



ILLINOIS VALLEY COMMUNITY COLLEGE

COURSE OUTLINE

DIVISION: Workforce Development

COURSE: CSN 1225 Core Networking Technologies

Date: Spring 2018

Credit Hours: 3

Prerequisite(s): none

Delivery Method: **Lecture** **2 Contact Hours (1 contact = 1 credit hour)**
 Seminar **0 Contact Hours (1 contact = 1 credit hour)**
 Lab **2 Contact Hours (2-3 contact = 1 credit hour)**
 Clinical **0 Contact Hours (3 contact = 1 credit hour)**
 Online
 Blended

Offered: **Fall** **Spring** **Summer**

IAI Equivalent –**Only for Transfer Courses**-go to <http://www.itransfer.org>:

CATALOG DESCRIPTION:

The course introduces the student to the essential terminology and basic concepts of networking. These will consist of network components, designs, and physical media. Networking topics will include media, topologies, protocols, networking devices, network design and layouts, basic troubleshooting, security, and documentation.

GENERAL EDUCATION GOALS ADDRESSED

[See last page for Course Competency/Assessment Methods Matrix.]

Upon completion of the course, the student will be able:

[Choose up to three goals that will be formally assessed in this course.]

- To apply analytical and problem solving skills to personal, social, and professional issues and situations.
- To communicate successfully, both orally and in writing, to a variety of audiences.
- To construct a critical awareness of and appreciate diversity.
- To understand and use technology effectively and to understand its impact on the individual and society.
- To develop interpersonal capacity.
- To recognize what it means to act ethically and responsibly as an individual and as a member of society.
- To recognize what it means to develop and maintain a healthy lifestyle in terms of mind, body, and spirit.
- To connect learning to life.

EXPECTED LEARNING OUTCOMES AND RELATED COMPETENCIES:

[Outcomes related to course specific goals. See last page for more information.]

Upon completion of the course, the student will be able to:

1. Understand terminology commonly used in networking.
2. Design and layout efficient network topologies
3. Understand the layers of the OSI model.
4. Demonstrate a basic understanding of network security.
5. Explain how network communication takes place along layers of the OSI model.
6. Demonstrate a basic understanding of the job of the network administrator.
7. Solve simple network problems.

Outcome 1 – Upon completion of the course, the student will be able to understand of the terminology commonly used in networking.

Competency 1.1 – the student will be able to list the advantages of wired versus wireless connections.

Competency 1.2 – the student will be able to distinguish between client/server and peer-to-peer networks

Competency 1.3 – the student will be able to describe specific uses of home versus business networks

Outcome 2 - Upon completion of the course, the student will be able to design and layout efficient networks.

Competency 2.1 – the student will learn the various network topologies and the when it is appropriate to use each topology.

Competency 2.2 – the student will learn design software packages such as Visio and how it can be used to design and document networks.

Competency 2.3 – the student will be able to explain basic communications concepts.

Competency 2.4 – the student will be able to compare the benefits and limitations of different cabling media (fiber, STP, UTP, wireless).

Competency 2.5 – the student will learn to make patch cables using UTP cabling

Competency 2.6 – the student will identify networking hardware that makes up a LAN/WAN network (hubs, switches, routers, servers, clients).

Outcome 3 - Upon completion of the course, the student will be able to demonstrate a basic understanding of network security.

Competency 3.1 – the student will be able to identify security risks and design security policies to decrease those risks.

Competency 3.2 – the student will be able to identify physical security measures that can be taken.

Competency 3.3 – the student will be able to identify software-based security measures that can be taken.

Competency 3.4 – the student will learn differences between wired and wireless security issues.

Outcome 4 - Upon completion of the course, the student will be able to explain how network communication takes place.

Competency 4.1 – the student will be able to describe the OSI model and identify the seven layers of the model.

Competency 4.2 – the student will be able to demonstrate knowledge of specific functions of each of the seven layers of the OSI model.

Competency 4.3 – the student will be able to discuss the structure and purpose of data and overhead information at different layers of the OSI model.

Competency 4.4 – the student will be able to distinguish between physical addressing and IP addressing and when they are used.

Outcome 5 - Upon completion of the course, the student will be able to demonstrate a basic understanding of the job of the network administrator.

Competency 5.1 – the student will be able to understand network management and the importance of establishing document, measurements, and policies.

Competency 5.2 – the student will be able to plan regular hardware and software maintenance schedules.

Competency 5.3 – the student will be able to understand the use of asset management systems to track computers and networking equipment.

Competency 5.4 – the student will be exposed to some network management tools used by network operating systems.

Outcome 6 - Upon completion of the course, the student will be able to solve simple network problems.

Competency 6.1 – the student will be able to use case studies to identify network needs and present network solutions.

