DD2393 Protocols and Principles of the Internet 6.0 credits

Internets protokoll och principer

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

Course syllabus for DD2393 valid from Autumn 2010

Grading scale

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

Education cycle

Second cycle

Main field of study

Computer Science and Engineering

Specific prerequisites

Single course students: 90 university credits including 45 university credits in Mathematics or Information Technology. English B, or equivalent.

Language of instruction

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

Intended learning outcomes

After the course, the student should be able to:

- generally describe the architecture of the Internet, its services and protocols, including the administration and organization of global Internet resources, such as domain names, IP addresses and Internet standards.
- in technical detail explain the central protocols that constitute the Internet, including IP, UDP, TCP, ARP, ICMP, SNMP, DNS and SMTP.
- describe abstractions and principles for network design, including layering, the end-to-end principle, the hourglass model, encapsulation and multiplexing.
- describe how the procotols are implemented in end systems and routers. Explain how packet forwarding is acheived in a router, including routing, forwarding and error handling.
- assess different methods for naming, addressing, routing and error detection and how they are used in bridged and routed networks.
- in detail explain how reliability is provided by the Internet transport protocols such as TCP and SCTP. Describe algorithms for connection control, flow control, congestion control and error handling. The student should also be able to describe the protocol behaviour by studying a packet trace.
- in detail describe how name lookup on the Internet works and be able to configure a simple name server.
- describe security aspects within networking and how firewalls and address translation works and why they are necessary.
- on a general level describe how routing works internally, and between, autonmous systems, as well as explain how they most common VPN technologies work.

Course contents

Overview of the TCP/IP and OSI models, adressing, local and wide-area networks, routing protocols, transport protocols (TCP/UDP), switched and routed networks, name lookup, IPv6, network security and address translation. The course contains several guest lecturers and a thorough lab course.

Labs: TCP/IP, DNS, SMTP, HTTP, FTP.

Course literature

Behrouz A Forouzan, TCP/IP Protocol Suite, fourth edition.

Examination

- LAB1 - Laboratory Work, 1.5 credits, grading scale: P, F
- TEN1 - Examination, 4.5 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.

In this course all the regulations of the code of honor at the School of Computer science and Communication apply, see: http://www.kth.se/csc/student/hederskodex/1.17237?l=en_UK.

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.