COURSE INFORMATION

COURSE TITLE
CNG101: Introduction to Computer Networking

COURSE DESCRIPTION
Introduces network fundamentals using the OSI (Open Systems Interconnection) model and TCP/IP (Transmission Control Protocol/Internet Protocol) suite, fundamentals of Ethernet, IP addressing, and building simple LANs (Local Area Networks).

CREDIT HOURS
3

SUGGESTED PREREQUISITE KNOWLEDGE
None
COURSE MATERIALS

Your textbook is available online as an eText. You do not need to purchase any additional materials. For specific information on refund policies and the optional black and white textbook available for purchase please contact the CCCOnline bookstore.

MINIMUM COMPUTER REQUIREMENTS

To complete this course, you will need regular access to a computer from which you can get to the internet and use email. In order to ensure that your course functions properly, you must run the System Check. This is a CRITICAL STEP, and taking the time to do it now will eliminate a tremendous amount of frustration for you later. To run the System Check, click Tools in the course NavBar and then click System Check.

REQUIRED eTEXT


DIGITAL MATERIALS ACCESS AND SETUP

This course uses Cengage which contains the eText in addition to interactive media content to help you remember what you learn.

- Visit the Cengage Course Start page for details on first access of the materials.

To make sure your computer is set up correctly to access the eText and other digital content, review the Cengage Technical Support page, also linked in the Technical Support Module.

CCCOOnline COURSE POLICIES

The CCCOnline Course Policies page contains information about the student's role in the classroom, grading policies, and rights and responsibilities.
COURSE LEARNING OUTCOMES AND MODULE LEARNING OUTCOMES

STUDENT OUTCOMES

The outcomes you will demonstrate in this course are as follows:

A. Describe the use of OSI and TCP/IP layered models.
B. Describe the nature and roles of protocols, services, and devices at the OSI and TCP/IP layers.
C. Describe current network addressing.
D. Implement various addressing schemes.
E. Describe Ethernet LAN concepts, media, and operations.
F. Configure network routers, switches, and wireless devices for SOHO and enterprise sized systems.
G. Build simple LANs by applying cabling and addressing schemes.

The module outcomes that will permit you to demonstrate course learning outcomes are:

MODULE 1

<table>
<thead>
<tr>
<th>Module Outcomes</th>
<th>Course Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Describe network applications and protocols.</td>
<td>A, B</td>
</tr>
<tr>
<td>2. Compare client/server and peer-to-peer network models.</td>
<td>B</td>
</tr>
<tr>
<td>3. Identify key hardware devices and physical topologies.</td>
<td>B</td>
</tr>
<tr>
<td>4. Explain the Open Systems Interconnection (OSI) model.</td>
<td>A</td>
</tr>
<tr>
<td>5. List safety practices when working with networks.</td>
<td>F</td>
</tr>
<tr>
<td>6. Solve a networking problem using the seven-step troubleshooting model.</td>
<td>A</td>
</tr>
<tr>
<td>7. Explain the best cable-installation techniques.</td>
<td>G</td>
</tr>
<tr>
<td>8. Summarize the management of network power sources.</td>
<td>F</td>
</tr>
<tr>
<td>9. Describe network interface card (NIC) and Ethernet interfaces.</td>
<td>E</td>
</tr>
<tr>
<td>10. Use a network map to troubleshoot network devices.</td>
<td>F</td>
</tr>
</tbody>
</table>
### Module 2

**Module Outcomes** | **Course Outcomes**
--- | ---
1. Describe computer addressing. | C
2. Identify the functions of host names and domain names. | C
3. Explain the purpose of ports and sockets at the OSI Transport layer. | A
4. Describe how Internet Protocol (IP) addresses are assigned and formatted. | C
5. Solve network address issues using command-line tools. | D
7. List the purposes and properties of routing. | B
8. Implement TCP/IP utilities for network discovery and troubleshooting. | B
9. Define basic data-transmission concepts. | E
10. Identify the physical and transmission characteristics of various common cables. | E
11. Compare and contrast the uses of various networking media. | G
12. Match each cabling type with its proper connectors, converters, and couplers. | G
13. Devise solutions to common cable problems. | G

