Miami Dade College

Course Description
CET2588C | Server + Service and Maintenance |3.00 credits
This course is designed for students preparing for the hardware component of the Server + certification. Students will learn how to install, configure, and upgrade workstations and servers, configure and test network and peripheral equipment, and diagnose and troubleshoot advanced computer systems. College readiness in reading and math required. Recommended Preparation: CET1178C or A+ certification.

Course Competencies:
Competency 1: The student will demonstrate an understanding of server hardware by:
1. Describing the major functions of server hardware components
2. Describing the hardware needed for different types of specialized servers
3. Describing the characteristics, purposes, functions, limitations, and performances of the system bus architectures of servers
4. Describing the characteristics, benefits, and specifications of server hardware components, including multiprocessors and server memory; fault-tolerant adapters; SCSI; ATA; fiber channel; iSCSI and FCIP; RAID; hot-swappable drives and plug-in boards
5. Describing the attributes, purpose, function, and advantages of clustering, scalability, high availability and fault tolerance
6. Describing the basic specifications of and differences between SAN and NAS

Competency 2: The student will demonstrate an understanding of how to install and configure server components by:
1. Describing and performing the installation and configuration sequences for server hardware components, including processors, memory, hard drives, adapters, network cards, SCSI cards, RAID controllers, internal and external peripheral devices, the server chassis, and cables
2. Performing a network server installation and configuration and conducting baseline and other tests, system optimization, and documentation
3. Developing a server management and maintenance plan based on the installation

Competency 3: The student will demonstrate an understanding of upgrading server components by:
1. Performing a system backup
2. Describing the issues that must be considered when upgrading servers
3. Describing the appropriate installation and configuration sequences for adding and/or upgrading processors.
4. Adding hard drives
5. Increasing memory
6. Upgrading the BIOS and firmware
7. Upgrading adapters, including Network cards, SCSI cards, and RAID controllers, internal and external peripheral devices, system monitoring agents, power supplies, UPS units, and service & diagnostic tools
8. Performing a network server upgrade to specifications and conducting baseline and other tests, system optimization, and documentation

Competency 4: The student will demonstrate an understanding of server maintenance and environment control by:
1. Identifying issues, concerns, and costs involved with maintaining server uptime 24/7/365
2. Describing the procedures and performing server backup and verification
3. Describing the procedures and performing server performance tests, performance evaluation, and optimization
4. Describing the procedures and performing physical housekeeping of servers, including cleaning and cable management
5. Describing the procedures for performing server monitoring, maintenance, and following the server management and service plan
6. Describing the procedures for maintaining server room security
7. Describing the procedures for maintaining and preserving the environment of the server room, including monitoring

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issues such as temperature, humidity, ESD, power surges, backup generators, and fire suppression

Competency 5: The student will demonstrate an understanding of diagnosing and troubleshooting server problems by:
1. Describing troubleshooting procedures and tools
2. Describing common problems associated with server components and explaining their symptoms
3. Identifying, isolating, and troubleshooting system problems
4. Employing various techniques to elicit information and problem symptoms from customers
5. Describing methods of analyzing the customer environment
6. Describing methods of preventive maintenance, safety, and environmental issues
7. Using diagnostic hardware and software tools and utilities in the correction of server problems and the identification of bottlenecks

Competency 6: The student will demonstrate an understanding of disaster recovery by:
1. Identifying causes of disasters and their characteristics
2. Describing the features of disaster recovery plans
3. Reading and comprehending disaster recovery plans
4. Describing the need for redundancy in such components as hard drives, power supplies, fans, NICs, processors, and UPSs
5. Identifying the types of backup hardware and media and the backup and restoration schemes, including differential and incremental backups
6. Describing the concepts of hot, cold, and warm sites
7. Confirming and using off-site storage for backup
8. Designing, implementing, and testing disaster recovery plans for common scenarios

Learning Outcomes:
- Communicate effectively using listening, speaking, reading, and writing skills.
- Solve problems using critical and creative thinking and scientific reasoning
- Use computer and emerging technologies effectively
- Describe how natural systems function and recognize the impact of humans on the environment

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