

# COMPUTER INFORMATION TECH (CITE)

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## **CITE-104 Systems Administration I**

### **3 Credits**

**Lecture:** 3 hours per week

**Offering:** Spring Only, All Years

This course covers the fundamentals of implementing, managing, maintaining, and provisioning services and infrastructure in a server-based network environment. This course covers the initial implementation and configuration of core networking services, such as IP networking, file storage, Directory Services, user and group management, file and print services, and virtualization.

## **CITE-105 Systems Administration I Projects**

### **3 Credits**

**Lecture:** 1 hour per week, **Lab:** 6 hours per week

**Offering:** Spring Only, All Years

This course utilizes projects in teaching the fundamentals of implementing, managing, maintaining, and provisioning services and infrastructure in a server-based network environment. This course covers the initial implementation and configuration of core networking services, such as IP networking, file storage, Directory Services, user and group management, file and print services, and virtualization.

**Corequisites:** CITE-104

## **CITE-116 Desktop Operating System Support**

### **3 Credits**

**Lecture:** 3 hours per week

**Offering:** Fall Only, All Years

This course concentrates on supporting desktop and mobile operating systems in an enterprise computing environment. It examines installation, configuration, networking, remote access, resource access, secure wireless network access, security issues and their resolution.

## **CITE-118 Computer Information Technology Essentials**

### **2 Credits**

**Lecture:** 2 hours per week

**Offering:** Fall Only, All Years

This course covers the fundamentals of computer hardware and software and advanced concepts such as security, networking, and the responsibilities of an IT professional. Additional topics include mobile operating systems, OS X, Linux, and client-side virtualization. Expanded topics include Microsoft Windows operating systems, cybersecurity concepts, networking, and troubleshooting.

## **CITE-119 Computer Information Technology Essentials Projects**

### **2 Credits**

**Lab:** 3 hours per week

**Offering:** Fall Only, All Years

This course presents a comprehensive advanced exposure to computer operating systems and hardware. Students working through hands-on activities and labs gain skills in assembling components, install, configure and maintain devices, PCs and software, understand the basics of networking and security/forensics, laptops, printers and properly diagnose, document, resolve common hardware and operating system software issues while applying troubleshooting skills. Students also gain understanding of appropriate customer support; understand the basics of virtualization, desktop imaging, and deployment. Additional topics include mobile operating systems, OS X, Linux, and client-side virtualization. Expanded topics include Microsoft Windows operating systems, cybersecurity concepts, networking, and troubleshooting.

**Corequisites:** CITE-118

**Recommended Prerequisites:** CITE-116 and CITE-127

## **CITE-121 Network Support I**

### **3 Credits**

**Lecture:** 3 hours per week

**Offering:** Fall and Spring Only, All Years

This course provides students with the knowledge of the architecture, structure, functions, components, and models of the Internet and other computer networks. The principles and structure of IP addressing and the fundamentals of LAN concepts, media, and operations are introduced to provide a foundation for students.

**Corequisites:** CITE-122

**Recommended Pre/Corequisites:** CITE-118 and CITE-119

## **CITE-122 Network Support I Projects**

### **3 Credits**

**Lecture:** 1 hour per week, **Lab:** 6 hours per week

**Offering:** Fall and Spring Only, All Years

This course provides students with the knowledge of the architecture, structure, functions, components, and models of the Internet and other computer networks. The principles and structure of IP addressing and the fundamentals of LAN concepts, media, and operations are introduced to provide a foundation for the student to be able to build simple LANs, perform basic configurations for routers and switches, and implement IP addressing schemes and troubleshoot network issues.

**Corequisites:** CITE-121

**Recommended Prerequisites:** CITE-118 and CITE-119

**CITE-124 TCP/IP Fundamentals****2 Credits****Lecture:** 0.5 hours per week, **Lab:** 4.5 hours per week**Offering:** Fall Only, All Years

This course offers an in-depth look at the various TCP/IP protocols that comprise today's converging communication technologies and data networks. This course is intended for students wishing to understand how communication and network protocols operate: programmers writing network applications, system administrators responsible for maintaining systems and networks utilizing the various protocols, and users who deal with network applications on a daily basis.

**Recommended Prerequisites:** CITE-118, CITE-121, and CITE-122**CITE-127 Desktop Commodity Operating System Support Projects****2 Credits****Lecture:** 0.5 hours per week, **Lab:** 4.5 hours per week**Offering:** Fall Only, All Years

This course utilizes projects in supporting commodity desktop and mobile operating systems in an enterprise computing environment. It examines installation, configuration, maintenance, remote access, resource access, secure wireless network access, security issues and their resolution. In addition configuring backups and restoring data, installing patches and updates, and networking are examined.

