

NETWORK INFRASTRUCTURE DESIGN ENGLISH SEMESTERS

The course of Network Infrastructure Design of the Zuyd University School of ICT in Heerlen offers two semesters in English: Beginning Network Management and Advanced Network Management. The contents of these semesters are described below.

Please note:

- Each semester is divided in two Block Periods of 10 weeks each.
- The total number of European Credits (ECs) to be gained per semester is 30,15 per Block Period; or 15 American semester credit hours per semester / 7.5 per Block Period.
- One European Credit equals 28 hours of work for the student.
- Each semester start twice per year: early September and early February.
- It is generally possible to select subjects from the Beginner's course and the Advanced course simultaneously, provided timetables allow.

BASIC NETWORK MANAGEMENT

This semester is intended for foreign students without any experience in the field of networks. The aim of this semester is to gain insight in and knowledge of the general field of computer networks.

Subjects Block Period 1

CCNA1	Basic Networking	3 ECs
SERVER	Microsoft Server 2008	3 ECs
ORNDS	Architecture	3 ECs
PRMANE	Projects Network and Management	6 ECs

Total = 15 ECs

Subjects Block Period 2

CCNA2	Router Technology	3 ECs
CLIENT	Microsoft Client (windows 7)	3 ECs
ARCH	Architecture 2	3 ECs
PRNET	Projects Network	6 ECs

Total = 15 Ecs

ADVANCED NETWORK MANAGEMENT

This semester is intended for foreign students with some experience in the field of computer networks. The aim of this advanced semester is to enhance the knowledge for students of general computer networks.

Subjects Block Period 1

NETINF	Infrastructure Win2008 + Case studies	6 ECs
SCRCON	Scripting Concepts (Pearl and Powershell)	3 ECs
CCNP1	Building Scalable Networks	3 ECs
COARCH	Computer Architecture	3. ECs

Total = 15 ECs

Subjects Block Period 2

ACTDIR	Active Directory Services	3 ECs
SCRIPT	Script Languages (Perl and Powershell)	3 ECs
CCDA	Designing Internetworks	3 ECs
CCNP2	Implementing Secure Conv. Wan's	3 ECs
Beheer	ITIL foundations	3 ECs

Total = 15 Ecs

In the following pages the course subjects will be described in detail.

ENGLISH SEMESTER BEGINNING NETWORK MANAGEMENT

BLOCK PERIOD 1 (semester 1A'

SUBJECT: BASIC NETWORKING (code: CCNA 1)

Description

In this module students learn to be able to explain and apply the basic principles of data networks. They can distinguish the various possibilities of coupling computer systems and peripherals. They can describe the fundamental notions of LANs and WANs, the OSI and TCP/IP models and the various topologies and explain which is most suitable in certain circumstances. They can recognize and describe cabling techniques. They also know the conditions for furnishing locations for servers and patch cabinets and can apply this knowledge in practice.

SUBJECT: ORIENTATION NETWORK DESIGN AND SECURITY (code: ORNDS)

Description

This module focuses on architecture: equipping electronic learning environments, introduction to process analysis, data modelling, input-process-output schemes, data flow diagrams, data warehouse, data mining, the notion of architecture and its different interpretations, the ideal architect, using various sorts of architecture (company, information and technical architectures), architecture and management as a partnership, software selection, what is DYA, the 10 principles of DYA, the DYA thinking and operational models, using the DYA thinking model. Three case studies are part of this module.

SUBJECT: SERVER (code: SERVER)

Description

This module teaches students how to install, manage and troubleshoot server systems. Including Core Server and covering Rights, permissions and GPO's.

SUBJECT: PROJECTS NETWORK and MANAGEMENT (code: PRMANE)

Description

Students learn about the theoretical and practical basic principles of wiring solutions, network security, different network operating systems, the ins and outs of hardware of server and PC systems, demands concerning installation and using multimedia components.

This is a project module. Groups of two students, which are changed a number of times, realize a number of projects in the field of network management. The division of tasks, cooperation, depth of knowledge, the theoretical basis and practical execution will all be assessed.

Special attention is given to work in groups, reporting skills and structuring activities.

BLOCK PERIOD 2 (semester 1B)

SUBJECT: ROUTER TECHNOLOGY (code: CCNA2)

Description

Students learn about the theoretical and practical basic principles of the router user interface, the router components, the router protocols, the router commands and the configuration possibilities. They also learn about the IOS software management, TCP/IP and the use of ACLs. Training takes place in simulations and practical labs. There are extra possibilities for realistic training in the challenge labs

prerequisites

Sufficient knowledge of computer architecture and networks at NID 1 level. Sufficient mark for the module Networking Basics (CCNA 1).

