

CISCO I
College Credit and Careers Network
Dual Credit Articulation Agreement

Upon completion of high school courses equivalent to the following competencies:

Learning Outcomes

- Perform arithmetic operations in binary, decimal and hexadecimal numbering systems.
- Define terms and units related to networking such as throughput and bandwidth.
- Name and describe the layers of standard networking models.
- Describe network signals and the phenomena that affect the integrity of those signals.
- Describe networking media and devices and the advantages and limitations of each.
- Design a sub netted addressing scheme giving network numbers, range of host numbers, broadcast numbers and subnet mask.
- Describe protocol data units and associate each with its corresponding layer in the Open Systems Interconnection (OSI) networking model.
- Design and implement a simple network.

Course Content

- Computing Basics
 - Basics of Computer Hardware
 - Basics of Computer Software
 - Binary Numbers
 - Basic Networking Terminology
 - Digital Bandwidth
- The OSI Model
 - General Model of Communication
 - The OSI Reference Model
 - Comparison of the OSI Model and the TCP/IP Model
- Local Area Networks
 - Basic LAN Devices
 - Evolution of Network Devices
 - Basics of Data Flow Through LANs
 - Building LANs
- Layer 1 - Electronics and Signals
 - Basics of Electricity
 - Basics of Digital Multi-meters
 - Basics of Signals and Noise in Communications Systems
 - Basics of Encoding Networking Signals
- Layer 1 - Media, Connections and Collisions
 - Most Common LAN Media
 - Cable Specification and Termination
 - Making and Testing Cable
 - Layer 1 Components and Devices
 - Collisions and Collision Domains in Shared Layer Environments
 - Basic Topologies Used in Networking
- Layer 2 – Concepts
 - LAN Standards
 - Hexadecimal Numbers
 - MAC Addressing
 - Framing
 - Media Access Control (MAC)
- Layer 2 – Technologies
 - Basics of Token Ring
 - Basics of Fiber Distributed Data Interface (FDDI)
 - Ethernet and IEEE 802.3
 - Layer 2 Devices
 - Effects of Layer 2 Devices on Data Flow
 - Basic Ethernet 10BASE-T Troubleshooting
- Design and Documentation
 - Basic Network Design and Documentation

- Planning Structured Cabling: Wiring Closet Specifications
- Planning Structured Cabling: Identifying Potential Wiring Closets
- Planning Structured Cabling: Selection Practice
- Planning Structured Cabling: Horizontal and Backbone Cabling
- Planning Structured Cabling: Electricity and Grounding
- Planning Structured Cabling: Cabling and Grounding
- Design Practice No. 1: Wiring Plan for Ethernet Star Topology LAN
- Design Practice No. 2: Multiple Earth Ground Problems
- Network Power Supply Issues: Power Line Problems
- Network Power Supply Issues: Surge Suppressors and Uninterruptible Power Supply (UPS) Functions
- Structured Cabling Project
 - Project Planning
 - RJ-45 Jack and Outlet Installation
 - Basics of Cable Installation
 - Structured Cable Run Installation
 - Stringing, Running, and Mounting Cable
 - Basics of Wiring Closets and Patch Panels
 - Range of Equipment for Testing Structured Cabling Projects
- Layer 3 - Routing and Addressing
 - Importance of a Network Layer
 - Path Determination
 - IP Address within the IP Header
 - IP Address Classes
 - Reserved Address Space
 - Basics of Sub-netting
 - Creating a Subnet
- Layer 3 – Protocols
 - Layer 3 Devices
 - Network-to-Network Communications
 - Advanced ARP Concepts
 - Ratable Protocols
 - Routing Protocols
 - Other Network Layer Services
 - ARP Tables
 - Interior Gateway Protocols (IGP) and Exterior Gateway Protocol (EGP)
 - Protocol Analyzer Software
- Layer 4 - The Transport Layer
 - The Transport Layer
 - TCP and UDP
 - TCP Connection Methods
- Layer 5 - The Session Layer
- Layer 6 - The Presentation Layer
- Layer 7 - The Application Layer
 - Basics of the Application Layer
 - Domain Name System
 - Network Applications
 - Application Layer Examples

A student earning a “B” or better may earn college credit at the following college:

<u>College</u>	<u>Course</u>	<u>Credits</u>
Bellevue College	NSCOM 201	5
Cascadia Community College	BIT 102	5