CIT 105. INTRODUCTION TO NETWORKS (Cisco #1).

Credit Hours: 5

Scheduled hours per week
- Lecture: 3
- Lab: 2
- Other: 0

Catalog Course Description: The first of four courses to prepare the student for the Cisco CCNA certification. Topics covered in this semester include the OSI Model, the TCP/IP Model, IP addressing, sub-netting, data encapsulation, basic network design and troubleshooting.

Pre-requisites: MATH 125 or MATH 126 with grade of C or higher.

Co-requisites: MATH 125 or MATH 126 with grade of C or higher.

Course Learning Outcomes:
- Describe the role of data networking in the global human network
- Identify components of a network (end devices, intermediary devices, and media)
- Identify and describe the seven layers of the OSI Model and their functions
- Describe functions and processes of well-known TCP/IP applications
- Describe client/server network model and peer-to-peer networking model
- Explain how protocols facilitate diverse technologies to communicate with each other
- Describe how the Transport Layer enables multiple devices and applications to communicate over networks at the same time
- Explain the role of Network Layer addressing and understand its hierarchical addressing to allow communication between networks
- Explain the structure of IP addresses and demonstrate the ability to convert between binary and decimal numbers
- Demonstrate understanding of sub-netting and variable length sub-netting
- Explain the role of Data Link Layer addressing and understand its role in network communication
- Explain the role of the Physical Layer and the purpose of Physical layer signaling and encoding schemes

Topics to be studied:
- LANs, WANs, and Internetworks
- Application, Transport, and Network Protocols
- OSI Model and TCP/IP Model
- IPv4 and IPv6 Addressing and Subnetting
- Ethernet Protocol and LAN Switches
- Cisco Hardware
- Cisco IOS and Command Line Configuration

Relationship of Course to Program or Discipline Learning Outcomes:

| X | Identify and describe layers of the OSI and TCP/IP models, and use them effectively in troubleshooting |
| X | Describe and apply LAN and WAN technologies in wired and wireless environments |
|   | Demonstrate ability to apply workstation and server installation, configuration, management and troubleshooting techniques |
| X | Demonstrate ability to install, configure, manage, and maintain routing and switching technologies |

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Describe and discuss different operating systems and their relationship with hardware, their functions, advantages and disadvantages, and their respective tools and software packages

| X | Explain Information Systems and choose appropriate systems based on requirements |
| X | Describe basic information security and computer ethics |

### Relationship of Course to General Education Learning Outcomes:

<table>
<thead>
<tr>
<th>Composition and Rhetoric</th>
<th>Students illustrate a fundamental understanding of the best practices of communicating in English and meet the writing standards of their college or program-based communication requirements.</th>
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<tbody>
<tr>
<td>Science &amp; Technology</td>
<td>Students successfully apply systematic methods of analysis to the natural and physical world, understand scientific knowledge as empirical, and refer to data as a basis for conclusions.</td>
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<tr>
<td>Mathematics &amp; Quantitative Skills</td>
<td>Students effectively use quantitative techniques and the practical application of numerical, symbolic, or spatial concepts.</td>
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<tr>
<td>Society, Diversity, &amp; Connections</td>
<td>Students demonstrate understanding of and a logical ability to successfully analyze human behavior, societal and political organization, or communication.</td>
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<tr>
<td>Human Inquiry &amp; the Past</td>
<td>Students interpret historical events or philosophical perspectives by identifying patterns, applying analytical reasoning, employing methods of critical inquiry, or expanding problem-solving skills.</td>
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<tr>
<td>The Arts &amp; Creativity</td>
<td>Students successfully articulate and apply methods and principles of critical and creative inquiry to the production or analysis of works of art.</td>
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**Special requirements of the course:**
Students will be required to setup and configure a network utilizing devices, protocols, and other topics studied during the semester.

**Additional information:**
This course requires a C or better to enroll into CIT 106 (the next Cisco curriculum).

**Prepared by:** Doug Rhodes

**Date:** 10/20/2017

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