**Corequisites:** CITE-116**CITE-142 Information Security Fundamentals****3 Credits****Lecture:** 1 hour per week, **Lab:** 6 hours per week**Offering:** Spring Only, All Years

This course is an introduction to network security and overall security processes and offers in-depth coverage of the risks and threats to an organization's data, combined with a structured way of addressing the safeguarding critical assets. The course provides a foundation for those new to security practices as well as those responsible for protecting network services, devices, traffic, and data.

**Recommended Prerequisites:** CITE-213 and CITE-215**CITE-150 Introduction to Networking****3 Credits****Lecture:** 3 hours per week**Offering:** Spring Only, All Years

This course is designed to provide students with the background necessary to understand local area networking information including industry language, data communications protocols, and an overview of microcomputers and network user basics. Topics include operating systems, network operating systems, network card configuration, and installation needed for network connectivity. Hands-on exercises and scenario-based reviews are included with coverage of critical networking issues and concepts. This is a required course in the Computer Information Technology certificate program. This class is geared towards preparing students for Network+ Certification.

**CITE-155 Linux Essentials****3 Credits****Lecture:** 2 hours per week, **Lab:** 3 hours per week**Offering:** Spring Only, All Years

This course will provide students with the fundamental concepts of Linux operating systems. The course covers such topics as the Linux file system, commands, utilities, text editing, shell programming, and text processing utilities. Students will learn command line syntax and features of the popular Linux shells, including filename generation, redirection, pipes, and quoting mechanisms. The course is designed to help students prepare for professional careers in the information technology and cybersecurity fields. It also helps prepare individuals seeking to pass Linux-based industry certification.

**CITE-165 Linux System Administration****3 Credits****Lecture:** 2 hours per week, **Lab:** 3 hours per week**Offering:** Fall Only, All Years

This course introduces the student to the intermediate level of system administration using Linux operating systems. Additionally, the course provides the broad-based knowledge necessary to prepare students for further study in other specialized security fields and will also appeal to Microsoft professionals seeking to gain Linux experience.

**Recommended Prerequisites:** CITE-155**CITE-206 Systems Administration II****3 Credits****Lecture:** 3 hours per week**Offering:** Fall Only, All Years

This course covers the administration tasks necessary in maintaining a network server in a business infrastructure. Topics include deploying images, managing users and groups in a directory database, managing policies, securing data, remote access, monitoring, and update management.

**Prerequisites:** CITE-104**CITE-207 Systems Administration II Projects****3 Credits****Lecture:** 1 hour per week, **Lab:** 6 hours per week**Offering:** Fall Only, All Years

This course uses projects to teach the skills necessary to maintain network servers in a business infrastructure. Projects include deploying images, managing users and groups using a directory database, management policies, securing data, configuring remote access, monitoring, and configuring update management.

**Corequisites:** CITE-206**CITE-208 Systems Administration III****3 Credits****Lecture:** 3 hours per week**Offering:** Spring Only, All Years

This course covers advanced administration tasks necessary in supporting enterprise network infrastructures. Topics include deploying an enterprise network infrastructure, advanced user and group management, advanced networking services, cross vendor network integration, identity management, designing for fault tolerance, and disaster recovery.

**Prerequisites:** CITE-206

**CITE-209 Systems Administration III Projects****3 Credits****Lecture:** 1 hour per week, **Lab:** 6 hours per week**Offering:** Spring Only, All Years

This course uses projects to teach the skills necessary to support enterprise network infrastructures. Projects include deploying an enterprise network infrastructure, implementing advanced user and group management, implementing advanced networking services, supporting cross vendor network integration, supporting identity management, designing for fault tolerance and disaster recovery.

**Corequisites:** CITE-208**CITE-213 Network Support II****3 Credits****Lecture:** 3 hours per week**Offering:** Fall and Spring Only, All Years

This course describes the architecture, components, and operations of routers and switches in a small network. Students learn how to configure a router and a switch for basic functionality. By the end of this course, students will be able to configure and troubleshoot routers and switches and resolve common issues with virtual LANs and inter-VLAN routing in both IPv4 and IPv6 networks.

**Prerequisites:** CITE-121**Corequisites:** CITE-215**CITE-215 Network Support II Projects****3 Credits****Lecture:** 1 hour per week, **Lab:** 6 hours per week**Offering:** Fall and Spring Only, All Years

This course describes the architecture, components, and operations of routers and switches in a small network. Students learn how to configure a router and a switch for basic functionality. By the end of this course, students will be able to configure and troubleshoot routers and switches and resolve common issues with virtual LANs and inter-VLAN routing in both IPv4 and IPv6 networks.

**Corequisites:** CITE-213**CITE-217 Network Support III****3 Credits****Lecture:** 3 hours per week**Offering:** Spring Only, All Years

This course describes the architecture, components, and operations of routers and switches in larger and more complex networks. Students learn how to configure routers and switches for advanced functionality and troubleshoot routers and switches and resolve common issues with routing and switching protocols in IP networks. Students will also develop the knowledge and skills needed to implement remote access operations in a complex network.

