



Network Technology Credential: Associate in Applied Science Degree in Network Technology A25340

The Networking Technology curriculum prepares individuals for employment supporting network infrastructure environments. Students will learn how to use technologies to provide reliable transmission and delivery of data, voice, image, and video communication in business, industry, and education.

Course work includes design, installation, configuration, and management of network infrastructure technologies and network operating systems. Emphasis is placed on the implementation and management of network software and the implementation and management of hardware such as switches and routers.

Graduates should find employment in entry-level jobs as local area network managers, network operators, network analysts, and network technicians. Graduates may also be qualified to take certification examinations for various network industry certifications, depending on their local program.

Graduates should qualify for positions such as: LAN/PC administrator, microcomputer support specialist, network control operator, Communication technician/analyst, network/computer consultant, and information systems specialist. Graduates are also prepared to sit for certification exams that can result in industry-recognized credentials.

Program Length: 4 semesters
 Career Pathway Options: Specialized Networking Certificate Programs
 Program Sites: Lee Campus - Day Program and Selected Night Courses

Course Requirements for Network Technology Degree

A. General Education Courses (16 SHC)		C-L-SHC
ENG 111	Expository Writing	3-0-3
ENG 111A	Expository Writing Lab	0-2-1
ENG 114	Professional Research and Reporting	3-0-3
*MAT 140	Survey of Mathematics	3-0-3
	Humanities/Fine Arts Elective	3-0-3
	Social/Behavioral Science Elective	3-0-3
B. Required Courses (45 SHC):		
CIS 110	Introduction to Computers	2-2-3
CIS 115	Introduction to Programming and Logic	2-3-3
CTS 120	Hardware/Software Support	2-3-3
DBA 110	Database Concepts	2-3-3
NET 125	Networking Basics	1-4-3
NET 126	Routing Basics	1-4-3
NET 225	Routing and Switching I	1-4-3
NET 226	Routing and Switching II	1-4-3
NOS 110	Operating Systems Concepts	2-3-3
NOS 120	Linux/UNIX Single User	2-2-3

NOS 130	Windows Single User	2-2-3
SEC 110	Security Concepts	3-0-3

Business. Select one:		
BUS 110	Introduction to Business	3-0-3
CTS 115	Information Systems Business Concepts	3-0-3

Design. Select one:		
NET 240	Network Design	3-0-3
NET 289	Networking Project	1-4-3

Operating System Administration. Select one:		
NOS 220	Linux/UNIX Administration I	2-2-3
NOS 230	Windows Administration I	2-2-3

C. Other Major Hours (select 6 SHC)		
CTS 220	Advanced Hardware/Software Support	2-3-3
CTS 287	Emerging Technologies	3-0-3
NET 113	Home Automation Systems	2-2-3
NET 116	Fundamentals of Voice/Data Cable	2-2-3
NET 175	Wireless Technologies	2-2-3
NET 230	Wide Area Networking	2-2-3
NOS 240	Novell Administration I	2-2-3
SEC 160	Security Fundamentals I	2-2-3
SEC 210	Intrusion Detection	2-2-3
SEC 240	Wireless Security	2-2-3

Total Semester Credit Hours: 67

Semester Curriculum for Networking Technology

1st Semester (21 SHC)		C-L-SHC
CIS 110	Introduction to Computers	2-2-3
NET 125	Networking Basics	1-4-3
NET 126	Routing Basics	1-4-3
	Networking Elective	2-2-3
	Networking Elective	2-2-3
NOS 110	Operating Systems Concepts	2-3-3
SEC 110	Security Concepts	3-0-3
		13-17-21
2nd Semester (18 SHC)		
CTS 120	Hardware/Software Support	2-3-3
NET 225	Routing and Switching I	1-4-3
NET 226	Routing and Switching II	1-4-3
NOS 120	Linux /UNIX Single User (Linux +)	2-2-3
NOS 130	Windows Single User (MCP)	2-2-3
NOS 220	Linux/UNIX Administration I	2-2-3
		10-17-18
3rd Semester (10 SHC)		
ENG 111	Expository Writing	3-0-3
ENG 111A	Expository Writing Lab	0-2-1
	Humanities/Fine Arts Elective	3-0-3
NET 240	Network Design	3-0-3
	OR	
NET 289	Networking Project	1-4-3
		7/9-6-10
4th Semester (18 SHC)		
BUS 110	Introduction to Business	3-0-3
	OR	
CTS 115	Info Sys Business Concepts	3-0-3
CIS 115	Intro to Programming and Logic	2-3-3
DBA 110	Database Concepts	2-3-3
ENG 114	Professional Research and Reporting	3-0-3
*MAT 140	Survey of Mathematics	3-0-3
	Social/Behavioral Science Elective	3-0-3
		16-6-18

