## Computer and Information Technology Systems (CITS)

### CITS F201  Microcomputer Operating Systems Support
- **1-3 Credits**
- Offered As Demand Warrants
- Comprehensive exploration of a current microcomputer operating system: use, configuring, installing and administering. Topics include end-user and technical support.
- **Recommended:** CIOS F150 or equivalent skills.
- **Lecture + Lab + Other:** 1-3 + 0 + 0

### CITS F202  Microcomputer Hardware Support
- **1-3 Credits**
- Offered As Demand Warrants
- Fundamental hardware and software (associated with hardware) configuration and troubleshooting. Includes installing, removing and configuring computer hardware components; installing and configuring software applications and operating systems to support hardware; diagnosing hardware and software problems; and developing troubleshooting and configuration procedures.
- **Recommended:** CITS F201 or equivalent skills.
- **Lecture + Lab + Other:** 1-3 + 0 + 0

### CITS F203  Information Technology Support Fundamentals
- **4 Credits**
- Offered As Demand Warrants
- Overview of skills and knowledge required by professional computer support technicians to support and troubleshoot computer operating systems and computer hardware, including the purpose and function of the internal components of a computer, how to assemble a computer system, install an operating system and the basic skills and knowledge required to connect to and share resources in a network environment.
- Course covers objectives defined for CompTIA A+ certification.
- **Recommended:** CIOS F150 or equivalent skills.
- **Lecture + Lab + Other:** 4 + 0 + 0

### CITS F204  Introduction to Computer Networks
- **3 Credits**
- Offered As Demand Warrants
- This foundational course introduces types of computer networks and the components that make them work. Teaches knowledge and skills needed to install, configure and troubleshoot basic networking hardware, protocols and services. Develop technical ability in the areas of media, topologies, protocols and standards, network implementation, and basic network administration. This serves as a gateway course to all CITS courses. May be taken concurrently with CITS F203.
- **Lecture + Lab + Other:** 3 + 0 + 0

### CITS F205  Introduction to Coding and Programming
- **1-3 Credits**
- Offered As Demand Warrants
- Computer programming focused on programming concepts with programming tools.
- **Prerequisites:** Math placement at the 100-level.
- **Lecture + Lab + Other:** 1-3 + 0 + 0

### CITS F206  Web Scripting
- **3 Credits**
- Offered As Demand Warrants
- Introduction to client-side Web page scripting. Covers basic programming concepts, including data representation, functions, control structures and arrays. Topics include client-side scripting with JavaScript, object-oriented JavaScript, design issues, error handling, security, the Document Object Model and dynamic HTML and AJAX.
- **Prerequisite:** CITS F205 or CS F103; CITS F222; or equivalent skills.
- **Lecture + Lab + Other:** 3 + 0 + 0

### CITS F207  Programming Tools
- **3 Credits**
- Offered As Demand Warrants
- Programming tools.
- **Prerequisite:** CITS F206 or equivalent skills.
- **Lecture + Lab + Other:** 3 + 0 + 0

### CITS F208  Network Administration Fundamentals
- **3 Credits**
- Offered As Demand Warrants
- In-depth and comprehensive technical class covering operating system skills and concepts. Course may be repeated for credit.
- **Recommended:** CITS F203 or equivalent skills.
- **Lecture + Lab + Other:** 3 + 0 + 0

### CITS F209  Network Administration: Topics
- **1-4 Credits**
- Offered As Demand Warrants
- In-depth and comprehensive technical class covering operating system skills and concepts. Course may be repeated for credit.
- **Recommended:** CITS F203 or equivalent skills.
- **Lecture + Lab + Other:** 1-4 + 0 + 0

### CITS F210  Operating System Fundamentals
- **3 Credits**
- Offered As Demand Warrants
- In-depth and comprehensive technical class covering operating system skills and concepts. Course may be repeated for credit.
- **Recommended:** CITS F203 or equivalent skills.
- **Lecture + Lab + Other:** 3 + 0 + 0

### CITS F211  Operating System Fundamentals: Topics
- **1-4 Credits**
- Offered As Demand Warrants
- In-depth and comprehensive technical class covering operating system skills and concepts. Course may be repeated for credit.
- **Recommended:** CITS F203 or equivalent skills.
- **Lecture + Lab + Other:** 1-4 + 0 + 0

### CITS F212  Server Operating Systems
- **3 Credits**
- Offered As Demand Warrants
- Fundamentals in installing, configuring and maintaining server operating systems. Learn how to configure and administer network accounts, resources, and common services deployed on server operating systems. Course covers foundation server operating system knowledge required for Microsoft Certified Solutions Associate (MCSA) certification exams related to server technologies.
- **Prerequisite:** CITS F204 (may be taken concurrently) or equivalent skills.
- **Lecture + Lab + Other:** 3 + 0 + 0

