Miami Dade College

Course Competencies Template - Form 112

GENERAL INFORMATION	
Course Prefix/Number: CTS1111	Course Title: Linux +
Number of Credits: 4.0	

Degree Type	☐ B.A. ☐ B.S. ☐ B.A.S ☐ A.A. ☒ A.S. ☐ A.A.S. ☐ C.C.C. ☐ A.T.C. ☐ V.C.C
Date Submitted/Revised: Nov. 2006	Effective Year/Term: 2007-1
☒ New Course Competency ☐ Revised Course Competency	

Course Description (limit to 50 words or less, **must correspond with course description on Form 102**):

This course is designed to help students prepare for the CompTIA LINUX+ Certification exam and to teach the skills needed to administer GNU/Linux-based workstations and servers. Students learn how to plan, install, maintain, document, and troubleshoot GNU/Linux operating system services. Prerequisite: CGS1060 or computer experience is required. Laboratory fee. A.S. degree credit only. (3 hr. lecture; 2 hr. lab)

Prerequisite(s): CGS1060 or computer experience is required.	Co requisite(s):

Course Competencies: (for further instruction/guidelines go to: http://www.mdc.edu/asa/curriculum.asp)

Competency 1: The student will demonstrate the knowledge and skills needed to relate different hardware, software and services options with the specific purposes and requirements of GNU/Linux users by:

1. Describing the history and development of GNU/Linux.
2. Identifying major distributions and their characteristics.
3. Describing common hardware components and resources.
4. Identifying customer requirements.
5. Differentiating the purposes and uses of GNU/Linux-based machines.
6. Planning appropriate implementation and configuration steps.
7. Justifying implementation decisions.

Competency 2: The student will demonstrate the knowledge and skills needed to perform initial installation of major distributions of GNU/Linux Operating Systems by:

1. Determining method of operating system installation based on pre-installation planning.
2. Selecting software packages based on pre-installation planning.
3. Selecting options for disk partitioning based on pre-installation planning.
4. Configuring disk partitions, file systems and boot managers based on pre-installation planning.

5. Selecting networking configuration and protocols based on pre-installation planning.

6. Configuring devices and peripherals..

Competency 3: The student will demonstrate the knowledge and skills needed to configure system settings, network services, and access rights by:

1. Configuring the X Windows System.

2. Setting environment variables.

3. Configuring advanced power management and Advanced Configuration Power Interface (ACPI).

4. Identifying and configuring mass storage devices and Redundant Array of Independent Disks (RAID).

5. Configuring Network Interface Card (NIC), client network services and TCP/IP settings from the command line interface (CLI).

6. Configuring basic server network services, including DHCP, SAMBA and Apache, and implementing basic routing and subnetting.

7. Configuring Internet services, including DNS, HTTP, POP, SMTP, SNMP and FTP.

8. Configuring Linux printing and applying basic printer permissions.

9. Configuring access rights, including NIS, FTP, TFTP, SSH.

10. Identifying and interpreting basic configuration files, including BASH, inittab, fstab, /etc/.

Competency 4: The student will demonstrate proficiency using the command line for everyday management of GNU/Linux-based clients and basic management of server systems by:

1. Creating, modifying, and deleting user and group accounts.

2. Creating and modifying files, linked files, and directories.

3. Identifying and changing files and directory permissions, modes, ownership, and type.

4. Mounting and managing file systems.

5. Identifying, configuring, and managing removable devices and media.

6. Managing, navigating, and searching standard GNU/Linux file systems.

7. Performing and verifying backups and restores.

8. Managing runlevels and system initialization from CLI and configuration files.

9. Identifying, executing, managing and killing processes.

10. Differentiating core processes from non-critical services.

11. Using common shell commands and expressions, including redirection of output and text manipulation.

12. Creating, modifying and using basic shell scripts.

13. Scheduling future jobs to execute, using at and cron daemons.

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14. Managing print jobs and print queues.
15. Monitoring network activity and system log files regularly for errors, logins, and unusual activity.
16. Downloading, updating, and repairing software packages and scripts.
17. Performing remote management.

Competency 5: The student will demonstrate the knowledge and skills needed to implement security options on GNU/Linux-based client systems by:

1. Discussing common security terms and relating security practices to common vulnerabilities.
2. Interpreting a given set of security requirements.
3. Setting process and special permissions.
4. Configuring security environment files (ie: hosts.allow, sudoers, sshd_config, PAM).
5. Implementing appropriate encryption, iptables/chains, password policies, auditing of files and authentication.
6. Identifying whether a package or file has been corrupted or altered.
7. Detecting symptoms that indicate whether a machine's security has been compromised.

Competency 6: The student will demonstrate the knowledge and skills needed to create, find, interpret, and apply written documentation of GNU/Linux-based systems by:

1. Identifying information that should be recorded for an installation or change in configuration.
2. Establishing and monitoring system performance baselines.
3. Creating written procedures for installation, configuration, security, and management.
4. Documenting installed configurations.
5. Troubleshooting errors using system logs.
6. Troubleshooting application errors using application logs.
7. Diagnosing hardware issues using the output from Linux tools.
8. Accessing system documentation and help files.

Competency 7: The student will demonstrate workplace-readiness skills by:

1. Following oral and written instructions.
2. Participating in group discussions as a member and as a leader.
3. Demonstrating self-motivation and responsibility to complete an assigned task.
4. Choosing appropriate actions in situations requiring effective time management.
5. Applying principles and techniques for being a productive, contributing member of a team.

6. Identifying and discussing intellectual property rights and licensing issues.

7. Identifying and discussing issues contained within professional codes of conduct.

8. Preparing, outlining, and delivering a short oral presentation.

9. Preparing visual material to support an oral presentation.

10. Using appropriate communication skills, courtesy, manners, and dress in the workplace.