Madison Area Technical College

Information Technology—
Network Specialist

Effective: 2009-2010

Program Number: 10-150-2

Associate in Applied Science Degree

Information Technology Program Cluster

Center for Agriscience and Technologies

Program offered at Madison Campuses

For information call: (608) 246-6800 or
(800) 322-6282 Ext. 6800

About the Program

The Information Technology-Network Specialist program prepares qualified individuals to administer, install, maintain and troubleshoot data and voice networks. The Network Specialist has a working knowledge of Local Area Networks (LANs); Wide Area Networks (WANs), and their interconnectivity to nodes, servers, and other end user devices in the enterprise network. Students receive hands-on training in network operating systems, user administration, network security, network design, and implementing voice over IP (VoIP). Instruction includes: managing Network Operating Systems (NOS) and client software, network security measures, user accounting, and monitoring network event logs for problem resolution. The program also prepares the graduates to test for the Cisco CCNA (Cisco Certified Networking Associate), the Cisco CCNA-Voice, the MCTS (Microsoft Certified Technology Specialist): Windows Vista Configuration and Configuring Windows Server 2008 Network Infrastructure, the CompTIA A+, and the CompTIA Network+ certifications, as well as 2 of the 4 CCNP (Cisco Certified Network Professional) exams.

Requirements for Admission

1) High school diploma, HSED, or GED with a minimum grade point average of 2.0 or equivalent
2) General knowledge of Microsoft Windows

Program Courses

10-107-111 Careers in IT 1 credit
Introduces students to the various careers available in the vast field of Information Technology and examines the Network Specialist, Programmer/Analyst, Web Programmer/Analyst, Computer Systems Administration Specialist and Security Specialist career paths. Students create an individualized career path plan as the capstone project for the course. Prerequisite: Working knowledge of Microsoft Windows (computer literacy, proficiency with a mouse, file management) and experience sending and receiving email.

10-107-175 Job Search Preparation 1 credit
Introduction to planning and organizing a job search in Information Technology. Activities include the development of a personalized job search plan, correspondence, resumé and portfolio. Prerequisite: IT students must have completed all IT courses in the first two semesters. Prerequisite: 10-107-111.

Curriculum

FIRST YEAR			Hrs/week
First Semester		Credits	Lec-Lab
10-107-111	Careers in IT	1	1-0
10-150-160	IT Security Awareness	1	1-0
10-150-170	CCNA1&2: Networking and Routing Basics	3	2-2
10-152-150	Introduction to Perl Programming	3	2-2
10-154-184	Windows Client	3	2-2
10-801-195	Written Communication	3	3-0
10-804-144	Math of Finance	3	3-0
	Semester Total	17	
Second Semester			
10-150-172	CCNA3&4: Switching and WAN Access	3	2-2
10-152-151	Scripting with Perl	3	2-2
10-154-186	Windows Network Infrastructure	3	2-2
10-154-189	Computer Hardware Essentials	3	2-2
10-801-196	Oral/Interpersonal Communication	3	3-0
10-809-199	Psychology of Human Relations	3	3-0
	Semester Total	18	
SECOND YEAR			
First Semester			
10-107-175	Job Search Preparation	1	1-0
10-150-150	VOIP Convergence Fundamentals*	3	2-2
10-150-162	Computer Systems Security	3	2-2
10-150-194	Firewall/VPN Technologies*	3	2-2
10-801-197	Technical Reporting	3	3-0
10-809-166	Introduction to Ethics: Theory and Application	3	3-0
	Semester Total	16	
Second Semester			
10-150-151	Advanced Networking Topics**	3	2-2
10-150-195	Networking Internship**	3	2-2
10-154-122	IT Service Concepts OR	3	2-2
10-107-159	IT Project Management**	(3)	(2-2)
10-154-190	Linux Server	3	2-2
10-809-197	Contemporary American Society	3	3-0
	Elective	3	E
	Semester Total	18	

Graduation Requirement

All Prerequisite courses require the grade of C or better in prerequisite in Information Technology (150-, 152-, 154-, 107-) course(s). All Information Technology courses require a grade of C or better in order to graduate

Note: Students are assessed for correct placement in English or mathematics courses based on their scores on the COMPASS test or on completion of the appropriate prerequisite/s. Additionally, there may be courses in other subject areas that may use COMPASS scores as prerequisites when reading, writing, math, or critical thinking competencies are required.

