and numbers, complete footnotes showing your sources, a thorough, consistent bibliography, and the aesthetics of the paper.

4. Show communication skills when working with the project

- Manage scope and stakeholder expectations effectively as the project evolved
- Communicate with stakeholders effectively by voice mail/e-mail
- Make wise use of stakeholder time and project budget
- Respect the stakeholders points of view
- Take criticism non-defensively
- Revise the deliverable when stakeholders have a better idea;
- Give credit to stakeholders and other peoples input where appropriate

5. Show communication skills when presenting the solution

- Include relevant content
- Apply proper structure
- Use correct and appropriate language
- Devise a realistic and structured project plan
- Make presentations interesting and enjoyable to others

6. Work as a successful team

- Communicate effectively within group
- Contribute to the group work
- Contribute to the learning experience of the whole group
- Handle conflicts effectively
- Interact with other project groups
- Be aware of their competence and act out of it with authority

Course contents

The course implements problem based learning driven by projects. By solving "real-world" problems in project teams, the students will learn advanced technology issues and at the same time become aware of many other aspects than technical which are relevant to problem solving, design, teamwork, project management and to take technology from an idea all the

way to the market.
Besides the problem based, project driven approach, the course includes a set of methods facilitating learning, including peer learning, learning from other team members, vicarious learning, to exploit experiences from earlier offerings of the course and benchlearning, to learn from the best existing solutions to similar problems and the problem solvers behind them.
The CSD project course also includes compulsory lectures and seminars in oral and written presentations. In this course element there are two lectures, addressing all students, and three training seminars for each project group. All information about lectures and seminars, including schedules, are pasted in the Communication and Presentations module on the course web - and updated as the course proceeds.

Disposition

The course runs from Mid-January to End-of-May (or Mid-September to January) i.e., the course spans over two periods.

The course can be taken for 15-30hp and as a result is co-taught with IK2200, IK2202, IK2207, IK2208 and IK2209. A detailed schedule can be under the "Course Schedule" entry.

The students can choose between IK2200:15 credits, IK2202:24 credits, IK2207:18 credits, IK2208:24 credits and IK2209:30 credits.

Students that select a version that is not part of the standard curriculum for the program he/she is following may have to get an approval from the program director of that program.

The course requires full attention from the students. Based on past experience we estimate the hourly commitment to amount to at least 40 hours/ 1,5 hp (credit) per student. There is compulsory attendance for all students at all seminars.
You apply to the course via the course web site. If you
are admitted, you are required to provide a cv, a ranking of the projects and a cover letter indicating your contributions to the course and your expectations.
The first week of the course there will be an introduction at KTH in Kista with the whole teaching team, the students, and the principals.

Registration and kickoff workshop will be held on Monday and the rest of the week is allocated for different seminars and team activities. Attendance during the first week of the course is mandatory to keep your space in the course.
In February (October) a project plan is due for all projects. After this the project teams continues their work together with their coaches and principals until March (November).
In March (Novenmber) a Midterm workshop will be held in Kista with group discussions, seminars, and project work. Attendance during the Midterm workshop is mandatory.
The course ends with a workshop and presentation of the projects in the end of May (January). The workshop in May (January) is mandatory to attend for all students (except for students from other universities who are part of the SIDA-projects).

The Lessons Learned paper is due in May. After the Final workshop the students do their evaluation of the course and the principals, coaches, and other people who have been involved in the projects and in the course give their input to the final grades.

Examination

- PRO1 - Project Plan, 4.5 credits, grading scale: A, B, C, D, E, FX, F
- RAP1 - Report, 19.5 credits, grading scale: A, B, C, D, E, FX, F

Based on recommendation from KTH's coordinator for disabilities, the examiner will decide how to adapt an examination for students with documented disability.

The examiner may apply another examination format when re-examining individual students.

If the course is discontinued, students may request to be examined during the following two academic years.

Different students in the same project can take the course for different points!
But remember:

1. In the project plan all students have to specify how many credits they have assign to the course (This also responds the course number the student as registered under.).
2. In the project plan all students have to show how they are going to contribute to the project and how their individual contribution corresponds to how many points they are taking. Remember that 1 point equals 40 hours of work per week. In their plans, all projects have to specify how they are going to log different team-members' contribution to the project.
3. Students can sign up for 15hp., 18hp., 24hp., or 30hp. Each of this credit course has a specific course and course code assigned to it. The final commitment has to be included in the project plan. No student is allowed to exceed 24p in total for the whole semester. Students who for some reason have to exceed the limit are required to inform the Teaching Team by sending an email to Bjorn Pehrson, bjorn@it.kth.se, explain their situation and to get an approval from the Teaching Team.
   All students who have other time consuming commitments, besides courses, such as side employments, have to inform the Teaching Team about that by sending an email to Bjorn Pehrson, explain their situation and get an OK from the Teaching Team to continue the course.
4. The teaching-team is entitled to change assigned point for an individual student if the Teaching Team concludes that a student hasn't lived up to the expectations for a certain amount of credits

Other requirements for final grade

Just as the learning objectives and expected learning outcomes of this course are very integrated, a student's grade is determined in a holistic and integrated manner as well. The below deliverables are designed to enable the student to reach the six expected learning outcomes specified above.
The course uses a 360 degree perspective in it grading. Therefore, the grading process will involve the teachers, the coaches and the principals (for the project deliverables).
Your final individual grade is based on your individual performance and the performance of the team.
The grades are based on:

- The quality of the mandatory deliverables described below

- Additional deliverables defined and negotiated in the contracts for the different projects and different individuals in part based on how many credits/how many hours spent and for which course they have registered.
- Individual contribution to objectives of the team projects , individual contribution to the learning environment of the course by your active participation during seminars and other course activities

Mandatory Deliverables:

- A project plan including a contract defining the project deliverables
- Project web site
- A Lessons Learned paper, including Individual Contribution Papers from all students individually
- A mid-term presentation
- An oral presentation
- A final report
- A video
- An exhibition

Examples of deliverables specified in the contracts:

- A prototype
- A business-plan

Grading scale: A/B/C/D/E/Fx/F

Ethical approach

- All members of a group are responsible for the group's work.
- In any assessment, every student shall honestly disclose any help received and sources used.
- In an oral assessment, every student shall be able to present and answer questions about the entire assignment and solution.