HI1037 Internet's Domain Name System 7.5 credits

Internets domännamnsystem

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 HI1037 valid from Autumn 2017

Grading scale

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

Education cycle

First cycle

Main field of study

Technology

Specific prerequisites

The course requires basic knowledge of Internet and its protocols equivalent to the course Communication Networks (HE1033).

Language of instruction

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

Intended learning outcomes

The course aims to give theoretical insights into how the domain name system is constructed and functions as well as practical skills to set up, manage, and troubleshoot name servers and other components in DNS.

After completing the course, the participants should:

• Be able to describe how the domain name system is constructed

• Understand the role of domain names on Internet.

• Be able to accurately describe the most common DNS resource records that occurs in a zone file.

• Know and be able to describe concepts such as delegation, glue records, master and slave servers and zone transfer.

• Be able to set up different name server configurations such as recursive, authoritative and caching servers, as well as describe the differences between them.

• Be able to set up a name server with or without DNSSEC signing..

• Be able to describe the differences between UDP and TCP as the transport protocol for DNS, and describe how they are used for DNS.

• Be able to troubleshoot DNS lookups with the help of tools such as **dig** and **drill**.

• Be familiar with Internationalized Domain Names (IDNs) and how these domain names are handled in DNS.

• Know the most important standards for DNS, DNSSEC and IDNs.

• Familiarity with standard documents within the IETF so that the definitions and standards for DNS can be looked up.

Course contents

• What is DNS and what problems does it solve?

• DNS concepts â€" resource records, zones, delegation, DNS resolver.

- DNS name space (domain names). Character set in domain names. Character set in domain names.

- DNS protocol. Walk-through of the packet structure and the meaning of fields and flags UDP and TCP as the transport protocol.

- Signing of the DNS records with DNS Security Extensions- DNSSEC. What function DNSSEC fills and how it is used.

- Hands-on handling and troubleshooting ofDNS.

- Internationalized Domain Names, IDN.

- Installation and configuration of name servers. Operation and maintenance. Troubleshooting. Troubleshooting.

- Ongoing development DNS DNS privacy and other projects.

Course literature

- Liu& Albitz: DNS and Bind, 5th edition (O â€™ Reilly 2006)
- A selection of RFCs (Request For Comments) published by IETF
- Course compendium with comments on the reading of the RFCs

Examination

- LAB1 - Lab work, 4.5 credits, grading scale: P, F
- TEN1 - Examination, 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.

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.