

COMPUTER OPERATING SYSTEMS
COURSE CODE: 5322

COURSE DESCRIPTION: In the Operating Systems courses, students explore characteristics and features of a variety of operating systems. Student will gain application support and desktop support skills including installation and monitoring of an operating system, managing access for users and groups, managing hardware and applications, and working with networks, printing, and security. Students will learn how to install, configure and maintain devices within a corporate server environment. They will also learn how to configure local and remote network connectivity and storage, explore how to configure data security, device security, and network security. In addition, students will discover how to maintain, update, and recover devices. Upon completion of the two courses, students will be prepared to earn nationally-recognized industry certifications.

OBJECTIVE: Given the essential classroom and work-based learning experiences, the student will be able to perform the following core competencies.

COURSE CREDITS: 1 (120 hours) or 2 (240 hours) units

RECOMMENDED PREREQUISITE(S): IT Fundamentals **or**
Computer Repair and Service

COMPUTER ACCESS REQUIRED: One computer per student with Internet access

RECOMMENDED GRADE LEVEL: 10-12

RECOMMENDED MAXIMUM ENROLLMENT: 20

CERTIFICATIONS: CompTIA Linux +
TestOut Linux Pro
TestOut Client Pro
MTA Windows Operating Fundamentals

OTHER: Computer service technology programs may choose to articulate with postsecondary institutions for completion of some advanced level competencies.

RESOURCES: [Instructional Materials](#)

A-E follows H.

F. INSTALLATION, CONFIGURATION, AND ADMINISTRATION

Proficient Information Technology professionals demonstrate proficiency in managing and maintaining operating systems. The following accountability criteria are considered essential for students in the Information Support and Services and Networking Services programs of study.

1. Install and activate operating system that meets end-user requirements, e.g., upgrade/clean install, virtual, hardware specs, and installation media.
2. Perform post-installation configuration tasks.
3. Explain boot process concepts.
4. Given a scenario, configure and use command/line utilities and shell environments.
5. Given a scenario, manage system start-up and shutdown.
6. Given a scenario, manage system processes.
7. Given a scenario, use package management.
8. Configure internet and web browser options for security and privacy.
9. Implement client-side virtualization.
10. Given a scenario, install, configure, and monitor kernel modules.
11. Given a scenario, configure and verify network connection parameters.
12. Compare and contrast cloud and virtualization concepts and technologies.
13. Given a scenario, configure localization options.

G. HARDWARE

Proficient Information Technology professionals demonstrate proficiency in managing computer hardware. The following accountability criteria are considered essential for students in the Information Support and Services and Networking Services programs of study.

1. Manage BIOS, devices, and drivers.
2. Implement hardware that meets system requirements.
3. Customize display settings.
4. Optimize hardware performance, power management, and virtual memory.

H. STORAGE AND FILE SYSTEM MANAGEMENT

Proficient Information Technology professionals demonstrate proficiency in managing storage and file systems. The following accountability criteria are considered essential for students in the Information Support and Services and Networking Services programs of study.

1. Given a scenario, manage storage devices.
2. Given a scenario, manage a file system.
3. Configure file systems, partitions, volumes, and RAID.
4. Given a scenario, create, modify, and redirect files.
5. Optimize and troubleshoot disks.
6. Given a scenario, backup, restore, and compress files.

I. APPLICATIONS AND SERVICES

Proficient Information Technology professionals demonstrate proficiency in managing applications and services. The following accountability criteria are considered essential for students in the Information Support and Services and Networking Services programs of study.

1. Given a scenario, conduct software installations, configurations, updates, and removals.
2. Given a scenario, manage services.
3. Configure location settings for location-aware applications.
4. Configure user account control (UAC) settings.
5. Given a scenario, automate and schedule jobs.

J. SECURITY AND ACCESS CONTROL

Proficient Information Technology professionals demonstrate proficiency in managing security and access control. The following accountability criteria are considered essential for students in the Information Support and Services and Networking Services programs of study.

1. Given a scenario, manage users and groups.
2. Given a scenario, manage user and group access.
3. Given a scenario, apply or acquire the appropriate user and/or group policies, permissions, and ownership.
4. Given a scenario, configure and implement appropriate access and authentication methods.
5. Summarize security best practices for a specified environment.
6. Given a scenario, implement logging services.
7. Given a scenario, implement and configure remote access and firewalls.
8. Configure operating systems updates.
9. Secure a system from potential threats.
10. Explain disaster recovery measures, e.g., restore points, backup.

K. NETWORKING AND PRINTING

Proficient Information Technology professionals demonstrate proficiency in networking and printing. The following accountability criteria are considered essential for students in the Information Support and Services and Networking Services programs of study.