### CITS F219  Microcomputer Operating Systems: Topics
- **1-4 Credits**
- Offered As Demand Warrants
- In-depth and comprehensive technical class covering operating system skills and concepts. Course may be repeated for credit.
- **Recommended:** CITS F203 or equivalent skills.
- **Lecture + Lab + Other:** 1-4 + 0 + 0

### CITS F220  Implementing Internet Tools and Technologies
- **3 Credits**
- Offered As Demand Warrants
- Exploration of advanced Internet topics. Building a presence on the Internet -- evaluate web hosting services, domain names and registration services. How to implement and understand web communication tools and develop and understand the impact of participating in social networks and the changing nature of these networks.
- **Recommended:** CIOS F150 or equivalent skills.
- **Lecture + Lab + Other:** 3 + 0 + 0

### CITS F221  Graphics and Multimedia for the Web
- **3 Credits**
- Offered As Demand Warrants
- Creating graphics and multimedia content for the Web. Graphic topics include formats, size and resolution, optimization and design fundamentals. Multimedia topics include animation, interactivity and combining sound, speech, graphics, photographs and video.
- **Recommended:** CIOS F150; or equivalent skills.
- **Lecture + Lab + Other:** 3 + 0 + 0

### CITS F222  Website Design
- **3 Credits**
- Offered As Demand Warrants
- Comprehensive survey of professional website design and authoring tools used to create Internet websites. Topics include: website design and planning; HTML, XHTML and CSS.
- **Recommended:** CIOS F150 or equivalent skills.
- **Lecture + Lab + Other:** 3 + 0 + 0

### CITS F224  Computer and Information Technology Systems (CITS)
CITS F225  Web Databases and Programming
3 Credits
Offered As Demand Warrants
Programming and database design as it relates to creating dynamic web sites and applications. Develop web applications to automate websites, create and access web databases, provide tools for users to modify parts of their own website, create and access files on the fly and reduce repetitive maintenance. Course topics include CSS, SSI, DHTML, SQL, PHP and other web technologies.
Prerequisites: CITS F205 or CS F103; CITS F222; or equivalent skills.
Lecture + Lab + Other: 3 + 0 + 0

CITS F228  Advanced Website Design and Development
3 Credits
Offered As Demand Warrants
Plan and implement professional and comprehensive websites that utilize and integrate multiple website design and development technologies such as XHTML, CSS, XML, Ajax, Web APIs, client-side and server-side programming, graphics and multimedia, and web communication tools.
Prerequisites: CITS F221; CITS F222; CITS F224; CITS F225; or equivalent skills.
Lecture + Lab + Other: 3 + 0 + 0

CITS F240  System and Network Services Administration
3 Credits
Offered As Demand Warrants
Implement and administer the core network services operating within a network environment. Topics include: WSUS, WDS, DHCP, DNS, remote access, file and print, security and network management services. Develop a conceptual understanding of each network service and learn how to plan, implement and administer each service. Course covers system and network services objectives required for Microsoft Certified Solutions Associate (MCSA) certification exams related to server technologies.
Prerequisites: CITS F212 (may be taken concurrently) or equivalent skills.
Lecture + Lab + Other: 3 + 0 + 0

CITS F241  Networking and LAN Infrastructure Basics
4 Credits
Offered As Demand Warrants
Design and implementation of networks in small- to medium-sized environments. Focuses on network terminology and protocols, local-area networks (LANs), wide-area networks (WANs), open systems interconnection model, cabling, cabling tools, routers, router programming, Ethernet, Internet protocol addressing and network standards.
Recommended: CITS F201; CITS F202; or equivalent skills.
Lecture + Lab + Other: 4 + 0 + 0

CITS F242  Routing and Switching Essentials
4 Credits
Offered As Demand Warrants
This course teaches students the architecture, components, and operations of routers and switches in a small network. Students learn to configure routers and switches for basic functionality as well as troubleshoot routers and switches and resolve common issues with RIPv1, RIPv2, single-area and multi-area OSPF, virtual LANs, and inter-VLAN routing in both IPv4 and IPv6 networks. This course is the second of four courses that cover objectives required for the Cisco Certified networking Associate (CCNA) certification.
Prerequisites: CITS F241.
Lecture + Lab + Other: 4 + 0 + 0

CITS F243  Intermediate Networking and LAN Infrastructure
4 Credits
Offered As Demand Warrants
Provide an understanding of the architecture, components, and operations of routers and switches in large and complex networks. Students will learn how to configure routers and switches for advanced functionality. Topics include configuring and troubleshooting routers and switches and resolving common issues with OSPF, EIGRP, STP and VTP in both IPv4 and IPv6 networks. Students will also develop the knowledge and skills needed to implement DHCP and DNS operations in a network. This course is the third of four courses that cover objectives required for the Cisco Certified Networking Associate (CCNA) certification.
Prerequisites: CITS F241.
Lecture + Lab + Other: 4 + 0 + 0

