ADVANCED SERVER ADMINISTRATION
Course Code 5313

COURSE DESCRIPTION: In Advanced Server Administration, students learn the concepts and practices of server administration, including server architecture, server management and maintenance, software installation and configuration, troubleshooting, storage management, networking configuration and management, security and disaster recovery, virtualization and shell scripting. 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 Carnegie unit (120 hours), 2 (240 hours)

RECOMMENDED PREREQUISITE(S): Server Administration

COMPUTER ACCESS REQUIRED: 1 Computer per student with Internet access

RECOMMENDED GRADE LEVELS: 10-12

RECOMMENDED MAXIMUM ENROLLMENT: 20

CERTIFICATIONS: CompTIA Server +
MTA Windows Server Administration Fundamentals
TestOut Windows Server Pro

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., piracy; cyberbullying, 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, Creative Commons, 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.

F. SERVER ARCHITECTURE

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

1. Explain the purpose and function of server form factors.
2. Given a scenario, install, configure and maintain server components.
3. Compare and contrast power and cooling components.

G. SERVER ADMINISTRATION

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

1. Install and configure server operating systems.
2. Compare and contrast server roles and requirements for a variety of server types.
3. Given a scenario, use access and control methods to administer a server.
4. Given a scenario, perform proper server maintenance techniques.
5. Explain the importance of asset management and documentation.
6. Explain the purpose and operation of virtualization components.

H. STORAGE

Proficient Information Technology professionals demonstrate knowledge in server storage. 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, install and deploy primary storage devices based on given specifications and interfaces.
2. Given a scenario, configure RAID using best practices.
3. Summarize hardware and features of various storage technologies.
4. Given a scenario, calculate appropriate storage capacity and plan for future growth.

I. SECURITY

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

1. Compare and contrast physical security methods and concepts.
2. Given a scenario, apply server hardening techniques.
3. Explain basic network security systems and protocols.
4. Implement logical access control methods based on company policy.
5. Implement data security methods and secure storage disposal techniques.
6. Given a scenario, implement proper environmental controls and techniques.

J. NETWORKING

Proficient Information Technology professionals demonstrate knowledge in server networking. 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, configure servers to use IP addressing and networking infrastructure services.
2. Compare and contrast various ports and protocols.

3. Given a scenario, install cables and implement proper cable management procedures.

K. DISASTER RECOVERY

Proficient Information Technology professionals demonstrate knowledge protecting from data loss. The following accountability criteria are considered essential for students in the Information Support and Services and Networking Services programs of study.

1. Explain the importance of disaster recovery principles.
2. Given a scenario, implement appropriate backup techniques.

L. TROUBLESHOOTING

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

1. Explain troubleshooting theory and methodologies.
2. Given a scenario, effectively hardware problems, selecting the appropriate tools and methods.
3. Given a scenario, effectively troubleshoot software problems, selecting the appropriate tools and methods.
4. Given a scenario, effectively diagnose network problems, selecting the appropriate tools and methods.
5. Given a scenario, effectively troubleshoot storage problems, selecting the appropriate tools and methods.
6. Given a scenario, effectively diagnose a security issues, selecting the appropriate tools and methods.

Course Materials and Resources

Academic Standards and Indicators

Computer Science Standards and Indicators