1. Configure and troubleshoot IPv4 and IPv6 addressing.
2. Configure wired and wireless networks.
3. Share network resources.
4. Summarize and explain server roles.
5. Install and configure local and shared printers.
6. Configure and manage print jobs.

L. TROUBLESHOOTING AND DIAGNOSTICS

Proficient Information Technology professionals demonstrate proficiency in diagnosing and troubleshooting computer systems. The following accountability criteria are considered essential for students in the Information Support and Services and Networking Services programs of study.

1. Given a scenario, analyze system properties and remediate accordingly.
2. Given a scenario, analyze system processes in order to optimize performance.
3. Given a scenario, analyze and troubleshoot user issues.
4. Given a scenario, analyze and troubleshoot application and hardware issues.
5. Given a scenario, analyze and troubleshoot networking issues.

A. SAFETY

Proficient professionals know the academic subject matter, including safety as required for proficiency within their area. They will use this knowledge as needed in their role. The following accountability criteria are considered essential for students in any program of study.

1. Review school safety policies and procedures.
2. Review classroom safety rules and procedures.
3. Review safety procedures for using equipment in the classroom.
4. Identify major causes of work-related accidents in office environments.
5. Demonstrate safety skills in an office/work environment.

B. STUDENT ORGANIZATIONS

Proficient professionals know the academic subject matter, including professional development, required for proficiency within their area. They will use this knowledge as needed in their role. The following accountability criteria are considered essential for students in any program of study.

1. Identify the purpose and goals of a Career and Technology Student Organization (CTSO).
2. Explain how CTSOs are integral parts of specific clusters, majors, and/or courses.
3. Explain the benefits and responsibilities of being a member of a CTSO
4. List leadership opportunities that are available to students through participation in CTSO conferences, competitions, community service, philanthropy, and other activities.
5. Explain how participation in CTSOs can promote lifelong benefits in other professional and civic organizations.

C. TECHNOLOGY KNOWLEDGE

Proficient professionals know the academic subject matter, including the ethical use of technology as needed in their role. The following accountability criteria are considered essential for students in any program of study.

1. Demonstrate proficiency and skills associated with the use of technologies that are common to a specific occupation.
2. Identify proper netiquette when using e-mail, social media, and other technologies for communication purposes.
3. Identify potential abuse and unethical uses of laptops, tablets, computers, and/or networks.
4. Explain the consequences of social, illegal, and unethical uses of technology (e.g., cyber bullying, piracy; illegal downloading; licensing infringement; inappropriate uses of software, hardware, and mobile devices in the work environment).
5. Discuss legal issues and the terms of use related to copyright laws, fair use laws, and ethics pertaining to downloading of images, photographs, documents, video, sounds, music, trademarks, and other elements for personal use.
6. Describe ethical and legal practices of safeguarding the confidentiality of business-related information.
7. Describe possible threats to a laptop, tablet, computer, and/or network and methods of avoiding attacks.

D. PERSONAL QUALITIES AND EMPLOYABILITY SKILLS

Proficient professionals know the academic subject matter, including positive work practices and interpersonal skills, as needed in their role. The following accountability criteria are considered essential for students in any program of study.

1. Demonstrate punctuality.
2. Demonstrate self-representation.
3. Demonstrate work ethic.
4. Demonstrate respect.
5. Demonstrate time management.
6. Demonstrate integrity.
7. Demonstrate leadership.
8. Demonstrate teamwork and collaboration.
9. Demonstrate conflict resolution.
10. Demonstrate perseverance.
11. Demonstrate commitment.
12. Demonstrate a healthy view of competition.
13. Demonstrate a global perspective.
14. Demonstrate health and fitness.
15. Demonstrate self-direction.
16. Demonstrate lifelong learning.

E. PROFESSIONAL KNOWLEDGE

Proficient professionals know the academic subject matter, including positive work practices and interpersonal skills, as needed in their role. The following accountability criteria are considered essential for students in any program of study.

1. Demonstrate effective speaking and listening skills.
2. Demonstrate effective reading and writing skills.
3. Demonstrate mathematical reasoning.
4. Demonstrate job-specific mathematics skills.
5. Demonstrate critical-thinking and problem-solving skills.
6. Demonstrate creativity and resourcefulness.
7. Demonstrate an understanding of business ethics.
8. Demonstrate confidentiality.
9. Demonstrate an understanding of workplace structures, organizations, systems, and climates.
10. Demonstrate diversity awareness.
11. Demonstrate job acquisition and advancement skills.
12. Demonstrate task management skills.
13. Demonstrate customer-service skills.

[Course Materials and Resources](#)

[Course Academic Standards and Indicators](#)

[SC Computer Science Academic Standards and Process Standards](#)