### Module 3

**Module Outcomes** | **Course Outcomes**
--- | ---
1. Predict wireless transmission obstacles and the resulting repercussions. | F
2. Describe the components of WLANs. | F
3. Explain various WLAN transmission methods. | F
4. Set up wireless access points and their clients. | F
5. Identify wireless security concerns. | F
6. Solve common WLAN problems. | F
7. Summarize aspects of cloud computing. | B
8. Set up a remote connection to a network. | F
9. Describe virtual private networks (VPNs) and their protocols. | B
10. Give examples of methods of encryption that secure data in storage and transit. | B
11. Explain how user-authentication protocols function. | B
12. Identify common WLAN connectivity and security issues. | F

### Module 4

**Module Outcomes** | **Course Outcomes**
--- | ---
1. Summarize the methods of TCP/IP network design. | B
2. Describe virtualization, including virtual network components. | B
3. Explain ways to use virtual components in virtual local area networks (VLANs). | F
4. Describe switches, including popular switching techniques. | F
5. Explain how to incorporate VM into VLANs. | F
6. Identify a network's security risks. | G
7. Summarize the elements of an effective security policy. | B
8. Set up security measures when designing a network. | G
9. Describe ways to protect against malware risks and infections. | G
10. Describe how various network security devices function and how their features work. | F
11. Give examples of how to implement security precautions on a switch. | F
12. Identify the processes of authentication, authorization and auditing on a network. | B
13. Explain the available options in network access control methods. | B
14. Identify security measures on a wireless network. | F

Module 5
### Module Outcomes

<table>
<thead>
<tr>
<th>Module Outcomes</th>
<th>Course Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Summarize the main concepts of network management.</td>
<td>B</td>
</tr>
<tr>
<td>3. Explain how unified communications affects network performance.</td>
<td>B</td>
</tr>
<tr>
<td>4. Describe common quality-of-service techniques.</td>
<td>F</td>
</tr>
<tr>
<td>5. Solve network availability issues.</td>
<td>F</td>
</tr>
<tr>
<td>6. Identify best practices for managing network assets.</td>
<td>F</td>
</tr>
<tr>
<td>7. Devise change management procedures for network changes.</td>
<td>F</td>
</tr>
<tr>
<td>8. Explain ways to physically control access to secure areas.</td>
<td>B</td>
</tr>
<tr>
<td>9. Summarize uses for WANs.</td>
<td>G</td>
</tr>
<tr>
<td>10. Compare various WAN topologies.</td>
<td>F</td>
</tr>
<tr>
<td>11. Describe WAN technologies.</td>
<td>F</td>
</tr>
<tr>
<td>12. Explain WAN transmission and connection methods.</td>
<td>G</td>
</tr>
<tr>
<td>13. Summarize wireless WAN technologies.</td>
<td>F</td>
</tr>
<tr>
<td>14. Describe solutions for problems with WAN connections.</td>
<td>G</td>
</tr>
</tbody>
</table>

### GRADING AND EVALUATION

#### METHODS:

Evaluation includes a combination of discussion participation, assignments, and other evaluation. Rubrics will be provided for assignments and discussions.

#### GRADING POLICIES:

Mark all Module due dates on your calendar for this class. You may submit assignments AHEAD of schedule. Late assignments will not be accepted without prior approval.

#### SUMMARY OF GRADING

<table>
<thead>
<tr>
<th>Assignment</th>
<th>Points</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discussions (15 @ 20 points each)</td>
<td>300</td>
<td>30%</td>
</tr>
<tr>
<td>Quizzes (5 @ 20 points each)</td>
<td>100</td>
<td>10%</td>
</tr>
<tr>
<td>Assignments (13 @ 40 points each)</td>
<td>520</td>
<td>52%</td>
</tr>
<tr>
<td>Final Project (1@80)</td>
<td>80</td>
<td>8%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>1000</td>
<td>100%</td>
</tr>
</tbody>
</table>

**Grading Scale**

A = 90 to 100%  B = 80 to 89%  C = 70 to 79%  D = 60 to 69%  F = 59% and below
The Schedule is subject to change as needed.

This page summarizes all of the graded assignments, exams, and reading assignments for the course. If you want, you can print it out and post it somewhere handy.

