GAVILAN COLLEGE
5055 Santa Teresa Blvd
Gilroy, CA 95023

Course Outline

COURSE: CSIS 178 DIVISION: 50 ALSO LISTED AS:

TERM EFFECTIVE: Spring 2021 CURRICULUM APPROVAL DATE: 12/8/2020

SHORT TITLE: APPLIED NETWORKING

LONG TITLE: Applied Networking

Units	Number of Weeks	Type	Contact Hours/Week	Total Contact Hours
4	18	Lecture:	3	54
		Lab:	3	54
		Other:	0	0
		Total:	6	108

COURSE DESCRIPTION:

This course covers fundamental networking concepts and develops the skills and knowledge to set up and maintain small business/home networks. The course is not hardware or vendor specific. It helps students prepare for the "Network +" certification exam, an industry- wide, vendor-neutral certification program developed and sponsored by the Computing Technology Industry Association (CompTIA). This course has the option of a letter grade or pass/no pass.

PREREQUISITES:

COREQUISITES:

CREDIT STATUS: D - Credit - Degree Applicable

GRADING MODES
- L - Standard Letter Grade
- P - Pass/No Pass

REPEATABILITY: N - Course may not be repeated

SCHEDULE TYPES:

- 02 - Lecture and/or discussion
- 03 - Lecture/Laboratory
- 04 - Laboratory/Studio/Activity
- 047 - Laboratory - LEH 0.7
- 05 - Hybrid
- 72 - Dist. Ed Internet Delayed
- 73 - Dist. Ed Internet Delayed LAB
- 737 - Dist. Ed Internet LAB-LEH 0.7

STUDENT LEARNING OUTCOMES:

By the end of this course, a student should:

1. Define and describe what a network is.

2. Identify and explain networking protocols.

3. Set up and explain network security.

CONTENT, STUDENT PERFORMANCE OBJECTIVES, OUT-OF-CLASS ASSIGNMENTS

Curriculum Approval Date: 12/8/2020

LECTURE CONTENT:

6 HOURS

Lecture:

Introduction

Defining Networking

The Goal of Networking

Servers and Clients

Making Shared Resources Usable

Building a Network with OSI

NICs

Network software

OSI Seven Layer Model

Performance Objectives: Explain what a network is and what its goals are. Describe the OSI model. Explain the function of common networking protocols. Classify how applications, devices, and protocols relate to the OSI model layers.

6 HOURS

Lecture:

Hardware Concepts

Hybrid topologies

Cabling

Networking Industry Standards-IEEE

Ethernet Basics

How Ethernet Works

CSMA/CD

Ethernet Cabling Systems

Extending the Network: Repeaters and Bridges

Performance Objectives: Describe the role of the IEEE. Explain how Ethernet and CSMA/CD work. Explain the difference between repeaters and bridges.

6 HOURS

Lecture:

Modern Ethernet

10BaseT Topology

Connecting Ethernet Segments

High-Speed Ethernet

Non-Ethernet Networks

Logical Token Ring

LAN to WAN - FDDI and ATM

Performance Objectives: Compare various types of Ethernet. Compare and contrast Ethernet and non-Ethernet networks.

6 HOURS

Lecture:

Installing a Physical Network

Structured Cabling

Testing the Cable Runs

Beyond the Basic Star

NICs

Diagnostics and Repair of Physical Cabling

Wireless Networking

Wireless Networking Basics

Wireless Networking Standards

Configuring Wireless Networking

Troubleshooting Wireless Networks

Performance Objectives: Explain how to test a cable. Describe how to configure a wireless network. Develop a floor plan and map the runs.

6 HOURS

Lecture:

Protocols

Network Protocols

Implementing Protocols

NetBIOS/NetBEUI

IPX/SPX

TCP/IP

Also Ran Protocols

TCP/IP

IP Address Basics

IP Address Format

Local vs. Remote

Subnet Masks and Subnetting

Other Critical TCP/IP Settings

IP Ports

IPv6

Performance Objectives: Explain the role of network protocols and compare several different network protocols. Explain the IP addressing scheme and describe how to subnet a network.

6 HOURS

Lecture:

Network Operating Systems

Categorizing Operating Systems

Client/Server vs. Peer-to-Peer

The Major Network Operating Systems

Creating Servers and Clients

Sharing Resources

Resource Naming

Permissions

Sharing Resources

Accessing Shared Resources

Performance Objectives: Compare various network operating systems. Explain the difference between a client and a server. Discuss sharing a resource across the network.

6 HOURS

Lecture:

Going Large with TCP/IP

DNS

DHCP

WINS

Diagnosing TCP/IP Networks

TCP/IP and the Internet

Real World Routers

Connecting to the Internet

TCP/IP Applications

Performance Objectives: Explain the roles of DHCP and DNS in a TCP/IP network. Explain the role of routers in connecting a network to the internet.

6 HOURS

Lecture:

Interconnecting Network Operating systems

Connecting to Windows

Connecting to NetWare

Connecting to Macintosh

Connecting to UNIX/Linux

The Perfect Server

Protection of Data-Fault Tolerance

Speed

Reliability

Performance Objectives: Explain how different network operating systems can be interconnected. Describe the ideal server.

4 HOURS

Lecture:

The Art of Network Support

Troubleshooting Tools

The Troubleshooting Process

Troubleshooting Scenarios

Performance Objectives: List the hardware and software tools used for troubleshooting. Explain the proper troubleshooting procedure when tracking down common network problems. Establish a plan of action and identify potential effects.

