

**Central Carolina Community College  
Program Planning Guide**

**Networking Technology**

**Credential: Associate in Applied Science Degree in Networking 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.

Coursework 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: North Carolina School of Telecommunications

Day and selected evening courses. Corporate and career-centered programs

<b>Suggested Course Schedule:</b>	<b>HOURS</b>			<b>Grade</b>	<b>Semester</b>	<b>Notes</b>
	<b>Class</b>	<b>Lab</b>	<b>Credit</b>			
<b>1st Semester (Fall)</b>						
CIS 110	Introduction to Computers	2	2	3		
NET 125	Networking Basics	1	4	3		
NET 126	Routing Basics	1	4	3		
See Below*	Networking Elective	2	2	3		
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NOS 110	Operating Systems Concepts	2	3	3		
NOS 130	Windows Single User (MCP)	2	2	3		
		13	17	21		
<b>2nd Semester (Spring)</b>						
CTS 120	Hardware/Software Support	2	3	3		
NET 225	Routing & Switching I	1	4	3		
NET 226	Routing & Switching II	1	4	3		
NOS 120	Linux/UNIX Single User (Linux +)	2	2	3		
NOS 220	Linux/UNIX Administration I	2	2	3		
SEC 110	Security Concepts	3	0	3		
		10	17	18		
<b>3rd Semester (Fall)</b>						
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		

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### 4th Semester (Spring)

BUS 110	Introduction to Business	3	0	3			
<b>OR</b> CTS 115	Info Sys Business Concepts	3	0	3			
CIS 115	Intro to Programming & Logic	2	3	3			
DBA 110	Database Concepts	2	3	3			
ENG 114	Professional Research & Reporting	3	0	3			
MAT 140**	Survey of Mathematics	3	0	3			
	Social/Behavioral Science Elective	3	0	3			
		16	6	18			

### \*Networking Electives (select 6 SHC)

CTS 220	Adv. 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			

\*\*Students may substitute MAT 161

Total Semester Hours Credit: 67

### Course Descriptions Networking Technology

#### **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 for transfer under the CAA and ICAA as a premajor and/or elective course requirement. This course is also available through the Virtual Learning Community (VLC).

#### **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 for transfer under the CAA and ICAA as a premajor and/or elective course requirement.

#### **CIS 115 Introduction to Programming and Logic 2-3-3**

*Prerequisite: 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 for transfer under the CAA and ICAA as a premajor and/or elective course requirement.

#### **CTS 115 Information Systems 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. This course has been approved for transfer under the CAA and ICAA as a premajor and/or elective course requirement.

#### **CTS 120 Hardware/Software Support 2-3-3**

*Prerequisite: 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.

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### **CTS 220      Advanced Hardware/Software Support      2-3-3**

*Prerequisite:* 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:* Take one set: RED 090 and ENG 090, ENG 095, or appropriate placement test scores.

*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 for transfer under the CAA and ICAA as a general education course in English Composition.

### **ENG 111A      Expository Writing Laboratory      0-2-1**

*Prerequisites:* Take one set: RED 090 and ENG 090, ENG 095, or appropriate placement test scores.

*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      Professional Research and Reporting      3-0-3**

*Prerequisite:* 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 for transfer under the

CAA and ICAA as a general education course in English Composition.

### **MAT 140      Survey of Mathematics      3-0-3**

*Prerequisite:* Take one set: MAT 060 and MAT 070, MAT 060 and MAT 080, MAT 060 and MAT 090, MAT 095, MAT 120, MAT 121, MAT 161, MAT 171, MAT 175, or appropriate placement test scores.

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. Under the CAA and ICAA, this course satisfies the general education Mathematics requirement for the AA and AFA degrees. It does not satisfy the general education Mathematics requirement for the AS degree.

### **NET 113      Home Automation 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      Fundamentals of Voice/Data Cable      2-2-3**

*Prerequisite:* 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**

*Prerequisite:* 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**

*Prerequisite:* 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



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### **SEC 160 Security Administration 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**

*Prerequisite: 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.