All assignments are described in detail on the Module assignment pages. If you have questions check there and/or send me an e-mail.

This course is not self-paced and is not open-exit. All assignments, papers, quizzes, discussions, etc., are to be completed by no later than midnight of the due date.

NOTE: Important CCCOnline semester dates (e.g., drop/withdraw/term end) appear on the CCCOnline calendar (link opens in a new window).

### MODULE 1

<table>
<thead>
<tr>
<th>Reading/Assignments/Exams</th>
<th>Due Dates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discussion: Introductions</td>
<td>W1D1</td>
</tr>
<tr>
<td>Discussion 1, Part 1</td>
<td>W1D3</td>
</tr>
<tr>
<td>Discussion 1, Part 2</td>
<td>W1D4</td>
</tr>
<tr>
<td>Case Project 1-1</td>
<td>W1D6</td>
</tr>
<tr>
<td>Discussion 2, Part 1</td>
<td>W2D3</td>
</tr>
<tr>
<td>Discussion 2, Part 2</td>
<td>W2D4</td>
</tr>
<tr>
<td>Case Project 2-1</td>
<td>W2D6</td>
</tr>
<tr>
<td>Discussion 3, Part 1</td>
<td>W3D3</td>
</tr>
<tr>
<td>Discussion 3, Part 2</td>
<td>W3D4</td>
</tr>
<tr>
<td>Case Project 3-1</td>
<td>W3D5</td>
</tr>
<tr>
<td>Module 1 Quiz</td>
<td>W3D6</td>
</tr>
</tbody>
</table>

### MODULE 2

<table>
<thead>
<tr>
<th>Reading/Assignments/Exams</th>
<th>Due Dates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discussion 1, Part 1</td>
<td>W4D3</td>
</tr>
<tr>
<td>Discussion 1, Part 2</td>
<td>W4D4</td>
</tr>
<tr>
<td>Case Project 4-1</td>
<td>W4D6</td>
</tr>
<tr>
<td>Discussion 2, Part 1</td>
<td>W5D3</td>
</tr>
<tr>
<td>Discussion 2, Part 2</td>
<td>W5D4</td>
</tr>
<tr>
<td>Case Project 5-1</td>
<td>W6D1</td>
</tr>
<tr>
<td>Discussion 3, Part 1</td>
<td>W6D3</td>
</tr>
<tr>
<td>Discussion 3, Part 2</td>
<td>W6D4</td>
</tr>
<tr>
<td>Module 2 Quiz</td>
<td>W6D6</td>
</tr>
</tbody>
</table>
**MODULE 3**

**Reading/Assignments/Exams**
- Discussion 1, Part 1  
  W7D3  
- Discussion 1, Part 2  
  W7D4  
- Router Configuration Lab  
  W7D5  
- Case Project 6-1  
  W7D6  
- Discussion 2, Part 1  
  W8D3  
- Discussion 2, Part 2  
  W8D4  
- Case Project 7-1  
  W8D6  
- Discussion 3, Part 1  
  W9D3  
- Discussion 3, Part 2  
  W9D4  
- Module 3 Quiz  
  W9D6

**MODULE 4**

**Reading/Assignments/Exams**
- Discussion 1, Part 1  
  W10D3  
- Discussion 1, Part 2  
  W10D4  
- Case Project 8-1  
  W10D6  
- Discussion 2, Part 1  
  W11D3  
- Discussion 2, Part 2  
  W11D4  
- Case Project 9-1  
  W11D6  
- Discussion 3, Part 1  
  W12D3  
- Discussion 3, Part 2  
  W12D4  
- Module 4 Quiz  
  W12D6

**MODULE 5**

**Reading/Assignments/Exams**
- Discussion 1, Part 1  
  W13D2  
- Discussion 1, Part 2  
  W13D3  
- Case Project 10-1  
  W13D5  
- Discussion 2, Part 1  
  W13D6  
- Discussion 2, Part 2  
  W14D1  
- Case Project 11-1  
  W14D3  
- Discussion 3, Part 1  
  W14D6  
- Discussion 3, Part 2  
  W15D1  
- Case Project 12-1  
  W15D3  
- Module 5 Quiz  
  W15D4  
- Final Project  
  W15D6

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