*Students may substitute MAT 161

Total Semester Hours Credit: 67

COURSE DESCRIPTIONS

BUS 110 Introduction to Business 3-0-3

This course provides a survey of the business world. Topics include the basic principles and practices of contemporary business. Upon completion, students should be able to demonstrate an understanding of business concepts as a foundation for studying other business subjects. This course has been approved to satisfy the Comprehensive Articulation Agreement for transferability as a premajor and/or elective course requirement.

CIS 110 Introduction to Computers 2-2-3

This course introduces computer concepts, including fundamental functions and operations of the computer. Topics include identification of hardware components, basic computer operations, security issues, and use of software applications. Upon completion, students should be able to demonstrate an understanding of the role and function of computers and use the computer to solve problems. This course has been approved to satisfy the Comprehensive Articulation Agreement general education core requirement in natural science/mathematics (Quantitative Option). This course is also available through the Virtual Learning Community (VLC).

CIS 115 Intro to Prog & Logic 2 3 3

Prerequisites: MAT 070, MAT 080, MAT 090, MAT 095, MAT 120, MAT 121, MAT 161, MAT 171, or MAT 175

This course introduces computer programming and problem solving in a structured program logic environment. Topics include language syntax, data types, program organization, problem solving methods, algorithm design, and logic control structures. Upon completion, students should be able to manage files with operating system commands, use top-down algorithm design, and implement algorithmic solutions in a programming language. This course has been approved to satisfy the Comprehensive Articulation Agreement general education core requirement in natural science/mathematics (Quantitative Option). This course is also available through the Virtual Learning Community (VLC).

CTS 115 Info Sys Business Concept 3-0-3

The course introduces the role of IT in managing business processes and the need for business process and IT alignment. Emphasis is placed on industry need for understanding business challenges and developing/managing information systems to contribute to the decision making process based on these challenges. Upon completion, students should be able to demonstrate knowledge of the 'hybrid business manager' and the potential offered by new technology and systems.

CTS 120 Hardware/Software Support 2-3-3

Prerequisites: CIS 110 or CIS 111

This course covers the basic hardware of a personal computer, including installation, operations and interactions with software. Topics include component identification, memory-system, peripheral installation and configuration, preventive maintenance, hardware diagnostics/repair, installation and optimization of system software, commercial programs, system configuration, and device-drivers. Upon completion, students should be able to select appropriate computer equipment and software, upgrade/maintain existing equipment and software, and troubleshoot/repair non-functioning personal computers.

CTS 220 Adv Hard/Software Support 2-3-3

Prerequisites: CTS 120

This course provides advanced knowledge and competencies in hardware and operating system technologies for computer technicians to support personal computers. Emphasis is placed on: configuring and upgrading; diagnosis and troubleshooting; as well as preventive maintenance of hardware and system software. Upon completion, students should be able to install, configure, diagnose, perform preventive maintenance, and maintain basic networking on personal computers.

CTS 287 Emerging Technologies 3-0-3

This course introduces emerging information technologies. Emphasis is placed on evolving technologies and trends in business and industry. Upon completion, students should be able to articulate an understanding of the current trends and issues in emerging technologies for information systems.

DBA 110 Database Concepts 2-3-3

This course introduces database design and creation using a DBMS product. Emphasis is placed on data dictionaries, normalization, data integrity, data modeling, and creation of simple tables, queries, reports, and forms. Upon completion, students should be able to design and implement normalized database structures by creating simple database tables, queries, reports, and forms.

ENG 111 Expository Writing 3-0-3

Prerequisites: 80 CPT reading score and 86 CPT writing score, or 18 ACT score, or 450 verbal SAT score, or satisfactory completion of developmental requirements.

Corequisites: ENG 111A

This course is the required first course in a series of two designed to develop the ability to produce clear expository prose. Emphasis is placed on the writing process including audience analysis, topic selection, thesis support and development, editing, and revision. Upon completion, students should be able to produce unified, coherent, well-developed essays using standard written English. This course has been approved to satisfy the Comprehensive Articulation Agreement general education core requirement in English composition.

ENG 111A Expository Writing Lab 0-2-1

Prerequisites: 80 CPT reading and 86 CPT writing score, or 18 ACT score, or 450 verbal SAT score, or satisfactory completion of developmental requirements.