Competency 6.2 – the student will be able to use cognitive thinking to resolve simple network problems.

Competency 6.3 – The student will be able to use various software and hardware tools to help resolve network problems.

MAPPING LEARNING OUTCOMES TO GENERAL EDUCATION GOALS

[For each of the goals selected above, indicate which outcomes align with the goal.]

Goals	Outcomes
First Goal	
To apply analytical and problem solving skills to personal, social, and professional issues and situations	<p>The student will be able to design and layout efficient networks.</p> <p>The student will be able to demonstrate a basic understanding of network security.</p> <p>The student will be able to solve simple network problems.</p>
Second Goal	
To understand and use technology effectively and to understand its impact on the individual and society	<p>The student will be able to understand the terminology commonly used in networking.</p> <p>The student will be able to design and layout efficient networks.</p> <p>The student will be able to demonstrate a basic understanding of network security.</p> <p>The student will be able to explain how network communication takes place.</p> <p>The student will be exposed to some network management tools used by network operating systems.</p> <p>The student will be able to solve simple network problems.</p>

COURSE TOPICS AND CONTENT REQUIREMENTS:

1. Introduction to Networking
 - Types of networks
 - How networks are used
2. Networking Standards and the OSI Model
 - IEEE's role
 - IANA and ICANN
 - The OSI Model layers
3. Transmission Basics and Networking Media
 - How transmissions work in a wired environment
 - Media characteristics
 - Types of copper wires
 - Fiber optic wiring
 - Wireless transmission
4. Network Protocols
 - TCP/IP
 - Other proprietary protocols
5. Network Hardware
 - Network Interface Cards
 - Repeaters, hubs, switches, routers
6. Physical Topologies
 - Star, Ring, Bus, Mesh
 - Hybrid networks
7. Wide Area Networks
8. Troubleshooting Networks
9. Network Security
 - Security risks
 - Encryption
 - Authentication
 - Wireless security

INSTRUCTIONAL METHODS:

- Lecture
- Homework assignments including
 - short answer questions
 - Simulation software
 - case studies
 - hands-on assignments
- Outside readings
- Class discussion

INSTRUCTIONAL MATERIALS:

CompTIA Network+ Guide to Networks, 7th edition

West, Dean, Andrews Copyright 2016

ISBN-13: 978-1-305-09094-1

ISBN-10: 1-305-09094-2

TestOut Network Pro 5.0 Courseware

ISBN: 978-935080-43-5

Headset/earbuds for listening to videos

STUDENT REQUIREMENTS AND METHODS OF EVALUATION:

Students will successfully complete all assigned hands-on activities performed during class/lab.

Students will successfully complete and turn in all independent hands-on application assignments.

Students will successfully complete quizzes on the topic discussed.

Students will successfully complete a midterm and final written exam covering terminology.

Students will successfully complete a midterm and final hands-on exam covering tasks assigned

A= 90-100

B= 80-89

C= 70-79

D= 60-69

F= 0-59

OTHER REFERENCES

Course Competency/Assessment Methods Matrix

(Dept/# Course Name)	Assessment Options																															
For each competency/outcome place an "X" below the method of assessment to be used.	Assessment of Student Learning	Article Review	Case Studies	Group Projects	Lab Work	Oral Presentations	Pre-Post Tests	Quizzes	Written Exams	Artifact Self Reflection of Growth	Capstone Projects	Comprehensive Written Exit Exam	Course Embedded Questions	Multi-Media Projects	Observation	Writing Samples	Portfolio Evaluation	Real World Projects	Reflective Journals	Applied Application (skills) Test	Oral Exit Interviews	Accreditation Reviews/Reports	Advisory Council Feedback	Employer Surveys	Graduate Surveys	Internship/Practicum /Site Supervisor Evaluation	Licensing Exam	In Class Feedback	Simulation	Interview	Written Report	Assignment
	Direct/ Indirect	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	I	I	I	I	D	D						
Assessment Measures – Are direct or indirect as indicated. List competencies/outcomes below.																																
Outcome 1 – Upon completion of the course, the student will be able to understand of the terminology commonly used in networking.								X	X																			X				X
Outcome 2 - Upon completion of the course, the student will be able to design and layout efficient networks.		X	X	X				X	X																			X				X
Outcome 3 - Upon completion of the course, the student will be able to demonstrate a basic		X	X	X				X	X																			X				X

Outcome 4 - Upon completion of the course, the student will be able to explain how network communication takes place.			X	X	X			X	X																											X												X					
Outcome 5 - Upon completion of the course, the student will be able to demonstrate a basic understanding of the job of the network administrator.			X	X	X			X	X																																											X	
Outcome 6 - Upon completion of the course, the student will be able to solve simple network problems.			X	X	X			X	X																																												X