HI1M03 Applied Computer Networking 7.0 credits

Tillämpad nätverksteknik

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 HI1M03 valid from Autumn 2008

Grading scale

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

Education cycle

First cycle

Main field of study

Information Technology,Technology

Specific prerequisites

Basic knowledge in telecommunications

Language of instruction

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

Intended learning outcomes

The aim of this course is applied networking using switches and routers in lab exercises.

After completion of the course the participants should be able to:

- Use network protocol models to explain the layers of communications in data networks.
- Design, calculate, and apply subnet masks and addresses.
- Build a simple Ethernet network using routers and switches.
- Analyze the operations and feature of the transport and network layer protocols and services.
- Design and implement a classless IP addressing scheme for a network.
- Use advanced configuration commands with routers implementing EIGRP.
- Apply the basic RIPv2 configuration commands and evaluate RIPv2 classless routing updates.
- Identify the characteristics of distance vector routing protocols.
- Troubleshoot common network problems at Layers 1, 2, 3, and 7 using a layered model approach.
- Perform and verify switch configuration tasks including remote access management
- Configure, verify, and troubleshoot VLANs, interVLAN routing, VTP, trunking on switches, and RSTP operation.
- Manage IOS configuration files.
- Identify the basic parameters to configure a wireless network and common implementation issues.
- Describe the impact of applications (Voice over IP and Video over IP) on a network.
- Configure, verify, and troubleshoot DHCP and DNS operation on a router.
- Verify, monitor, and troubleshoot ACLs in a network environment.
- Configure and verify a basic WAN serial connection and a PPP connection.
- Troubleshoot WAN implementation issues.

Course contents

- Introduction to networking
- OSI model
- Networking fundamentals and networking media
- Ethernet fundamentals and Ethernet switching
- TCP/IP protocol suite, IP addressing and subnets
- TCP/IP suite error and control messages
- Classless routing and scaling IP addresses
- Routing and routing protocols (RIPv1, RIPv2, OSPF, EIGRP)

- WANs and routers
- Access control lists
- WAN technologies (PPP, Frame Relay)
- Practical assignments and laboratory exercises are important parts of the course

Course literature

Web based course material, CCNA Exploration or in book form from Cisco press: Network Fundamentals, Routing Protocols and Concepts, LAN Switching and Wireless and Accessing the WAN, latest version.

Examination

- LAB1 - Laboratory Work, 4.0 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.