



IK2217 Advanced Internetworking II 7.5 credits

Avancerad Internetteknik II

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

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

Establishment

On 2019-10-15, the Head of School of EECS has decided to establish this official course syllabus to apply from the spring semester 2020 (registration number J-2019-2098).

Grading scale

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

Education cycle

Second cycle

Main field of study

Computer Science and Engineering, Electrical Engineering, Information and Communication Technology

Specific prerequisites

Students who attend this course are required to have passed IK2215 (Advanced Internetworking) or have equivalent knowledge in Internetworking and Computer Communications.

Language of instruction

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

Intended learning outcomes

After passing the course, the student shall be able to

- describe methods and elements that are used to design exchanged network and describe and discuss factors that influence choice of methods and equipment
- explain different technologies for choices in exchanged network
- program forwarding and control planes for a programmable switch
- explain the concept "virtual network" and describe different methods to substantiate virtual networks
- describe different technologies to protect against faults in links and nodes and to increase the degree of network availability
- analyse and compare protocols with regard to network design implications, costs, performance and management properties
- design, configure and handle complex local networks with Ethernet-switches and routers
- give examples of and describe current research issues in the fields that are included in the course
- give examples of and explain social, ethical and environmental aspects of sustainable development in the area for communication systems

in order to

- obtain a deep understanding of how communication networks are built and connected with one another and how switches and routers have been developed during the last decades
- learn about performance, safety and control aspects of network devices and protocols
- obtain practical experience of to program a network that consists of programmable latest generation's switches and routers.

Course contents

IP (Internet Protocol) has become the protocol that is used the world over to connect networks in global scale. IP have remained the same for many years, while dramatic changes have taken place with regard to capacity, connectivity, services, and so on, mainly as a sequence of the development in underlying network technologies. For operators, companies, universities etc become it everything more important to have a good understanding of how underlying web techniques can be used to design reliable and cost efficient nets.

This course covers the fields in link and network protocols and network and intends give a good understanding of modern trends and progress in the area communication and network. The fields of technology that are included in the course can vary from one year to another and example of fields that may be included is MPLS (Mulltiprotocol Label Switching), Datacenter-networks and Internet-of-Things.

To further illustrate different principles and to give practical experience contains the course in addition to theoretical items as lectures, a set labs and a project task.

Examination

- LABA - Laboratory work, 1.0 credits, grading scale: P, F
- PROA - Project, 2.5 credits, grading scale: A, B, C, D, E, FX, F
- SEMA - Summary of scientific papers, 1.0 credits, grading scale: P, F
- TENA - Written exam, 3.0 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.

For a Pass grade, it is required that the technology student should be able to describe and explain design principles of protocols, methods and network devices in switched as well as routed networks and be able to apply these protocols and methods in correct networks.

For higher grades is required that the technology student should furthermore be able to review critically and evaluate different communications protocols and compare and explain advantages and disadvantages with the various protocol designs.

Transitional regulations

Students who read the course 2019 or earlier and needs complete one of the earlier parts LAB1 or PRO1 should contact examiner to obtain re-examination assignment. The earlier item TEN1 is replaced by TENA.

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.