

COMS-190: COMPUTER NETWORK FUNDAMENTALS

Justification for this inactivation request

Course not offered in 3 years.

Effective Term

Fall 2025

CC Approval

11/01/2024

AS Approval

11/14/2024

BOT Approval

11/21/2024

COCI Approval

03/13/2025

SECTION A - Course Data Elements

CB04 Credit Status

Credit - Degree Applicable

Discipline

Minimum Qualifications	And/Or
Computer Information Systems (Any Degree and Professional Experience)	

Subject Code

COMS - Computer Studies

Course Number

190

Department

Computer Studies

Division

Career Education and Workforce Development (CEWD)

Full Course Title

Computer Network Fundamentals

Short Title

Computer Network Fundamentals

CB03 TOP Code

0708.10 - *Computer Networking

CB08 Basic Skills Status

NBS - Not Basic Skills

CB09 SAM Code

D - Possibly Occupational

SECTION B - Course Description

Catalog Course Description

This course will introduce the architecture, structure, functions, components, and models of the Internet and other computer networks. The principles and structure of IP (Internet Protocol) addressing and the fundamentals of Ethernet concepts, media, and operations are introduced to provide a foundation for further study of computer networks. It uses the OSI (Open Systems

Interconnection) and TCP (Transmission Control Protocol) layered models to examine the nature and roles of protocols and services at the application, network, data link, and physical layers. This course also prepares students for the CompTIA Network+.

SECTION C - Conditions on Enrollment

Open Entry/Open Exit

No

Repeatability

Not Repeatable

Grading Options

Letter Grade or Pass/No Pass

Allow Audit

Yes

Requisites

SECTION D - Course Standards

Is this course variable unit?

No

Units

3.00000

Lecture Hours

54.00

Outside of Class Hours

108

Total Contact Hours

54

Total Student Hours

162

Distance Education Approval

Is this course offered through Distance Education?

Yes

Online Delivery Methods

DE Modalities	Permanent or Emergency Only?
Entirely Online	Permanent
Hybrid	Permanent
Online with Proctored Exams	Permanent

SECTION E - Course Content

Student Learning Outcomes

Upon satisfactory completion of the course, students will be able to:	
1.	Demonstrate understanding of basic security issues and best practices in network configuration.

Course Objectives

Upon satisfactory completion of the course, students will be able to:	
1.	Identify and use network transmission media.
2.	Identify and use network transmission media.
3.	Demonstrate the ability to install physical connections (cabling and wireless) between networked devices.

Course Content

1. Network Fundamentals
 - a. OSI (Open Systems Interconnection) and TCP/IP (Transmission Control Protocol/Internet Protocol) layered models
 - b. IP addressing (IPv4 and IPv6)
 - c. Routing and switching
2. Functions of common networking protocols
 - a. DNS (Domain Name System)
 - b. FTP (File Transfer Protocol)
 - c. email (POP3, IMAP, SMTP,...)
 - d. DHCP (Dynamic Host Configuration Protocol)
 - e. HTTP (HyperText Transport Protocol)
 - f. Telnet, SSH, RDP,...
3. Network Design
 - a. Network topologies (for example: Ring, Star, Client-server)
 - b. WAN (Wide Area Networks) technology types and properties
 - c. LAN (Local Area Networks) technology types and properties
 - d. Planning and implementation of a basic SOHO (Small Office/Home Office) network for a given set of requirements.
 - e. Standard media types (for example: Fiber, Copper), associated properties, standard connector types
 - f. Wireless standards, protocols and design considerations
4. Network Configuration
 - a. Installation and configuration of routers and switches for a given scenario
 - b. Installation and configuration of a wireless network for a given scenario
5. Network Management, Monitoring and Troubleshooting
 - a. Methodology
 - b. Hardware and software tools to troubleshoot connectivity issues
 - c. Network monitoring resources to analyze traffic
 - d. Network performance optimization
6. Network Security
 - a. Wireless Security Measures
 - b. Network Access Security Method
 - c. User authentication Methods
 - d. Common threats, vulnerabilities, and mitigation techniques
 - e. Installation and configuration of a basic firewall
 - f. Network Security appliances and methods

Methods of Instruction

Methods of Instruction

Types	Examples of learning activities
Lecture	Lab assignments include: *Designing network topologies *Implementing a network design *Configuring operating systems *Monitoring network throughput *Inspecting network packets

Online Adaptation

Types	Examples of learning activities
Activity	
Directed Study	
Discussion	
Group Work	
Individualized Instruction	

Journal

Lecture

Instructor-Initiated Online Contact Types

Announcements/Bulletin Boards

Chat Rooms

Discussion Boards

E-mail Communication

Telephone Conversations

Video or Teleconferencing

Student-Initiated Online Contact Types

Chat Rooms

Discussions

Group Work

Course design is accessible

Yes

Methods of Evaluation**Methods of Evaluation**

Types	Examples of classroom assessments
Exams/Tests	Objective quizzes and exams on: the architecture, structure, functions, components, and models of the Internet and other computer networks; the nature and roles of protocols and services at the application, network, data link, and physical layers; and the principles and structure of IP addressing and the fundamentals of Ethernet concepts, media, and operations.
Homework	Textbook readings and online supporting webpages to inform the student on the architecture, structure, functions, components, and models of the Internet and other computer networks.
Lab Activities	

Assignments**Reading Assignments**

Daily reading assignments from the textbook(s) and supplementary materials.

Writing Assignments

Prepare critical analysis reports on networking concepts and issues that could include:

Network troubleshooting, log analyses and forensic evaluation.

Critical network evaluation against customer requirements.

Establish network operating procedures.

Outside-of-Class Assignments

Assignments include designing and configuring networks conceptually and in practice and answering questions in preparation for the Network+ certification exam.

SECTION F - Textbooks and Instructional Materials**Material Type**

Textbook

Author

Various

Title

Introduction to Networks

Edition/Version

6th

Publisher

Cisco Press

Year

2017

SECTION G - Diversity, Equity and Inclusivity**Course Codes (Admin Only)****CB10 Cooperative Work Experience Status**

N - Is Not Part of a Cooperative Work Experience Education Program

CB11 Course Classification Status

Y - Credit Course

CB13 Special Class Status

N - The Course is Not an Approved Special Class

CB23 Funding Agency Category

Y - Not Applicable (Funding Not Used)

CB24 Program Course Status

Program Applicable

Allow Pass/No Pass

Yes

Only Pass/No Pass

No