Course Number and Title: ITN 254 System Administration for Linux

Campus Location:
Georgetown, Dover, Stanton, Wilmington

Effective Date:
2020-51

Prerequisite:
ITN 200

Co-Requisites:
None

Course Credits and Hours:
3.00 credits
2.00 lecture hours/week
2.00 lab hours/week

Course Description:
This course provides the essential knowledge and skills to perform advanced Linux system administration, including common tasks regarding the Linux kernel, system startup, and maintenance. Topics include performing advanced management of block storage and file systems as well as advanced networking and authentication, system security, and Internet and intranet services. Additionally, this course prepares students for related industry certifications.

Required Text(s):
Obtain current textbook information by viewing the campus bookstore - https://www.dtcc.edu/bookstores online or visit a campus bookstore. Check your course schedule for the course number and section.

Additional Materials:
Access to high speed Internet.

Schedule Type:
Classroom Course
Video Conferencing
Web Conferencing
Hybrid Course
Online Course

Disclaimer:
None

Core Course Performance Objectives (CCPOs):

1. Administer Linux single-host servers. (CCC 1, 2, 3; PGC 1, 3, 4)
2. Administer Linux advanced storage devices. (CCC 1, 2, 3; PGC 1, 3)
3. Administer and troubleshoot Linux networking services. (CCC 1, 2 ,3, 6; PGC 1, 3)
4. Implement and administer Linux system security. (CCC 1, 2, 3; PGC 1, 3, 4)

See Core Curriculum Competencies and Program Graduate Competencies at the end of the syllabus. CCPOs are linked to every competency they develop.

Measurable Performance Objectives (MPOs):
Upon completion of this course, the student will:

1. Administer Linux single-host servers.
    1. Describe how to utilize kernel components that are necessary to specific hardware, hardware drivers, system resources, and requirements.
    2. Configure a kernel to include or disable specific features of the Linux kernel as necessary.
    3. Identify and correct common boot and run time issues.
    4. Query and modify the behavior of system services at various targets and run levels.
    5. Manipulate a Linux system during both the boot process and during recovery mode.
    6. Build and install executable programs from source.
    7. Measure computer hardware resource and network bandwidth, identify and troubleshoot resource problems.
    8. Monitor resource usage to predict future resource needs.
2. Administer Linux advanced storage devices.
    1. Configure and navigate the standard Linux filesystem.
    2. Maintain a Linux filesystem using system utilities.
    3. Configure and implement software RAID.
    4. Configure kernel options to support various drives.
3. Administer and troubleshoot Linux networking services.
    1. Configure network devices to be able to connect to a local, wired or wireless, and a wide-area network.
    2. Troubleshoot common network setup issues.
    3. Configure a caching-only DNS server.
    4. Create a zone file for a DNS server.
    5. Configure a web server to provide HTTPS.
    6. Install and configure proxy services.
    7. Configure an email server.
    8. Configure network based file sharing services between multiple operating system platforms.
    9. Configure a DHCP server.
    10. Configure centralized authentication between multiple operating system platforms.
4. Implement and administer Linux system security.
    1. Create firewall configurations
    2. Apply security patches
    3. Configure a Virtual Private Network (VPN), and create secure point-to-point or site-to-site connections.
    4. Configure a domain name system (DNS) server to run as a non-root user and run in a chroot jail.
    5. Use system tools to backup system data.
    6. Configure PAM to support authentication.

Evaluation Criteria/Policies:
Students must demonstrate proficiency on all CCPOs at a minimal 75 percent level to successfully complete the course. The grade will be determined using the Delaware Tech grading system:

92	**–**	**100**	**=**	**A**
83	**–**	**91**	**=**	**B**
75	**–**	**82**	**=**	**C**
0	**–**	**74**	**=**	**F**

Students should refer to the Student Handbook - https://www.dtcc.edu/handbook for information on the Academic Standing Policy, the Academic Integrity Policy, Student Rights and Responsibilities, and other policies relevant to their academic progress.

Core Curriculum Competencies (CCCs are the competencies every graduate will develop):

1. Apply clear and effective communication skills.
2. Use critical thinking to solve problems.
3. Collaborate to achieve a common goal.
4. Demonstrate professional and ethical conduct.
5. Use information literacy for effective vocational and/or academic research.
6. Apply quantitative reasoning and/or scientific inquiry to solve practical problems.

Program Graduate Competencies (PGCs are the competencies every graduate will develop specific to his or her major):

1. Solve technology-related problems using critical thinking and troubleshooting skills.
2. Articulate the role of the technology professional in organizations to support the ethical use of information technology.
3. Apply fundamental security concepts and strategies for maintaining and securing information technology.
4. Read and interpret technical information and effectively communicate to a wide range of audiences using oral, print, and multimedia strategies.
5. Demonstrate the importance of lifelong learning that empowers personal and professional growth.

Disabilities Support Statement:
The College is committed to providing reasonable accommodations for students with disabilities. Students are encouraged to schedule an appointment with the campus Disabilities Support Counselor to request an accommodation needed due to a disability. A listing of campus Disabilities Support Counselors and contact information can be found at the disabilities services - https://www.dtcc.edu/disabilitysupport web page or visit the campus Advising Center.