**Prerequisites:** CITE-213**CITE-219 Network Support III Projects****3 Credits****Lecture:** 1 hour per week, **Lab:** 6 hours per week**Offering:** Spring Only, All Years

This course describes the architecture, components, and operations of routers and switches in larger and more complex networks. Students learn how to configure routers and switches for advanced functionality and troubleshoot routers and switches and resolve common issues with routing and switching protocols in IP networks. Students will also develop the knowledge and skills needed to implement remote access operations in a complex network.

**Corequisites:** CITE-217**CITE-235 Network Security Fundamentals****3 Credits****Lecture:** 1 hour per week, **Lab:** 6 hours per week**Offering:** Fall Only, All Years

This course prepares students for entry-level security specialist careers by developing an in-depth understanding of network security principles and the tools and configurations needed to secure a network. Students will have hands-on experience with network implementation, network security, firewall implementation and maintenance and server hardening techniques.

**Recommended Pre/Corequisites:** CITE-142**CITE-237 Ethical Hacking and Systems Defense****3 Credits****Lecture:** 1 hour per week, **Lab:** 6 hours per week**Offering:** Spring Only, All Years

This course combines an ethical hacking methodology with the hands-on application of security tools to better help students understand securing systems. Students are introduced to common countermeasures that effectively reduce and/or mitigate attacks. Students will also practice using structured knowledge bases to discover vulnerabilities and recommend solutions for tightening network security and protecting data from potential attackers. Focus is on penetration-testing tools and techniques to protect computer networks.

**Prerequisites:** CITE-235**CITE-239 Network Forensics Incident Response****3 Credits****Lecture:** 1 hour per week, **Lab:** 6 hours per week**Offering:** Spring Only, All Years

This course explores security incidents and intrusions, including identifying and categorizing incidents, responding to incidents, log analysis, network traffic analysis, various tools, and creating an incident response team.

**Prerequisites:** CITE-235

**CITE-243 Command Line and Scripting Fundamentals****3 Credits****Lecture:** 2 hours per week, **Lab:** 3 hours per week**Offering:** Fall Only, All Years

This course teaches the fundamental skills necessary for working in a command line environment of today's common operating systems such as Microsoft DOS and PowerShell and the Linux Bash environment. This course is intended for technical professionals wanting to advance their skills and for students preparing for a technology-related career. It also offers an introduction to scripting languages including basic data types, control structures, regular expressions, input/output, and textual analysis.

**CITE-275 Intrusion Detection/Prevention Systems Fundamentals****3 Credits****Lecture:** 1 hour per week, **Lab:** 6 hours per week**Offering:** Fall Only, All Years

This course is designed to allow students to gain a thorough foundation in the design, implementation, and administration of Intrusion Detection Systems and Intrusion Prevention Systems, as well as practical, hands-on experience working with these systems. In addition, students analyze various attack signatures and the network traffic these systems collect.

**Corequisites:** CITE-235**CITE-289 Cyber Competitions****3 Credits****Lecture:** 1 hour per week, **Lab:** 6 hours per week**Offering:** Spring Only, All Years

This course prepares the student to participate in various cybersecurity competitions. It covers topics in the major areas of concentration for the competitions, and students will participate in practice competitions. Participating in a competition teaches students practical techniques for securing a network or personal data. This course provides an in-depth understanding of how to effectively protect computer networks. Students will learn the tools and penetration testing methodologies used by ethical hackers. In addition, the course provides a thorough discussion of what and who an ethical hack is and how important they are in protecting corporate and government data from cyber attacks. Students will learn updated computer security resources that describe new vulnerabilities and innovative methods to protect networks. Also covered is a thorough update of federal and state computer crime laws, as well as changes in penalties for illegal computer hacking.

**CITE-295 Computer Information Technology Internship****4 Credits****Internship:** 9 hours per week**Offering:** Spring Only, All Years

This course involves a working partnership in which the sophomore students of the CITE program join with area employers in a structured, real-life relationship. Students will gain insight and on-the-job work experience doing projects that would normally be assigned to the employer's entry-level support staff. During this supervised experience, students will be evaluated on their performance of course competencies. Students are responsible for finding an appropriate internship site and permission of the instructor is required. This course may be used to substitute for ATEC-117.

**CITE-296 Cybersecurity Internship****3 Credits****Internship:** 9 hours per week**Offering:** Fall and Spring Only, All Years

This course involves a working partnership in which the sophomore students of the Network Security Administration program join with area employers in a structured, real-life relationship. Students will gain insight and on-the-job work experience doing projects that would normally be assigned to the employer's entry-level support staff. During this supervised experience, students will be evaluated on their performance of course competencies. Students are responsible for finding an appropriate internship site and permission of the instructor is required. This course may be used to substitute for ATEC-117 or CITE-289 Cybersecurity Competitions in the Network Security Administration program. Students must be sophomore status or have instructor permission to enroll in CITE-296.