CITS F244  Advanced Network Infrastructure Services
4 Credits
Offered As Demand Warrants
This course discusses the WAN technologies and network services required by converged applications in a complex network. Students will understand the selection criteria of network devices and WAN technologies to meet network requirements. Students will learn to configure and troubleshoot network devices and resolve common issues with data link protocols. Students will also develop the knowledge and skills needed to implement IPsec and virtual private networks (VPN) operations in a complex network. This course is the fourth of four courses that cover objectives required for the Cisco Certified Networking Associate (CCNA) certification.
Prerequisites: CITS F242; CITS F243.
Lecture + Lab + Other: 4 + 0 + 0

CITS F249  Networking and Communications: Topics
1-4 Credits
Offered As Demand Warrants
In-depth technical and comprehensive coverage of networking and communications skills and concepts.
Recommended: CITS F204 or equivalent skills.
Special Notes: May be repeated for credit.
Lecture + Lab + Other: 1-4 + 0 + 0

CITS F261  Computer and Network Security
3 Credits
Offered As Demand Warrants
The fundamental concepts of computer and network security. Course topics include: understanding threats to a computing infrastructure, understanding encryption technologies, securing network communications and applications, security policies and responding to incidents. Course covers objectives defined for CompTIA Security+ certification.
Prerequisites: CITS F204 or equivalent skills.
Lecture + Lab + Other: 3 + 0 + 0

CITS F262  Cybersecurity Defense and Countermeasures
3 Credits
This course focuses on network and information systems security from a defensive point of view. Students will learn how to analyze internal and external security threats, develop security policies, and implement security measures to protect information within an enterprise. Topics include risk assessment, security policies and procedures, incident response, cryptographic services, network and host-based security.
Prerequisites: CITS F261 or equivalent skills.
Lecture + Lab + Other: 3 + 0 + 0
### CITS F263  Network Security Penetration Testing
3 Credits
Offered As Demand Warrants
This course focuses on network and information systems security from an offensive point of view. Students will learn technical testing and examination techniques used to identify, validate and assess technical vulnerabilities within an enterprise. Topics include penetration testing methodology, footprinting and reconnaissance, scanning and enumeration, vulnerability validation, data collection and reporting.

**Prerequisites:** CITS F261 or equivalent skills.

**Lecture + Lab + Other:** 3 + 0 + 0

### CITS F265  Directory Services Administration
3 Credits
Offered As Demand Warrants
The purpose and components that make up directory services and the role these services play in storing, organizing and managing information in a network environment. How to create and configure directory service objects to manage access to network resources, to implement and manage group policy objects, and to backup, restore, monitor and troubleshoot directory service related issues. Course covers advanced directory services administration objectives required for Microsoft Certified Solutions Associate (MCSA) certification exams related to server technologies.

**Prerequisite:** CITS F212 (may be taken concurrently) or equivalent skills.

**Lecture + Lab + Other:** 3 + 0 + 0

### CITS F281  Professional Practices in IT
1-3 Credits
Offered As Demand Warrants
Prepares students for work as an IT professional. Topics include: providing computer technical support, user support management, soft skills in IT, resume writing and career exploration, diagnosing problems, researching and documenting solutions, meeting user needs, developing training materials and giving workshops and lessons.

**Prerequisites:** 24 credits in CITS courses.

**Lecture + Lab + Other:** 1-3 + 0 + 0

### CITS F282  IT Troubleshooting Skills
1-3 Credits
Offered As Demand Warrants
Practical IT troubleshooting skills, including hardware, software, networks and operating systems. The course will include practical and useful troubleshooting scenarios.

**Prerequisites:** CITS F203; CITS F204 or equivalent skills.

**Lecture + Lab + Other:** 1-3 + 0 + 0

### CITS F284  Independent Project
1-3 Credits
Offered As Demand Warrants
Student created project or internship that includes learning new skills, applying the skills to significant problems, and demonstrating the results to other computer users. Includes application of learned skills in a professional manner.

**Prerequisites:** 12 credits in CITS courses.

**Lecture + Lab + Other:** 1-3 + 0 + 0

### CITS F285  Cooperative Work Experience
3 Credits
Offered As Demand Warrants
On-the-job training related to occupational objectives. Weekly seminar with coordinator required.

**Prerequisites:** 12 credits in CITS courses.

**Lecture + Lab + Other:** 3 + 0 + 0

### CITS F288  Professional Certification Review
1-3 Credits
Offered As Demand Warrants
Prepares students for national or industry specific certification examination.

**Lecture + Lab + Other:** 1-3 + 0 + 0

### CITS F289  Information Technology: Topics
1-3 Credits
Offered As Demand Warrants
Comprehensive coverage of a specific information technology topic.

**Recommended:** CITS F203 or equivalent skills.

**Lecture + Lab + Other:** 1-3 + 0 + 0