Washington County Community College

Computer Technology

Course Syllabus

Course No: CTT-140

Course Title: Introduction to Computer Networking

Semester:

Class Location:

Class Schedule:

Instructor:

Email:

Phone:

Office Location:

Office Hours:

# Textbooks:

Title: CompTIA Network+ Guide to Networks Bundle

 ISBN: 9781305778825

Publisher:Cengage Learning

 This bundle includes the following titles:

Title:CompTIA Network+ Guide to Networks

 Authors:Jill West, Tamara Dean, Jean Andrews

ISBN:978-1-305-09094-1

Title:Lab Manual for CompTIA Network+ Guide to Networks

Author:Todd Verge

ISBN: 978-1-305-09309-6

# Materials:

**Required:** Notebook (either spiral bound or 3 ring).

**Recommended:** USB flash drive

# Course Description:

Introduction to computer networking introduces history of networks, network software, terminology, topologies, structure, protocols, cabling, modems, LANS, WANS, network management and security, and future direction in the industry.Course Goals:

The goals of this course for students are as follows:

# Course Goals:

The goals of this course for students are as follows:

1. To gain a basic understanding of computer networking.
2. To prepare to take the CompTIA Network+ certification exam.
3. To practice questions that may be covered in the certification exam.
4. To gain confidence in their ability to independently address problems and answer questions that may arise in their role when employed as a Desktop Technician.

# Student Learning Outcomes:

Upon successful completion of the course’s lectures, readings, labs and assignments, the student will be able to:

1. Describe the certifications available to networking professionals.
2. List the advantages of networked computing relative to stand-alone computing, distinguish between client/server and peer-to-peer networks, list elements common to all client/server networks.
3. Describe the purpose of the OSI model and each of its layers, and explain specific functions belonging to each OSI model layer.
4. Explain basic data transmission concepts, including full duplexing, attenuation, latency, and noise, and describe the physical characteristics of coaxial cable, STP, UTP, and fiber-optic media.
5. Identify and explain the functions of the core TCP/IP protocols.
6. Describe the basic and hybrid LAN physical topologies, and their uses, advantages, and disadvantages, and identify the characteristics of Ethernet standards.
7. Install, configure, and differentiate between network devices such as, NICs, hubs, bridges, switches, routers, and gateways.
8. Explain different WAN topologies, including their advantages and disadvantages.
9. Describe several WAN transmission and connection methods, including PSTN, ISDN, T-carriers, DSL, broadband cable, broadband over powerline, ATM, and SONET.
10. Install and configure wireless access points and their clients.
11. Describe wireless WAN technologies, including 802.16 (WiMAX), HSPA+, LTE and satellite communications.
12. Describe methods of network design unique to TCP/IP networks, including subnetting, CIDR, and address translation.
13. Explain virtualization and identify characteristics of virtual network components.
14. Identify security risks in LANs and WANs and design security policies that minimize risks.
15. Explain security measures for hardware and design, including firewalls, intrusion detection systems, and scanning tools.
16. Understand methods of encryption, such as SSL and IPSec, that can secure data in storage and in transit.
17. Describe the steps involved in an effective troubleshooting methodology and follow a systematic troubleshooting process to identify and resolve networking problems.
18. Discuss the importance of documentation, baseline measurements, policies, and regulations to assess and maintain a network’s health.

# Instructional Methodologies:

This course will be taught in an open lab, lecture, question and answer format. Students will be assigned computer-based exercises and simulated certification tests as homework.

**Schedule**

Note: This schedule is subject to some changes/modifications per Instructor -- This offered as only a study guide. The pace of each class differs according to the instructional needs of the students in the class.

| **Unit** | **Coursework** | **Textbook Chapter** |
| --- | --- | --- |
| 1 | An Introduction to Networking | 1 |
| 2 | How Computers Find Each Other on Networks | 2 |
| 3 | How Data Is Transported Over Networks | 3 |
| 4 | Structured Cabling and Networking Elements | 4 |
| 5 | Network Cabling | 5 |
| 6 | Wireless Networking | 6 |
| 7 | Mid-term |  |
| 8 | Cloud Computing and Remote Access | 7 |
| 9 | Network Risk Management | 8 |
| 10 | Unified Communications and Network Performance Management | 9 |
| 11 | Network Segmentation and Virtualization | 10 |
| 12 | Wide Area Networks | 11 |
| 13 | Industrial and Enterprise Networking | 12 |
| 14 | Final |  |

# Grading:

Exams: Midterm – 20%, Final – 30%

 Labs, Quizzes, Exercises: 30%

 Attendance and Participation: 20%

# Elements of Success:

| **Element** | **Description** |
| --- | --- |
| Accountability  | Those who are accountable stand by their words and actions, taking full responsibility for what they create and for what they contribute to the community. |
| Respect  | Community members who respect themselves and others help to create a safe, yet open climate of learning. |
| Responsibility  | Students who assume personal responsibility for their education will reach their goals. Responsible students also make contributions to their communities. |
| Critical Thinking  | Instructor and students will strive to improve the critical thinking skills of analysis, synthesis, and evaluation. |
| Communication  | Communicating effectively in oral and written forms through traditional and new media is a powerful tool for personal and career success. |
| Collaboration  | Collaborative teamwork maximizes benefits to individuals and communities. When collaboration is expected, instructors will clearly indicate it. When collaboration is not identified as part of an assignment, students must demonstrate individual skills. |

# Late Assignments:

Work turned in late will receive reduced credit and will impact the student’s grade.

# Attendance:

Please refer to the Student Handbook for the WCCC attendance policy. WCCC policy states a student may miss no more than 10% of class hours. Due to the 3 hour block classes for this course, students may not miss more than 1 and ½ sessions.

# Computer Acceptable Use Policy:

Please refer to the Student Handbook for the WCCC Computer Acceptable Use policy. Do not store personal information or classwork on the classroom workstations.

# Accessibility:

WCCC does not discriminate on the basis of disability in admissions to, access to, or operation of its programs, services, or activities. In accordance with Section 504 of the Rehabilitation Act of 1973 (CRF 34 Part 104) and Title II of the Americans with Disabilities Act (ADA) of 1990, WCCC is committed to helping qualified students with disabilities achieve their individual goals. Students with disabilities who may need academic accommodations should bring this to my attention. Also, please contact (Name), the Coordinator of Accessibility Services, at (Contact Info). The office of the Coordinator of Accessibility Services is located in the study center.

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