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

CMPSC 289 Directory Services 3 Units

Recommended for Success: Before enrolling in this course, students are strongly advised to either complete CMPSC-264, Windows Server, or have experience managing business server systems.

Technical study of Directory Services using tools such as LDAP and Active Directory. Includes the design and implementation of directory services, analyzing business requirements, information technology structures, software, hardware and network requirements, large and small scale directory services design, group policy design, design topology and locations, replication and disaster recovery. Hands-on computer assignments required.

Four maximum completions.
Field trips might be required. (A-F or P/NP - Student choice) Lecture /Lab
Transfer: (CSU)

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. Introduction to Directory Service
   i. Overview of Directory Services
   ii. Overview of Group Policies
   iii. Overview of Security
   iv. Overview of TCP/IP and Directory Services

b. Analyzing Business Requirements
   i. Organizational models
   ii. Business management models
   iii. Business goals and strategies
   iv. Business flow and process analysis
   v. Legal and company policy factors
   vi. Outside relationships
   vii. Other models
c. Analyzing Information Technology Structures
   i. IT organization and decision flow models
   ii. Company and IT relationships
   iii. Business management models
   iv. Matching business goals and strategies to IT strategies
   v. Funding and cost issues
   vi. Outsourcing
   vii. Productivity Issues
   viii. Change manage processes

d. Analyzing Software Requirements
   i. Company user base and resources
   ii. User access and productivity
   iii. Evaluating existing software
   iv. Software systems
   v. Databases and data structures
   vi. Exiting corporate culture and software implementation
   vii. Software system performance issues
   viii. Security issues
   ix. Backup and disaster recovery analysis
   x. Technical support, user help, and testing

e. Analyzing Hardware and Network Requirements
   i. Hardware systems and hardware culture
   ii. Network systems and bandwidth
   iii. Global and local connectivity
   iv. Network management models
   v. User access and productivity
   vi. User computer needs
   vii. Performance issues
   viii. Security issues

f. Large-Scale Directory Services Design
   i. Directory services design and the business model
ii. Directory services design and the management model
iii. Directory services design and the network model
iv. Design issues
v. Namespace

g. Small-Scale Directory Services Design
   i. Directory services access and business organizational structure
   ii. Planning sites
   iii. Directory services management strategies
   iv. Delegating management
   v. DNS implementation strategies
   vi. Interoperability in an heterogeneous environment
   vii. Directory services implementation planning

h. Group Policy Design
   i. Matching groups to the business model
   ii. Matching groups to the management model
   iii. Group policy overview
   iv. Group policy implementation
   v. Using group policies to manage clients

i. Directory Services Security Design
   i. OS security overview
   ii. File systems
   iii. File and folder attributes
   iv. User accounts
   v. User rights
   vi. Permissions
   vii. Share permissions
   viii. Auditing
   ix. Ownership
   x. Security implementation and delegation

j. Design Topology and Locations
   i. Topology and location models
ii. Site topology
iii. Directory services topology
iv. DNS server topology
v. DHCP server topology
vi. Network design redundancy

k. Replication and Disaster Recovery
i. Replication services
ii. Backup services
iii. Designing a backup plan
iv. Designing a disaster recovery plan

2. Required Lab Content:

Labatory assignments are designed to reinforce classroom lecture concepts. Students perform hands-on computer configuration including:

a. Implement large and small scale directory services design principles.
b. Install Directory Services and required associated services.
c. Configure services to provide connectivity.
d. Manage service updates and feature installations
e. Create organizational units to manage large groups of resources.
f. Implement directory services security following commonly used methods.
g. Install and configure DNS server, and DHCP server topologies.
h. Evaluate service function from client operating system.
i. Implement a backup disaster plan.

B. Enrollment Restrictions

1. Advisories

Before enrolling in this course, students are strongly advised to either complete CMPSC-264, Windows Server, or have experience managing business server systems.

2. Requisite Skills

Before entering the course, the student will be able to:

a. Implement, manage and troubleshoot hardware devices and drivers
b. Describe how to monitor and optimize system performance and reliability
c. Implement, manage, and troubleshoot network protocol services

d. Evaluate, implement, manage, and troubleshoot network security

e. Compare different file systems used by various operating systems

f. Discuss client requirements, set up multiple client protocols and create user and roaming profiles.