Corequisites: ENG 111

This writing laboratory is designed to apply the skills introduced in ENG 111. Emphasis is placed on the editing and revision components of the writing process. Upon completion, students should be able to apply those skills in the production of final drafts in ENG 111. The computer is used as a writing and design tool for this course.

ENG 114 Prof. Research & Reporting 3-0-3

Prerequisites: ENG 111

This course, the second in a series of two, is designed to teach professional communication skills. Emphasis is placed on research, listening, critical reading and thinking, analysis, interpretation, and design used in oral and written presentations. Upon completion, students should be able to work individually and collaboratively to produce well-designed business and professional written and oral presentations. The computer is used as a writing and design tool for this course. This course has been approved to satisfy the Comprehensive Articulation Agreement general education core requirement in English composition.

- MAT 140 Survey of Mathematics** 3-0-3
Prerequisites: CPT arithmetic score of 57 and algebra score of 38, or ACT score of 18, or SAT mathematics score of 450, or successful completion of developmental requirements
 This course provides an introduction in a non-technical setting to selected topics in mathematics. Topics may include, but are not limited to, sets, logic, probability, statistics, matrices, mathematical systems, geometry, topology, mathematics of finance, and modeling. Upon completion, students should be able to understand a variety of mathematical applications, think logically, and be able to work collaboratively and independently. This course has been approved to satisfy the Comprehensive Articulation Agreement general education core requirement in natural sciences/mathematics.
- NET 113 Home Automaton Systems** 2-2-3
 This course covers the design, installation, testing, troubleshooting, and customer service of a fully automated home. Emphasis is placed on a structured wiring system that integrates the home phone, TV, home theater, audio, video, computer network, lighting, security systems, and automation systems into a pre-wired, remote controlled system. Upon completion, students should be able to design, install, and maintain home automation systems.
- NET 116 Fund of Voice/Data Cable** 2-2-3
Prerequisites: CIS 110 or CIS 111 or CTS 125
 This introductory course to Voice and Data Cabling focuses on cabling issues related to data and voice connections. Topics include skills in design documentation, determining cabling equipment, pulling, mounting and managing cable, selecting wiring closets, terminating cable, installing jacks, and testing cable. Upon completion, students should be able to understand of the industry, media and cabling, physical and logical networks, and signal transmission.
- NET 125 Networking Basics** 1-4-3
 This course introduces the networking field. Emphasis is placed on network terminology and protocols, local-area networks, wide-area networks, OSI model, cabling, router programming, Ethernet, IP addressing, and network standards. Upon completion, students should be able to perform tasks related to networking mathematics, terminology, and models, media, Ethernet, subnetting, and TCP/IP Protocols.
- NET 126 Routing Basics** 1-4-3
Prerequisites: NET 125
 This course focuses on initial router configuration, router software management, routing protocol configuration, TCP/IP, and access control lists (ACLs). Emphasis will be placed on the fundamentals of router configuration, managing router software, routing protocol, and access lists. Upon completion, students should have an understanding of routers and their role in WANs, router configuration, routing protocols, TCP/IP, troubleshooting, and ACLs.
- NET 175 Wireless Technology** 2-2-3
Prerequisites: NET 110 or NET 125
 This course introduces the student to wireless technology and interoperability with different communication protocols. Topics include Wireless Application Protocol (WAP), Wireless Mark-up language (WML), link manager, service discovery protocol, transport layer and frequency band. Upon completion, students should be able to discuss in written and oral form protocols and procedures required for different wireless applications.
- NET 225 Routing and Switching I** 1-4-3
Prerequisites: NET 126
 This course focuses on advanced IP addressing techniques, intermediate routing protocols, command-line interface configuration of switches, Ethernet switching, VLANs, STP, and VTP. Emphasis will be placed on application and demonstration of skills acquired in pre-requisite courses. Upon completion, students should be able to perform tasks related to VLSM, routing protocols, switching concepts and configuration, STP, VLANs, and VTP.
- NET 226 Routing and Switching II** 1-4-3
Prerequisites: NET 225
 This course introduces WAN theory and design, WAN technology, PPP, Frame Relay, ISDN, and additional case studies. Topics include network congestion problems, TCP/IP transport and network layer protocols, advanced routing and switching configuration, ISDN protocols, PPP encapsulation operations on a router. Upon completion, students should be able to provide solutions for network routing problems, identify ISDN protocols, and describe the Spanning Tree protocol.
- NET 230 Wide Area Networking** 2-2-3
Prerequisite: NET 110 or NET 125
 This course is designed to introduce significant aspects of network interconnectivity. Topics include LAN-to-LAN, LAN-to-host, LAN-to-WAN connectivity, Internet connections, and voice-video-data transmission. Upon completion, students should be able to demonstrate an understanding of wide area networking.
- NET 240 Network Design** 3-0-3
Prerequisites: NET 110 or NET 125
 This course covers the principles of the design of LANs and WANs. Topics include network architecture, transmission systems, traffic management, bandwidth requirements, Internet working devices, redundancy, and broad-band versus base-band systems. Upon completion, students should be able to design a network to meet specified business and technical requirements.
- NET 289 Networking Project** 1-4-3
Corequisites: NET 226
 This course provides an opportunity to complete a significant networking project from the design phase through implementation with minimal instructor support. Emphasis is placed on project definition, documentation, installation, testing, presentation, and training. Upon completion, students should be able to complete a project from the definition phase through implementation.
- NOS 110 Operating System Concepts** 2-3-3
 This course introduces students to a broad range of operating system concepts, including installation and maintenance. Emphasis is placed on operating system concepts, management, maintenance, and resources required. Upon completion of this course, students will have an understanding of OS concepts, installation, management, maintenance, using a variety of operating systems.
- NOS 120 Linux/UNIX Single User** 2-2-3
Prerequisites: NOS 110
 This course develops the necessary skills for students to develop both GUI and command line skills for using and customizing a Linux workstation. Topics include Linux file system and access permissions, GNOME Interface, VI editor, X Window System expression pattern matching, I/O redirection, network and printing utilities. Upon completion, students should be able to customize and use Linux systems for command line requirements and desktop productivity roles.

