**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:** CITS F205 or CS F103; CITS F222; 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 Network Support and Administration**  
3 Credits  
Offered As Demand Warrants  
Features and functions of networking components and the knowledge and skills needed to install, configure and troubleshoot basic networking hardware, protocols and services. Develop technical ability in the areas of media and topologies, protocols and standards, network implementation and basic network administration and support. Course covers objectives defined for CompTIA Network+ certification.  
**Recommended:** CITS F203 (may be taken concurrently) or equivalent skills.  
**Lecture + Lab + Other:** 3 + 0 + 0

**CITS F205 Introduction to Microcomputer Programming**  
1-3 Credits  
Offered As Demand Warrants  
Microcomputer programming focused on programming concepts for applications, operating systems and web technologies. Supplementing and integrating computer applications with built-in programming tools.  
**Prerequisites:** Math placement at the 100-level or instructor approval.  
**Lecture + Lab + Other:** 1-3 + 0 + 0

**CITS F206 Server Operating Systems**  
3 Credits  
Offered As Demand Warrants  
Comprehensive survey of server 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 Microsoft Certified Technology Specialist (MCTS) certification exams related to server technologies.  
**Prerequisite:** CITS F204 (may be taken concurrently) or equivalent skills.  
**Lecture + Lab + Other:** 3 + 0 + 0

**CITS F207 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 F212 Server Operating Systems**  
3 Credits  
Offered As Demand Warrants  
Comprehensive survey of server 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 Microsoft Certified Technology Specialist (MCTS) certification exams related to server technologies.  
**Prerequisite:** CITS F204 (may be taken concurrently) or equivalent skills.  
**Lecture + Lab + Other:** 3 + 0 + 0

**CITS F213 Graphics and Multimedia for the Web**  
3 Credits  
Offered As Demand Warrants  
Introduction to 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
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<tr>
<th>Course Code</th>
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<tbody>
<tr>
<td>CITS F242</td>
<td>Advanced Network Infrastructure Services</td>
<td>4</td>
<td>Demand</td>
<td>CITS F241 or permission of instructor.</td>
<td>Discusses the WAN technologies and network services required by converged applications in a complex network. 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.</td>
<td>CITS F242; CITS F243; or permission of instructor.</td>
<td>4</td>
<td>Demand</td>
<td>CITS F241 or permission of instructor.</td>
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<td>CITS F240</td>
<td>System and Network Services Administration</td>
<td>3</td>
<td>Demand</td>
<td>CITS F241; CITS F242; CITS F243; CITS F244; CITS F245; or equivalent skills.</td>
<td>Implement and administer the core network services operating within a network environment. Topics include: 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 Technology Specialist (MCTS) certification exams related to server technologies.</td>
<td>CITS F212 (may be taken concurrently) or equivalent skills.</td>
<td>3</td>
<td>Demand</td>
<td>CITS F241; CITS F242; CITS F243; CITS F244; CITS F245; or equivalent skills.</td>
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<tr>
<td>CITS F241</td>
<td>Networking and LAN Infrastructure Basics</td>
<td>4</td>
<td>Demand</td>
<td>CITS F201; CITS F202; or equivalent skills.</td>
<td>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.</td>
<td>CITS F201; CITS F202; or equivalent skills.</td>
<td>4</td>
<td>Demand</td>
<td>CITS F201; CITS F202; or equivalent skills.</td>
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<td>CITS F242</td>
<td>Routing and Switching Essentials</td>
<td>4</td>
<td>Demand</td>
<td>CITS F241 or permission of instructor.</td>
<td>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.</td>
<td>CITS F241 or permission of instructor.</td>
<td>4</td>
<td>Demand</td>
<td>CITS F241 or permission of instructor.</td>
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<tr>
<td>CITS F243</td>
<td>Intermediate Networking and LAN Infrastructure</td>
<td>4</td>
<td>Demand</td>
<td>CITS F205 or C5 F103; CITS F222; or equivalent skills.</td>
<td>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.</td>
<td>CITS F205 or C5 F103; CITS F222; or equivalent skills.</td>
<td>4</td>
<td>Demand</td>
<td>CITS F205 or C5 F103; CITS F222; or equivalent skills.</td>
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<td>CITS F244</td>
<td>Networking and Communications: Topics</td>
<td>1-4</td>
<td>Demand</td>
<td></td>
<td>In-depth technical and comprehensive coverage of networking and communications skills and concepts. Note: May be repeated for credit.</td>
<td>CITS F204 or equivalent skills.</td>
<td>1-4</td>
<td>Demand</td>
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<td>CITS F261</td>
<td>Computer and Network Security</td>
<td>3</td>
<td>Demand</td>
<td>CITS F261 or equivalent skills.</td>
<td>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.</td>
<td>CITS F261 or equivalent skills.</td>
<td>3</td>
<td>Demand</td>
<td>CITS F261 or equivalent skills.</td>
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<td>CITS F262</td>
<td>Cybersecurity Defense and Countermeasures</td>
<td>3</td>
<td>Demand</td>
<td>CITS F262 or equivalent skills.</td>
<td>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.</td>
<td>CITS F261 or equivalent skills.</td>
<td>3</td>
<td>Demand</td>
<td>CITS F261 or equivalent skills.</td>
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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 directory services administration objectives required for Microsoft Certified Technology Specialist (MCTS) certification exams related to server technologies.  
**Prerequisite:** CITS F212 (may be taken concurrently) or equivalent skills.  
**Lecture + Lab + Other:** 3 + 0 + 0

CITS F268  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 F269  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

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 or permission of instructor.  
**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 or permission of instructor.  
**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 and permission of instructor.  
**Lecture + Lab + Other:** 3 + 0 + 0