Modesto Junior College
Course Outline of Record

CMPSC 264

I. OVERVIEW
The following information will appear in the 2010 - 2011 catalog

CMPSC 264 Windows Server OS 3 Units

Prerequisite: Satisfactory completion of CMPSC 263.

Technical study of the Windows Server operating system. Includes server hardware, installation, configuration, clients, management, network protocols, active directory and security, remote access and virtual private networks, interoperability, Internet and intranets, monitoring, tuning, and troubleshooting. Hands-on computer assignments required.

Field trips might be required. (A-F or P/NP - Student choice) Lecture /Lab
Transfer: (CSU) General Education: (MJC-GE: D2 )

II. LEARNING CONTEXT
Given the following learning context, the student who satisfactorily completes this course should be able to achieve the goals specified in Section III, Desired Learning:

A. COURSE CONTENT

1. Required Content:

   a. Networking with Windows Server operating syst
      i. Networking model
      ii. Windows product comparisons
      iii. New features
      iv. Windows Server operating system capabilities
      v. Server file systems compatibility
      vi. Advanced Server and Datacenter

   b. Planning Network Protocols and Compatibility
      i. Overview of networks
      ii. Planning a network
      iii. Network topologies
      iv. Network communications media
      v. Network interface card
      vi. Transporting data on the communications cable
      vii. Protocols
      viii. Selecting the right topology, communication cable, and protocol
c. Server Hardware
   i. System requirements
   ii. Windows Server compatibility
   iii. CPU sizing
   iv. Bus architectures, plug and play, and USB ports
   v. Selecting a network interface card (NIC)
   vi. Memory requirements
   vii. Disk storage
   viii. Disk storage fault tolerance
   ix. Selecting disk storage fault tolerance
   x. Software RAID compared to hardware RAID
   xi. Choosing a CD-ROM drive
   xii. Setting up and testing the server

d. Server Installation
   i. Advanced preparations and installation options
   ii. Emergency repair disks (ERD)
   iii. Installation options and stepping through an installation
   iv. Testing a new server
   v. Troubleshooting installation problems and service packs
   vi. Uninstalling Windows Server

e. Planning the Active Directory and Security
   i. Defining the Active Directory
   ii. Elements in the Active Directory
   iii. Active Directive guidelines
   iv. Security basics
   v. Using groups
   vi. IP security policies

f. Server Configuration
   i. Setting up the server environment
   ii. Using the control panel to configure network connectivity
   iii. Configuring the server environment
iv. Managing devices and resources

g. Configuring server storage, backup, and performance options
   i. Basic and Dynamic disks
   ii. Disk performance and repair
   iii. Mounting a drive
   iv. Managing removable storage
   v. Disk security through backup
   vi. Performing a restore
   vii. Configuring for performance
   viii. UPS fault tolerance

h. Managing Accounts and Client Connectivity
   i. Setting up account naming conventions
   ii. Establishing account policies
   iii. Creating and managing accounts
   iv. Customizing client access with profiles
   v. Configuring client operating systems
   vi. Using remote installation services

i. Managing Groups, Folders, Files, and Object Security
   i. Managing server resources
   ii. Managing security through groups
   iii. Managing objects and object security
   iv. Configuring rights
   v. Configuring folder and file security
   vi. Troubleshooting a security conflict
   vii. Moving and copying files and folders

j. Managing Dfs, Disk Quotas, and Software Installation
   i. Comparing and using the distributed file system
   ii. Publishing a shared folder
   iii. Configuring disk quotas
   iv. Installing and managing application software
v. Using the Registry to configure the operating system setup and software
vi. Setting up and using the license manager

k. Installing and Managing Printers
   i. Windows printing
   ii. Installing a local and shared printers
   iii. Printer pooling
   iv. Managing printer services
   v. Managing print jobs
   vi. Solving common printing problems