C. HOURS AND UNITS

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<th>INST METHOD</th>
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<th>UNITS</th>
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D. METHODS OF INSTRUCTION (TYPICAL)

Instructors of the course might conduct the course using the following method:

1. Formal lectures
2. Assigned reading and discussion of required text
3. Assigned reading of supplemental reference materials
4. Implementation of computer laboratory projects
5. Researching network resources using technical manuals and the Internet
6. Demonstrate troubleshooting and problem solving techniques through live demonstrations
7. Technology Presentations
8. Multimedia and Video

E. ASSIGNMENTS (TYPICAL)

1. EVIDENCE OF APPROPRIATE WORKLOAD FOR COURSE UNITS

Time spent on coursework in addition to hours of instruction (lecture hours)

a. On a weekly basis students will:
   i. Read assigned textbook content
   ii. Read online assigned or research content
   iii. Maintain a system administrators log

b. Periodically students will:
   i. Complete hands-on computer lab assignments and simulations
   ii. Research pertinent topics and report on findings
   iii. Prepare to take quizzes and tests to evaluate retention
   iv. Execute group activities designed to build teamwork skills
2. **EVIDENCE OF CRITICAL THINKING**
   
   *Assignments require the appropriate level of critical thinking*

   **Assignment:**
   Use the Internet to research the topic of LDAP (Lightweight Directory Access Protocol). Identify its origins, standards and the vendors (companies) involved in its development. Also explain how LDAP reduces costs and increases organization in large business networks. The report should be approximately two printed pages and you should cite at least four sources of information. Organization, content, presentation and grammar all are evaluated in your grade for this assignment.

   **Essay Question:**
   You are the network administrator for Jim’s Garages. The Jim’s Garages network is distributed throughout the United States and Canada. The main location has several hundred users, while there are 75 satellite locations directly connected to the main location with fewer than 10 users at each site. You want to deploy DHCP. You have configured all satellite offices to use APIPA in the event of a WAN link failure. How many DHCP servers will you require if you want to make certain the DHCP service has high availability to the network? Explain your reasoning.

   **Short Answer:**
   If I have seven subnets and one DHCP server, will I be able to use DHCP on all the clients?

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F. **TEXTS AND OTHER READINGS (TYPICAL)**
   

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

   demonstrate the design and implementation of directory services, analyze and report on business requirements, and information technology structures. Students will demonstrate appropriate software selection, evaluate hardware and network requirements, implement directory services and develop disaster recovery procedures.

   **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. Describe and analyze various business network models
   b. Describe and analyze information technology structures
   c. Analyze software, hardware, and network requirements
   d. Design large and small scale directory services following accepted design principles
   e. Design group policy and directory services security
   f. Design network topology and location models
   g. Analyze directory services controller, DNS server, and DHCP server topologies
   h. Discuss and plan for systems replication and disaster recovery
   i. Design a backup plan
2. **Lab Learning Goals**
   
   Upon satisfactory completion of the lab portion of this course, the student will be able to:
   
   a. Implement large and small scale directory services design principles.
   b. Install Directory Services and required associated services.
   c. Configure services to provide connectivity.
   d. Manage service updates and feature installations.
   e. Create organizational units to manage large groups of resources.
   f. Implement directory services security following commonly used methods.
   g. Install and configure DNS server, and DHCP server topologies.
   h. Evaluate service function from client operating system.
   i. Implement a backup disaster plan.
   j. SECOND COMPLETION:
   k. demonstrate updated skills reflecting current industry standards as software tools, interface and functions evolve in new versions.
   l. THIRD COMPLETION:
   m. demonstrate updated skills reflecting current industry standards as software tools, interface and functions evolve in new versions.

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

A. **FORMATIVE ASSESSMENT**

1. Assignments
2. Quizzes
3. Lab Activities
4. Exams

B. **SUMMATIVE ASSESSMENT**

1. Assignments
2. Quizzes
3. Lab Activities
4. Exams