Recommended Electives

Electives must be associate degree (100 level) or college transfer (200 level) courses

10-150-152	Advanced VOIP/Convergence*	3 credits
10-152-119	Introduction to Programming using Javascript	3 credits
10-152-120	Website Development	3 credits
10-154-188	Windows Active Directory*	3 credits
10-154-193	Email in a Windows Environment**	3 credits

*Offered fall semester only
**Offered spring semester only

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Program Courses (continued)

10-150-150 VOIP Convergence Fundamentals 3 credits
This class will introduce students to the terms and definitions of Analog phone systems and Voice over IP (VoIP) networks. It introduces students to the building and configuration of Cisco IP Telephony infrastructure using Cisco Call Manger Express and Cisco VoIP phones. Topics included in this course will be modifying the LAN and WAN to accommodate IP Telephony and translating the various layers in the OSI model. Troubleshooting will be emphasized. Prerequisite: 10-150-172.

10-150-151 Advanced Networking Topics 3 credits
This class introduces more advanced networking topics from the CCNP exams, such as: Implementing QoS on converged networks, specific IP QoS mechanisms for implementing the DiffServ QoS model, wireless security and basic wireless management, security in a switched network, and gateway redundancy. Quality of Service (QoS) will be used to design and implement a structure to prioritize voice and data applications across the network. Wireless will include mobility between lightweight access points. Troubleshooting will be emphasized. Prerequisite: 10-150-150.

10-150-162 Computer Systems Security 3 credits
Introduces the basics of network security. The student is introduced to computer network vulnerabilities and threats and how to safeguard computer networks from those vulnerabilities and threats. This course exposes the student to network security planning, network security technology, network security organization and the legal and ethical issues associated with network security. In this class, students learn the skills necessary for Security+ certification. Prerequisites: 10-150-160, 10-154-186 and one of the following: 10-150-101 or 10-150-170.

10-150-170 CCNA1&2: Networking and Routing Basics 3 credits
Introduction to Networking basics and routing with a focus on network terminology, protocols, local area networks (LANs), Open System Interconnection (OSI) model, cabling, routers and router programming, Ethernet, Internet Protocol (IP) addressing, subnetting, Variable Length Subnet Masking (VLSM), Classless Inter-Domain Routing (CIDR) and network standards. The student will develop skills on configuring a router, using the Cisco IOS Software, and configuring routing using static routes and routing protocols, including RIP version 1 & 2, EIGRP, and single area OSPF. Involves extensive lab work using router, switches, and simulations. NOTE: Must take 10-150-172 CCNA3&4 within one year of completion of 10-150-170 CCNA1&2. Prerequisite: Working knowledge of Microsoft Windows (computer literacy, proficiency with a mouse, file management).

10-150-172 CCNA3&4: Switching & WAN Access 3 credits
A continuation of CCNA1&2, this course focuses on switching concepts and WAN access. Topics include Virtual LANs (VLANs), switch configuration, LAN and WAN network design, Rapid Spanning Tree Protocol, trunking, VLAN Trunking Protocol (VTP), access lists, Network Address Translation (NAT), DHCP, wide area networks (WANs), WAN connections (cable, DSL, Frame Relay, and leased lines), Quality of Service (QoS), VPN basics, and network monitoring. Prerequisites: 10-107-111 and 10-150-170 (must follow 10-150-170: CCNA1&2 within one year).