l. Remote Access and Virtual Private Networks
   i. How remote access works
   ii. How Virtual Private Networks (VPN) work
   iii. Using remote access services (RAS)
   iv. Configuring RAS
   v. Configuring a VPN
   vi. Troubleshooting RAS installations
   vii. Troubleshooting VPN installations
   viii. Configuring a DHCP agent
   ix. Configuring Multilink and Bandwidth Allocation Protocol
   x. Dial-up connections
   xi. Monitoring user connections

m. Managing Internet and Network Interoperability
   i. Internet Information Services
   ii. Windows Media Services
   iii. DNS Server
   iv. WINS and DHCP services
   v. Installing a NetWare gateway
   vi. Connecting through Terminal Services
   vii. Configuring a Telnet Server

n. Server Monitoring and Optimization
   i. Monitoring the server
ii. Monitoring applications with Task Manager
iii. Using System Monitor and performance logs and alerts

o. Network Monitoring and Tuning
   i. Network monitoring
   ii. Windows network monitoring
   iii. Network Monitor Driver
   iv. Using Network Monitor
   v. Using SNMP service
   vi. Using System Monitor for network monitoring
   vii. Network tuning tips

p. Troubleshooting
   i. Developing a problem-solving strategy
   ii. Tracking problems and solutions
   iii. Windows diagnostics
   iv. Using Event Viewer to solve problems
   v. Solving user access and permission problems
   vi. Network connectivity problems
   vii. Network printing problems
   viii. Resolving boot problems
   ix. Creating a startup disk for boot problems
   x. Restoring a failed system volume
   xi. Troubleshooting a failed mirrored volume or striped set with parity
   xii. Solving memory problems
   xiii. Using server manager to troubleshoot problems
   xiv. Getting additional help

2. **Required Lab Content:**

Through a series of hands-on computer lab exercises students will:

a. Evaluate server requirements
b. Plan and install Windows Server OS
c. Install service pack and security updates
d. Verify and install appropriate drivers  
e. Install networking protocols and configure  
f. Select, install and configure basic services  
g. Set up file sharing  
h. Implement user accounts and security  
i. Install and configure Web Server services  
j. Configure backup services  
k. Create recovery disks  
l. Configure printing services  

B. ENROLLMENT RESTRICTIONS

1. Prerequisites  
Satisfactory completion of CMPSC 263.  

2. Requisite Skills  
Before entering the course, the student will be able to:  
a. Describe the fundamental characteristics of local and wide area networks.  
b. Identify various types of computer networks.  
c. Compare and contrast standard topologies and hubs.  
d. Compare and contrast networking media.  
e. Describe the function of packets in network communications.  
f. Explain the function of network protocols.  
g. Diagram interconnectivity in multi-vendor complex networks.  
h. Describe the technological requirements of large-scale networks.  
i. Use Internet resources.  

C. HOURS AND UNITS

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D. METHODS OF INSTRUCTION (TYPICAL)  
Instructors of the course might conduct the course using the following method:  

1. Formal lectures by a certified instructor
2. Assigned reading and discussion of required text
3. Assigned reading of supplemental reference materials
4. Implementation of computer laboratory projects
5. The student will research network resources using technical manuals and the Internet
6. The student will demonstrate troubleshooting and problem solving techniques through hands-on projects
7. The student will analyze and present a documented solution to scenario-based case projects

E. ASSIGNMENTS (TYPICAL)

1. EVIDENCE OF APPROPRIATE WORKLOAD FOR COURSE UNITS
   Time spent on coursework in addition to hours of instruction (lecture hours)
   On a weekly basis students will:
   a. Read assigned textbook content
   b. Read online assigned or research content
   c. Maintain a system administrators log

   Periodically students will:
   a. Complete hands-on computer lab assignments and simulations
   b. Research pertinent topics and report on findings
   c. Take quizzes and tests to evaluate retention
   d. Execute group activities designed to build teamwork skills

2. EVIDENCE OF CRITICAL THINKING
   Assignments require the appropriate level of critical thinking

   Assignment Example:

   Write a two page report identifying the most commonly used network protocols in use today. Describe each protocol including why it is in use and what type of services it provides. Cite at least 3 sources in your paper. Neatness, organization and grammar will be graded along with content.

