COURSE INFORMATION

COURSE TITLE
CNG102: Local Area Networks

COURSE DESCRIPTION
Introduces Local Area Networking. Focuses on discussions and demonstrations of planning, installing, and supporting networks.

CREDIT HOURS
3

SUGGESTED PREREQUISITE KNOWLEDGE
This course is designed for those who have completed the CNG101 course on computer networking. In this course, you will focus on equipment that may be around you at home and/or workplace. You will learn how some common devices in a local area network are configured and some troubleshooting techniques to deal with network and device failures.

CCCOnline Course Policies

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

Your textbook is available online and within the course site 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:

You can access the eText through the eText module in Content.


COURSE COMPETENCIES AND OUTCOMES

STUDENT COMPETENCIES:

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

A. Identify common network components such as hubs, repeaters, bridges, switches, routers, and gateways.
B. Discuss the OSI architecture model and explain how each of the seven layers of the OSI model contribute to the network infrastructure.
C. Explain the advantages and disadvantages of the different network protocols in a networking environment.
D. Discuss the different features available in Unix, Novell, and NT network operating systems.
The module outcomes that will permit you to demonstrate course competencies are:

### MODULE 1

**Outcomes**
1. Define networks and common terminology.  
2. Explore common network protocols.  
3. Explain and use networking tools - Wireshark and Python.

**Competencies**
- A, B
- C
- A, C

### MODULE 2

**Outcomes**
1. Explain cloud services with TCP splitting.  
2. Describe current router architecture.  
3. Demonstrate the Data Transport layer and its functions.

**Competencies**
- A, B, C
- A, D
- A, B, C, D

### MODULE 3

**Outcomes**
1. Describe Data Center Networking.  
2. Explain the functionality of Cellular networks.  
3. Describe the characteristics of 802.11.  
4. Analyze common networking equipment to propose networking solutions.

**Competencies**
- A, B, C, D
- A, B, C, D
- A, C
- A

### MODULE 4

**Outcomes**
1. Describe multimedia networking and common applications.  
2. Describe Content Distribution Networks (CDNs) and demonstrate common uses.  
3. Explain common network security measures.

**Competencies**
- A, B, C, D
- A, B, C
- A, B, C

### MODULE 5

**Outcomes**
1. Describe the major responsibilities of a network administrator.  
2. Explain the Internet-Standard Management Framework.  
3. Propose network protocols and designs.  
4. Design a small business network.

**Competencies**
- A
- A, B, C
- C, D
- A, B
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. 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 (11 @ 20 points each)</td>
<td>220</td>
<td>22%</td>
</tr>
<tr>
<td>Modules Quizzes (4 @ 40 points each, 1 @ 20 points)</td>
<td>180</td>
<td>18%</td>
</tr>
<tr>
<td>Labs (8 @ 20 points each)</td>
<td>160</td>
<td>16%</td>
</tr>
<tr>
<td>Midterm Project</td>
<td>100</td>
<td>10%</td>
</tr>
<tr>
<td>Final Project</td>
<td>190</td>
<td>19%</td>
</tr>
<tr>
<td>Final Exam</td>
<td>150</td>
<td>15%</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

DISCUSSIONS

Participation in discussions is a very important part of the class experience. Discussions cannot be made up after the discussion ends. Discussions are where we discuss the readings and benefit from each class member's contributions and questions. Your discussion research findings can assist you with your mid-term and final projects.

You'll find discussion topics within each module. Each week you will be expected to post your initial response to the topic and, on a separate day, respond to at least two of your classmates' postings. You will be expected to offer helpful comments as you can. You'll want to be sure you do so to receive all points for the week.

Review the discussion rubric for more details on the expectations of you. Remember, you will receive points which will count toward your final grade for participating in the discussions, so of course, not participating will have a negative effect on your final course grade.

Discussions will require a minimum of three posts.
• The initial post will directly address the discussion topic. The initial post will require sources other than the textbook such as online resources. All sources used must be properly cited using **APA formatting**.
• The other two posts (more than two are encouraged) will be responses to classmate posts. The response posts do not have to have sources, although any sources used must be cited. Response posts that simply agree or disagree without elaboration will not be counted for points.
• Initial posts are due by the Wednesday of each week. Follow-up posts must be submitted on a different day than your initial post and by Sunday at 11:59 p.m. of each week. Follow-up post attempts after Sunday at 11:59 p.m. will not be accepted. All times are Colorado time.

**LABS**

Each week, you’ll be expected to attempt labs in Wireshark to help you understand the concepts with first-hand experience with common network tools.

• You are expected to do your best on each lab without the results being perfect.
• Your grade is based on the number of steps you complete. Point ranges are assigned for attempting:
  o Most to all of the lab steps.
  o A few of the lab steps.
  o Not attempting the lab.
• The labs will have their own instructions for you to follow.
• The results of the labs will be submitted in the respective assignment folder in the online classroom.

**PROJECTS**

There is a midterm and a final project. The Final Project submission will build off of the work done for the Midterm Project. See the project descriptions in the Syllabus folder and in Modules 3 and 5.

**QUIZZES & FINAL EXAM**

There is one quiz per module consisting of multiple choice and true/false questions. There are instructions with each quiz including the amount of time and number of questions. In Module 5 there is both a quiz and a Final Exam.
EXTRA CREDIT

There is no extra credit available in this course.

COURSE SCHEDULE

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 the due date.

NOTE: Important CCCOnline semester dates (e.g., drop/withdraw/term end) appear on the CCCOnline calendar.

MODULE 1

Reading/Assignments/Exams
- eText: Chapter 1
- Discussion: Student Introductions
- Discussion: Internet Software
- Pre-Labs: Install Wireshark
- eText: Chapter 2
- Discussion: Socket Programming
- Lab: Wireshark HTTP and DNS
- Quiz: Module 1

Due Dates

MODULE 2

Reading/Assignments/Exams
- eText: Chapter 3
- Discussion: Cloud Services
- Lab: Wireshark TCP and UDP labs
- eText: Chapter 4
- Discussion: Router Comparison
- Quiz: Module 2

Due Dates
MODULE 3

Reading/Assignments/Exams
- eText: Chapter 5
- Discussion: Data Center Networking
- Lab: Wireshark Ethernet and ARP lab
- eText: Chapter 6
- Discussion: Cellular Networks
- Lab: Wireshark 802.11 lab
- Quiz: Module 3
- Project: Midterm Project

Due Dates

MODULE 4

Reading/Assignments/Exams
- eText: Chapter 7
- Discussion: Video Streaming
- eText: Chapter 8
- Discussion: Botnets
- Lab: Wireshark SSL
- Quiz: Module 4

Due Dates

MODULE 5

Reading/Assignments/Exams
- eText: Chapter 9
- Discussion: Network Diagramming
- Quiz: Module 5
- eText: Review Chapters 1 to 9
- Discussion: Network Administration
- Project: Final Project
- Exam: Final Exam

Due Dates

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