NOS 130 Windows Single User 2-2-3

Prerequisites: NOS 110

This course introduces operating system concepts for single-user systems. Topics include hardware management, file and memory management, system configuration/optimization, and utilities. Upon completion, students should be able to perform operating systems functions at the support level in a single-user environment.

NOS 220 Linux/UNIX Admin I 2-2-3

Prerequisites: NOS 120

This course introduces the Linux file system, group administration, and system hardware controls. Topics include installation, creation and maintaining file systems, NIS client and DHCP client configuration, NFS, SMB/Samba, Configure X, Gnome, KDE, basic memory, processes, and security. Upon completion, students should be able to perform system administration tasks including installation, configuring and attaching a new Linux workstation to an existing network.

NOS 230 Windows Admin I 2-2-3

Prerequisites: NOS 130

This course covers the installation and administration of a Windows Server network operating system. Topics include managing and maintaining physical and logical devices, access to resources, the server environment, managing users, computers, and groups, and Managing/Implementing Disaster Recovery. Upon completion, students should be able to manage and maintain a Windows Server environment.

NOS 240 Novell Admin I 2-2-3

Prerequisites: NOS 110

This course will introduce students to the Novell network operating system. Topics include installing and using NetWare, managing printing, storage space, implementing internet services, and managing security. Upon completion, students should have basic knowledge about implementing NetWare and using its management tools.

SEC 110 Security Concepts 3-0-3

This course introduces the concepts and issues related to securing information systems and the development of policies to implement information security controls. Topics include the historical view of networking and security, security issues, trends, security resources, and the role of policy, people, and processes in information security. Upon completion, students should be able to identify information security risks, create an information security policy, and identify processes to implement and enforce policy.

SEC 160 Secure Admin I 2-2-3

Prerequisites: SEC 110 and NET 110 or NET 125

This course provides an overview of security administration and fundamentals of designing security architectures. Topics include networking technologies, TCP/IP concepts, protocols, network traffic analysis, monitoring, and security best practices. Upon completion, students should be able to identify normal network traffic using network analysis tools and design basic security defenses.

SEC 210 Intrusion Detection 2-2-3

Prerequisites: SEC 160

This course introduces the student to intrusion detection methods in use today. Topics include the types of intrusion detection products, traffic analysis, and planning and placement of intrusion detection solutions. Upon completion, students should be able to plan and implement intrusion detection solution for networks and host based systems.

SEC 240 Wireless Security 2-2-3

Prerequisites: SEC 110 and NET 175

This course introduces security principles and topics related to the wireless networking environment. Topics include network topologies, network protocols, security issues, and best practices for wireless environments. Upon completion, students should be able to design, setup, manage, and secure a wireless network.