

СОФИЙСКИ УНИВЕРСИТЕТ "СВ. КЛИМЕНТ ОХРИДСКИ"
ФАКУЛТЕТ ПО МАТЕМАТИКА И ИНФОРМАТИКА

учебна година: 2010/2011

семестър: летен

наименование на дисциплината: Дизайн на мрежова инфраструктура		
хорариум: 2 + 0 + 2 Общо: 60 часа (30 + 0 + 30)		
вид на дисциплината: избираема		
специалност: Разпределени системи и мобилни технологии	курс: I ÷ II	поток:
лектор: гл. ас. Георги Георгиев		

1. Кратка анотация на дисциплината

Курсът е избираем за студентите от I и II курс в магистърската програма "Разпределени системи и мобилни технологии" на направление „Информатика“.

Курсът дава основни познания по проектиране на мрежова инфраструктура съобразно бизнес- и технически изисквания за мрежовите услуги.

Курсът е предназначен за напреднали студенти, желаещи да се обучават за администратори на корпоративни мрежи.

Курсът е по учебната програма на Microsoft: MOC # 6435: Designing a Windows Server 2008 Network Infrastructure.

Този курс е подготвителен за сертификационен изпит за степен Microsoft Certified IT Profesional (MCITP) – Exam 70-647: PRO: Windows Server 2008, Enterprise Administrator.

2. Предварителни изисквания към студентите (отнася се само за избираемите дисциплини)

Студентите следва да имат сериозни познания по TCP/IP протокола, както и за компютърни мрежи и мрежови услуги – Active Directory, DHCP, DNS.

Препоръчително е студентите успешно да са преминали курсовете:

- „Администриране на Майкрософт сървъри“ (MOC # 6418: Deploying Windows Server 2008 и MOC # 6419: Configuring, Managing and Maintaining Windows Server 2008 Servers);
- „Изграждане на мрежова и приложна инфраструктура“ (MOC # 6420: Fundamentals of Windows Server 2008 Network and Applications Infrastructure);
- „Конфигуриране и поддръжка на мрежови услуги“ (MOC # 6421: Configuring and Troubleshooting a Windows Server 2008 Network Infrastructure).

3. Форма на проверка на знанията и уменията и начин на формиране на оценката по дисциплината

<i>Междинни тестове по време на занятията:</i>	33 % от крайната оценка
<i>Финален тест:</i>	67 % от крайната оценка

4. Тематичен план (конспект) на дисциплината

Module 1: Overview of Network Infrastructure Design

Lessons

- Preparing for Network Infrastructure Design
- Designing the Network Topology
- Designing Network Infrastructure for Virtualization
- Designing a Change Management Structure for a Network

Lab: Designing Network Infrastructure in Windows Server 2008

- Preparing for the Network Infrastructure Design
- Designing the Network Topology
- Designing Network Infrastructure for Virtualization
- Designing a Change Management plan
- Lab Discussion

Module 2: Designing Network Security

Lessons

- Overview of Network Security Design
- Creating a Network Security Plan
- Identifying Threats to Network Security
- Analyzing Security Risks
- Defense-in-Depth Model Overview

Lab: Designing a Network Security Plan

- Identifying a Team for the Security Plan Scenario
- Identifying Threats
- Analyzing Risk
- Discussion of Designing a Network Security Plan

Module 3: Designing IP Addressing

Lessons

- Designing an IPv4 Addressing Scheme
- Designing an IPv6 Addressing Scheme
- Designing DHCP Implementation
- Designing DHCP Configuration Options

Lab: Designing IP Addressing in Windows Server 2008

- Designing an IPv4 Addressing Scheme
- Designing an IPv6 Addressing Scheme
- Designing a DHCP Implementation
- Discussion of IP Address Allocation

Module 4: Designing Routing and Switching

Lessons

- Preparing for Designing a Network Routing Topology
- Selecting Network Devices
- Designing Internet Connectivity and Perimeter Networks