   Case Sample:

   A Dover Leasing employee recently purchased a notebook computer that’s used between her home and the Dover network. Recently, her notebook computer can’t connect to any network resources. Identify the steps you should perform as the network administrator and any commands or utilities you would use to troubleshoot this problem.

   Multiple Choice Quiz Questions:

   ____ 5. Groups are similar to ____ in that both organize other objects into logical containers.
   a. user accounts
   b. computer accounts
   c. functional levels
d. organizational units

6. Unlike security groups, distribution groups do not have a(n) ____ associated with them.
   a. SID
   b. global group
   c. domain functional level
   d. schema

7. The ____ of an environment is determined by the operating systems of the domain controllers in the environment.
   a. discretionary access control list
   b. group membership
   c. domain functional level
   d. distribution group

8. Which of the following refers to a type of group that is typically created for the purpose of aggregating users or groups in different domains throughout an Active Directory forest?
   a. distribution group
   b. universal group
   c. domain local group
   d. security group

F. TEXTS AND OTHER READINGS (TYPICAL)


III. DESIRED LEARNING

A. COURSE GOAL
   As a result of satisfactory completion of this course, the student should be prepared to:

   plan, build and manage a server employing the Windows Server operating system. The student will be able to evaluate hardware/software requirements, install and configure the operating system, implement security strategies, tune services, monitor activity and develop a disaster recovery process to provide reliable information services.

B. STUDENT LEARNING GOALS
   Mastery of the following learning goals will enable the student to achieve the overall course goal.

1. Required Learning Goals
   Upon satisfactory completion of this course, the student will be able to:

   a. Explain workgroup networking and domain networking.
   b. Compare different file systems used by Windows Server operating system.
   c. Explain network topologies and describe network communications media.
   d. Describe the Ethernet and Token Ring transport methods, and networking services and protocols.
   e. Select computer and network hardware appropriate to any client’s system requirements.
   f. Describe multiple server operating system installation options and different methods and
troubleshoot installation problems with each.

g. Plan the Active Directory and system security.

h. Explain how to configure the server environment and configure network connectivity using NWLink and TCP/IP.

i. Identify configuration policies for server storage, backup, and upgrade procedures.

j. Discuss client system requirements including profile type and location.

k. Develop guidelines for user account policies and set up account policies.

l. Plan server system folders, their permissions, and software and installation procedures.

m. Evaluate printing needs and develop appropriate solutions.

n. Explain the capabilities of Remote Access Service (RAS) and set up RAS server and clients.

o. Identify services for the Internet and an Intranet including their features and benefits.

p. Design server performance benchmarks and monitor the server performance with network tools.

q. Develop a problem solving strategy and demonstrate the use of server resources for troubleshooting.

2. **Lab Learning Goals**

   Upon satisfactory completion of the lab portion of this course, the student will be able to:

   a. Select appropriate server version and hardware for a given situation.

   b. Install operating system software.

   c. Select and install device drivers.

   d. Select, install and configure network protocols.

   e. Configure server file sharing.

   f. Plan and implement security services.

   g. Create user accounts and apply permissions.

   h. Install and configure Web Services software.

   i. Develop backup strategy and implement.

   j. Set up printer sharing service.

   k. Create system monitors to monitor system activity.

IV. **METHODS OF ASSESSMENT (TYPICAL)**

A. **FORMATIVE ASSESSMENT**

   1. Written unit examinations

   2. Completeness and clarity of laboratory work

   3. Accuracy of problem solving techniques
4. Classroom Group Activities and Discussions

B. **SUMMATIVE ASSESSMENT**

1. Written final exam.
2. Laboratory Exercises
3. Quizzes