10-150-194 Firewall/VPN Technologies 3 credits
Introduces the network security specialist to the various methodologies for defending a network. The student is introduced to the concepts, principles, types and topologies of firewalls to include packet filtering, proxy firewalls, application gateways, circuit gateways and stateful inspection. In this class, students learn the skills necessary for one of the CISCO Certified Security Professional (CCSP) certification exams. Prerequisite: 10-150-172.

10-150-195 Networking Internship 3 credits
An on-the-job experience, with instructor supervision, in Madison area networking companies and in companies that maintain and manage computer networks. The emphasis is on hands-on design, installation, configuration, management, documentation, troubleshooting and maintenance of LANs. Prerequisites: 10-107-175, 10-150-150, 10-150-162 and 10-150-194.

10-152-150 Introduction to Perl Programming 3 credits
This course is design to introduce students who are non programming Information Technology majors to scripting. During the course students will develop sound scripting skills for solving common business problems. Stressing structured programming and modular design, this course uses Pseudo code as the major program design technique. This course emphasis programming of scripts using the Perl programming language. Students will be required to complete simple to compound scripting assignments. This course is a prerequisite course for Scripting with Perl. Prerequisite: Working knowledge of Microsoft Windows (computer literacy, proficiency with a mouse, file management) and experience sending and receiving email.

10-154-122 IT Service Concepts 3 credits
Introduces the "value added" customer service roles and responsibilities of an IT professional; the components of a successful IT support infrastructure, customer service as the bottom line for IT operations, the evolution of IT support, industry trends, teamwork, IT professional work habits. Explores listening, written and verbal communications skills and critical thinking skills to resolve incidents. Examines how to identify and defuse challenging customer behavior, solve and prevent problems, and the importance of documentation. Course addresses awareness of best practices of the ITIL framework.

10-154-184 Windows Client 3 credits
Learn how to install, configure and administer Windows Vista, the latest Windows desktop operating system. Work in a computer laboratory setting to develop the real-world expertise needed to set up and support the Windows desktop environment. As you progress through topics such as installing the operating system, configuring hardware devices and establishing network connectivity, you are also preparing for Microsoft Exam 70-620. As an added bonus you will learn the operation of VMWare Workstation. Prerequisite: Working knowledge of Microsoft Windows (computer literacy, proficiency with a mouse, file management).

10-154-186 Windows Network Infrastructure 3 credits
Gain the skills necessary for supporting and configure a Windows Network infrastructure including name resolution, file and print services, and remote access. Learn the practical skills required to troubleshoot and monitor network problems while preparing for Microsoft MCTS Exam 70-642. Prerequisites: Completion of 10-101-111, 10-154-184 and completion or concurrent enrollment in 10-150-101 or 10-150-170.

10-154-190 Linux Server 3 credits
Introduces Linux with a focus on system administration skills. Topics include installation, file and directory management, command execution, input/output redirection and pipes, shell scripts, network services, security, troubleshooting and the X Window system. Prerequisite: 10-150-101 or 10-150-170.

Additional Required Program Courses

10-107-159	IT Project Management	3 credits
10-150-160	IT Security Awareness	1 credit
10-152-151	Scripting with Perl	3 credits
10-154-189	Computer Hardware Essentials	3 credits
10-804-144	Math of Finance	3 credits

Career Potential:

Entry level positions can include:

- Network Control Operator
- Network Support Technician
- Network Support Services
- Network Technician
- Network Specialist
- Network Professional
- Networking Services
- Assistant LAN Manager
- Assistant LAN Administrator
- Assistant Network Administrator

With experience, networking specialist can find work as:

- LAN Manager
- LAN Administrator
- Network Support Services Manager
- Network Engineer
- Network Administrator
- Web Designer

Upper Management positions can include:

- Networking Manager
- Manager of Voice/Data Networks
- Intranet (sic) Designer
- Data Communications Analyst
- Director of Networks

More detailed and updated information on this program may be available at: matcmadison.edu. The college reserves the right to make changes in the regulations and courses announced in this publication without notice.

Madison Area Technical College provides equal opportunity in education and employment.

Rev. 05/09