- Designing Routing Communications
- Evaluating Network Performance

Lab: Designing a Network Routing Topology

- Designing the Placement of Routers
- Designing a Perimeter Network
- Evaluating Network Performance
- Discussion of Designing a Network Routing Topology

Module 5: Designing Security for Internal Networks

Lessons

- Designing Windows Firewall Implementation
- Overview of IPSec
- Designing IPSec Implementation

Lab: Designing a Secure Internal Network

- Designing a Windows Firewall Implementation
- Designing an IPSec Implementation

Module 6: Designing Name Resolution

Lessons

- Collecting Information for a Name Resolution Design
- Designing a DNS Server Strategy
- Designing a DNS Namespace
- Designing DNS Zone Implementation
- Designing Zone Replication and Delegation

Lab: Designing a Name Resolution Strategy in Windows Server 2008

- Designing a DNS Server Strategy
- Designing a DNS Namespace
- Designing a DNS Zone and Replication Strategy
- Discuss the Design of Name Resolution
- Implement a DNS Zone and Replication Strategy

Module 7: Designing Advanced Name Resolution

Lessons

- Optimizing DNS Queries
- Designing DNS for High Availability
- Designing a WINS Name Resolution Strategy

Lab: Designing a Name Resolution Strategy in Windows Server 2008

- Optimize DNS Resolution
- Designing and Configuring WINS Name Resolution
- Integrating DNS and WINS Name Resolution

Module 8: Planning and Deploying the Application Virtualization Management System

Lessons

- Gathering Data for Designing Network Access Solutions
- Securing and Controlling Network Access
- Designing Remote Access Services
- Designing RADIUS Authentication with Network Policy Services
- Designing Wireless Access

Lab: Designing a Network Access Solution

- Designing a Remote Access Solution
- Designing Network Policy Services

- Designing a Wireless Connection Solution
- Discuss the Design of Network Access
- Deploying an SSTP VPN Solution

Module 9: Designing Network Access Protection

Lessons

- Designing the NAP Platform Architecture
- NAP Architecture
- NAP Enforcement
- Designing NAP Policy
- Designing NAP Enforcement and Remediation

Lab: Designing Network Access Protection

- Analyzing Enforcement Methods
- Designing DHCP Enforcement
- Designing IPsec Enforcement
- Implementing DHCP Enforcement

Module 10: Designing Operating System Deployment and Maintenance

Lessons

- Determining Operating System Deployment Requirements
- Deploying an Operating System by Using WDS
- Planning for the Creation and Modification of Images
- Designing Multicast Transmission of Images

Lab: Designing Operating System Deployment and Maintenance

- Designing an Operating System Deployment Solution
- Designing WDS Deployment
- Designing WDS Images
- Designing a WSUS Deployment
- Discussing Operating System Deployment and Maintenance

Module 11: Designing File Services and DFS in Windows Server 2008

Lessons

- Designing File Services
- Designing DFS
- Designing the FSRM Configuration

Lab: Designing File Services and DFS in Windows Server 2008

- Selecting File Services Components
- Designing DFS
- Designing FSRM
- Implementing DFS
- Implementing FSRM

Module 12: Designing High Availability in Windows Server 2008

Lessons

- Overview of High Availability
- Designing Network Load Balancing for High Availability
- Designing Failover Clustering for High Availability
- Designing Geographically Dispersed Failover Clusters

Lab: Designing High Availability in Windows Server 2008

- Designing High Availability
- Implementing an NLB Design
- Implementing a Failover Cluster Design

Module 13: Designing Print Services in Windows Server 2008

Lessons

- Overview of a Print Services Design
- Windows Server 2008 Printing Features
- Designing Print Services

Lab: Designing Shared Resources in Windows Server 2008

- Analyzing the Components of a Print Services Design
- Designing a Shared Printer Deployment

5. Литература

MOC # 6435: Designing a Windows Server 2008 Network Infrastructure –
Students book