2 HOURS
Final

LAB CONTENT:
6 HOURS
Lab:
Introduction
Defining Networking
The Goal of Networking
Servers and Clients
Making Shared Resources Usable
Building a Network with OSI
NICs
Network software
OSI Seven Layer Model
Performance Objectives: Troubleshoot common router and switch problems. Demonstrate how models such as the OSI seven-layer model and the TCP/IP model help technicians understand and troubleshoot networks.
6 HOURS
Lab:
Hardware Concepts
Hybrid topologies
Cabling
Networking Industry Standards-IEEE
Ethernet Basics
How Ethernet Works
CSMA/CD
Ethernet Cabling Systems
Extending the Network: Repeaters and Bridges
Performance Objectives: Identify the different types of cabling. Demonstrate how to connect Ethernet networks. Demonstrate how Ethernet and CSMA/CD work. Troubleshoot hubs and switches.
6 HOURS
Lab:
Modern Ethernet
10BaseT Topology
Connecting Ethernet Segments
High-Speed Ethernet
Non-Ethernet Networks
Logical Token Ring
LAN to WAN - FDDI and ATM
Performance Objectives: Identify mechanical connection variations. Implement multiple types of Gigabit Ethernet.
6 HOURS
Lab:
Installing a Physical Network
Structured Cabling
Testing the Cable Runs
Beyond the Basic Star
NICs

Diagnostics and Repair of Physical Cabling

Wireless Networking

Wireless Networking Basics

Wireless Networking Standards

Configuring Wireless Networking

Troubleshooting Wireless Networks

Performance objectives: Demonstrate testing a cable. Demonstrate configuring a wireless network. Diagnose and repair physical cabling. Troubleshoot wireless networks.

6 HOURS

Lab:

Protocols

Network Protocols

Implementing Protocols

NetBIOS/NetBEUI

IPX/SPX

TCP/IP

Also Ran Protocols

TCP/IP

IP Address Basics

IP Address Format

Local vs. Remote

Subnet Masks and Subnetting

Other Critical TCP/IP Settings

IP Ports

IPv6

Performance Objectives: Describe the IP addressing scheme and demonstrate subnetting a network. Perform troubleshooting exercises.

6 HOURS

Lab:

Network Operating Systems

Categorizing Operating Systems

Client/Server vs. Peer-to-Peer

The Major Network Operating Systems

Creating Servers and Clients

Sharing Resources

Resource Naming

Permissions

Sharing Resources

Accessing Shared Resources

Performance Objectives: Demonstrate sharing a resource across the network. Complete networking projects.

6 HOURS

Lab:

Going Large with TCP/IP

DNS

DHCP

WINS

Diagnosing TCP/IP Networks

TCP/IP and the Internet

Real World Routers

Connecting to the Internet

TCP/IP Applications

Performance Objectives: Identify router problems and work to correct them. Complete common TCP/IP applications. Perform troubleshooting exercises.

6 HOURS

Lab:

Interconnecting Network Operating systems

Connecting to Windows

Connecting to NetWare

Connecting to Macintosh

Connecting to UNIX/Linux

The Perfect Server

Protection of Data-Fault Tolerance

Speed

Reliability

Performance Objectives: Demonstrate how to interconnect network operating systems. Practice related troubleshooting exercises.

4 HOURS

Lab:

The Art of Network Support

Troubleshooting Tools

The Troubleshooting Process

Troubleshooting Scenarios

Performance Objectives: Demonstrate the proper troubleshooting procedure when tracking down common network problems. Implement and test the solutions. Verify full system functionality and implement preventative measures.

2 HOURS

Final

METHODS OF INSTRUCTION:

Lecture, online research, guided practice, one-on-one or small group instruction.

OUT OF CLASS ASSIGNMENTS:

Required Outside Hours: 54

Assignment Description:

Read the chapters covered in the class lectures and do the homework at

the end of the chapters. Study for exams.

Required Outside Hours: 54

Assignment Description:

Do projects assigned in lecture on each chapter.

METHODS OF EVALUATION:
Writing assignments
Percent of total grade: 20.00 %
Writing assignments: 20% - 40% Lab reports, homework
Problem-solving assignments
Percent of total grade: 30.00 %
Problem-solving demonstrations: 20% - 40% Lab projects, homework
Skill demonstrations
Percent of total grade: 40.00 %
Skill demonstrations: 30% - 70% Performance exams
Objective examinations
Percent of total grade: 10.00 %
Objective examinations: 10% - 20%

REPRESENTATIVE TEXTBOOKS:
Glen E. Clarke. CompTIA Network+ Certification, Seventh Edition. NYC, NY: McGraw-Hill Education,2018.
ISBN: 9781260122053
Reading Level of Text, Grade: 12th Verified by: MS Word

ARTICULATION and CERTIFICATE INFORMATION
Associate Degree:
CSU GE:
IGETC:
CSU TRANSFER:
Transferable CSU, effective 200570
UC TRANSFER:
Not Transferable

SUPPLEMENTAL DATA:
Basic Skills: N
Classification: Y
Noncredit Category: Y
Cooperative Education:
Program Status: 1 Program Applicable
Special Class Status: N
CAN:
CAN Sequence:
CSU Crosswalk Course Department:
CSU Crosswalk Course Number:
Prior to College Level: Y
Non Credit Enhanced Funding: N
Funding Agency Code: Y
In-Service: N
Occupational Course: C
Maximum Hours:
Minimum Hours:
Course Control Number: CCC000026694
Sports/Physical Education Course: N
Taxonomy of Program: 070810