# Network Systems I Course No. 10112 Credit: 1.0

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| **Student name:** |  | **Graduation Date:** |  |

Pathways and CIP Codes:Network Systems (11.0901)

Course Description: **Application Level:** a course designed for students who have chosen to pursue a Network Systems program of study to introduce the basic conceptual and practical skills necessary to identify, install, and manage relevant hardware and software in network systems. **\*\*Prerequisite Foundations of Information Technology or demonstration of all competencies therein.**

Directions:The following competencies are required for full approval of this course. Check the appropriate number to indicate the level of competency reached for learner evaluation.

**RATING SCALE:**

4. Exemplary Achievement: Student possesses outstanding knowledge, skills or professional attitude.

3. Proficient Achievement:Student demonstrates good knowledge, skills or professional attitude. Requires limited supervision.

2. Limited Achievement:Student demonstrates fragmented knowledge, skills or professional attitude. Requires close supervision.

1. Inadequate Achievement:Student lacks knowledge, skills or professional attitude.

0. No Instruction/Training:Student has not received instruction or training in this area.

## Benchmark 1: Knowledge of the history, basic components, and types of network systems.

### Competencies

| **#** | **DESCRIPTION** | **RATING** |
| --- | --- | --- |
| 1.1 | Demonstrate knowledge of the history and general characteristics of network operating systems including basic network terminology. |  |
| 1.2 | Identify the basic components of a network operating system and the basic point-to-point network topologies (e.g., star, mesh, bus, ring, hybrid). |  |
| 1.3 | Identify and demonstrate an understanding of the different types of networks (e.g. LAN, MAN, WAN, VPN, EPN, SAN, PAN). |  |
| 1.4 | Demonstrate knowledge of the principles and operation of wire (coaxial, fiber optics, etc.), analog and digital circuits, and wireless systems. |  |

## Benchmark 2: Working knowledge of the Open Systems Interconnection (OSI) Model and its basic functions.

### Competencies

| **#** | **DESCRIPTION** | **RATING** |
| --- | --- | --- |
| 2.1 | Explain the Open Systems Interconnection (OSI) Model and the flow of data through it, define the functions, and identify the associated hardware components. |  |
| 2.2 | Identify the basic functions of a network operating system (NOS), research various types (e.g. Microsoft Windows server, Linux enterprise server, UNIX, etc.), and synthesize findings to demonstrate knowledge that includes, but is not limited to: Optimal software requirements, client support features, organization of network elements, sharing applications, managing system resources (e.g., memory, multitasking, multiprocessing), and the importance of considering future needs. |  |

## Benchmark 3: Design and install a Network System

### Competencies

| **#** | **DESCRIPTION** | **RATING** |
| --- | --- | --- |
| 3.1 | Identify basic network hardware (e.g. routers, switches) and demonstrate knowledge of their components, architecture, and function. |  |
| 3.2 | Configure and install a basic network (wired or wireless) using available materials, hardware, and software. |  |

## Benchmark 4: Working knowledge of network security and basic troubleshooting techniques.

### Competencies

| **#** | **DESCRIPTION** | **RATING** |
| --- | --- | --- |
| 4.1 | Research and describe the most common network security risks associated with: people; data transmission and hardware; protocols and software; and internet access. Investigate and distinguish among the following common prevention methods to secure a network system: physical security, security in network design, network operating systems security, encryption, authenication protocols, and wireless network security. Synthesize findings to identify security requirements for the installed network and develop a security plan that demonstrates knowledge of basic security software (e.g. firewalls, intrusion detection systems, etc.) and the roles both software and hardware play in network security. |  |
| 4.2 | Demonstrate knowledge of basic troubleshooting theory using appropriate hardware and software (e.g. cable tester, butt set, multimeter, protocol analyzer, throughput testers, connectivity software, etc.). |  |
| 4.3 | Identify and demonstrate knowledge of most common network problems including but not limited to: wireless problems (e.g., interference, signal strength, configurations, latency), router and switch problems (e.g., switching loop, bad cables, port configuration), and physical connectivity problems (e.g., connectors, wiring, split cables, cable placement) |  |
| 4.4 | Demonstrate the application of troubleshooting theory in various network system problems. For each network system problem given, students should model the following, including but not limited to: gather information from users or the system, back up data, and document findings, verify the problem exists and how many users are affected, verify the problem exists and how many users are affected, determine whether escalation is necessary, and plan a solution and resolve the problem. Upon verification the problem was resolved, students should document findings (including an explanation of the common symptoms, diagnostic procedures, and specific tools used that led to the resolution) and develop a preventative maintenance plan. |  |

I certify that the student has received training in the areas indicated.

Instructor Signature:

For more information, contact:

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