SUBJECT: MICROSOFT CLIENT (code: Client)

Description

This module teaches students how to install, manage and troubleshoot client systems. Including WDS and basic Active Directory knowledge.

prerequisite

A mark for the module 'Server' (not necessarily sufficient) or an exemption for this module.

SUBJECT: ARCHITECTURE (code: ARCH)

Description

The focus is on client/server concepts, application architecture, middleware, web services, client/server application versus standalone, explanation of Sniffer assignment, ABC, quality demands, software architecture styles, optimizing performance, costs and the COO model.

Case study: 'Air Traffic Management'.

Practical: 'Postal code book'.

SUBJECT: PROJECT NETWORK MANAGEMENT (code: PRNET)

Description

Students learn more about the theoretical and practical basic principles of network security, different network overacting systems, the ins and outs of hardware of server and PC systems, demands concerning installation and using multimedia components.

This is a project module. Groups of two students, which are changed a number of times, realize a number of projects in the field of network management. The division of tasks, cooperation, depth of knowledge, the theoretical basis and practical execution will all be assessed.

ENGLISH SEMESTER ADVANCED NETWORK MANAGEMENT

BLOCK PERIOD 1 (semester 2A)

SUBJECT: INFRASTRUCTURE WINDOWS 2008 AND CASE STUDIES (code: NETINF)

Description

This module teaches students how to manage and troubleshoot infrastructure servers, and install, configure, manage, check and troubleshoot DNS for Active Directory

prerequisites

Sufficient marks for 'Client' and 'Servers'.
Sufficient marks for the projects PRMANE.

SUBJECT: SCRIPTING CONCEPTS (code: SCRCON'

Description

This module teaches students the concepts of building efficient scripts in Pearl and Powershell to carry out Client Side Scripting.

SUBJECT: BUILDING SCALABLE NETWORKS (code: CCNP1)

Description

The increasing use of computer systems and the exchange of information by means of, among others, the Internet, have caused an increasing interest in data communication, networks and infrastructure. In this module the student will learn about the elements of Advanced Routing, and will learn how to apply them. The students will be instructed in the theoretical and practical basic principles of an overview of Scalable Internetworks, Advanced IP addressing, Overview Routing, RIP version 2, EIGRP, OSPF, IS-IS, route optimization, BGP. All this is trained in labs, with case studies providing extra possibilities for realistic exercise. Students acquire practical skills, which has to be made apparent in a practical assignment.

prerequisite

Sufficient marks for the modules CCNA1 and CCNA2

SUBJECT: COMPUTER ARCHITECTURE (code: COARCH)

Description

This module explores the inside of the computer. From logical port through micro instruction and internal architecture to the understanding of how a computer works.

BLOCK PERIOD 2

SUBJECT: ACTIVE DIRECTORY SERVICES (code: ACTDIR)

Description

The students learn to
Install, configure and troubleshoot Active Directory
Manage, check and optimize the various parts of Active Directory
Configure, manage, check and troubleshoot security solutions for Active Directory
Monitor important parts of Active Directory.

prerequisite

The modules Server and Infrastructure should have been taken. The module Infrastructure has preferably resulted in a sufficient mark, but the student's performance should at least have been assessed.

SUBJECT: SCRIPTING (code: SCRIPT)

Description

Based on the module SCRCON the students learn Server/Side scripting and create scripts to maintain the domain.

prerequisite

Sufficient marks for SCRCON.

SUBJECT: DESIGNING INTERNETWORKS (code: CCDA)

Description

Various subjects in the field of designing networks will be discussed; the module can be seen as an introduction to this subject. In this module the student will learn about and understand all the ins and outs of designing a Network Infrastructure at the CCDA level. The student will be trained in the possibilities through case studies, so that he can apply them.

prerequisite

A pass for the modules CCNA1 and CCNA2

SUBJECT: IMPLEMENTING SECURE CONV. WAN'S (code: CCNP2)

Description

Students will learn about the converged network requirements of various network and networked applications within the Cisco network architectures.

IIN and Cisco SONA Framework. Cisco Network Models. Traffic Conditions in a Converged Network. VoIP Networks, Calculating Bandwidth Requirement.

prerequisite

A pass for the module Scalable Networks (CCNP1).

SUBJECT: ITIL Foundations (code: BEHEER)

Description

In this module students focus on the theoretical and practical basic principles of the operational management processes based on ITIL. In a case study students are trained in each process in its functionality, impact and relation with the other processes. Thus students acquire practical skills, which has to become apparent in the case study.

prerequisites

Sufficient knowledge of computer architecture, Microsoft Client and Basic Networking.