CS 82.22A Course Outline as of Fall 2021

CATALOG INFORMATION

Dept and Nbr: CS 82.22A Title: INTRO TO NETWORKS
Full Title: Introduction to Networks
Last Reviewed: 2/22/2021

Units		Course Hours per Week		Nbr of Weeks	Course Hours Total	
Maximum	4.00	Lecture Scheduled	4.00	17.5	Lecture Scheduled	70.00
Minimum	4.00	Lab Scheduled	0	8	Lab Scheduled	0
		Contact DHR	0		Contact DHR	0
		Contact Total	4.00		Contact Total	70.00
		Non-contact DHR	0		Non-contact DHR	0

Total Out of Class Hours: 140.00 Total Student Learning Hours: 210.00

Title 5 Category:	AA Degree Applicable
Grading:	Grade or P/NP
Repeatability:	00 - Two Repeats if Grade was D, F, NC, or NP
Also Listed As:	
Formerly:	

Catalog Description:
This course introduces the architecture, structure, functions, components, and models of the Internet and other computer networks. It uses the Open Systems Interconnection (OSI) and Transmission Control Protocol (TCP) layered models to examine the nature and roles of protocols and services at the application, network, data link, and physical layers. The principles and structure of Internet Protocol (IP) addressing and the fundamentals of Ethernet concepts, media, and operations are introduced to provide a foundation for the curriculum. Network simulator activities help students analyze protocol and network operation and build small networks in a virtual environment. Students build simple Local Area Network (LAN) topologies by applying basic principles of cabling, performing basic configurations of network devices, including routers and switches, and implementing IP addressing schemes. Network Fundamentals is the first of the three courses leading to the Cisco Certified Network Associate (CCNA) designation.

Prerequisites/Corequisites:

Recommended Preparation:
Eligibility for ENGL 100 or ESL 100 or appropriate placement based on AB705 mandates; and Completion of CS 80.15

Limits on Enrollment:

Schedule of Classes Information:
Description: This course introduces the architecture, structure, functions, components, and models of the Internet and other computer networks. It uses the Open Systems Interconnection (OSI) and Transmission Control Protocol (TCP) layered models to examine the nature and roles of protocols and services at the application, network, data link, and physical layers. The principles and structure of Internet Protocol (IP) addressing and the fundamentals of Ethernet concepts, media, and operations are introduced to provide a foundation for the curriculum. Network simulator activities help students analyze protocol and network operation and build small networks in a virtual environment. Students build simple Local Area Network (LAN) topologies by applying basic principles of cabling, performing basic configurations of network devices, including routers and switches, and implementing IP addressing schemes. Network Fundamentals is the first of the three courses leading to the Cisco Certified Network Associate (CCNA) designation. (Grade or P/NP)
Prerequisites/Corequisites:
Recommended: Eligibility for ENGL 100 or ESL 100 or appropriate placement based on AB705 mandates; and Completion of CS 80.15
Limits on Enrollment:
Transfer Credit: CSU;
Repeatability: Two Repeats if Grade was D, F, NC, or NP

ARTICULATION, MAJOR, and CERTIFICATION INFORMATION:

AS Degree:	**Area**	Effective:	Inactive:
CSU GE:	**Transfer Area**	Effective:	Inactive:
IGETC:	**Transfer Area**	Effective:	Inactive:

CSU Transfer:	Transferable	Effective:	Fall 2021	Inactive:
UC Transfer:		Effective:		Inactive:

CID:

Certificate/Major Applicable:
Not Certificate/Major Applicable

Approval and Dates

Version:	01	Course Created/Approved:	2/22/2021
Version Created:	11/28/2020	Course Last Modified:	4/13/2022
Submitter:	Michael McKeever	Course last full review:	2/22/2021
Version Status:	Approved New Course (First Version)	Prereq Created/Approved:	2/22/2021
Version Status Date:	2/22/2021	Semester Last Taught:	Fall 2021
Version Term Effective:	Fall 2021	Term Inactive:	Fall 2022

COURSE CONTENT

Student Learning Outcomes:

At the conclusion of this course, the student should be able to:
1. Analyze data networks supporting business communications and apply network protocol models to facilitate improved transfer of information across an internetwork.
2. Demonstrate the importance of addressing and naming schemes at the various layers of data networks.
3. Compare and contrast fundamental Ethernet concepts and topological designs used in data networks.

Objectives:
Students will be able to:
1. Examine the importance of data networks and the Internet in supporting business communications and everyday activities
2. Summarize how communication is accomplished in data networks and across the Internet
3. Differentiate the devices and services that are used to support communications across an internetwork
4. Deduce the layers of communications in data networks through analysis of network protocol models
5. Examine the role of protocols in data networks
6. Evaluate the importance of addressing and naming schemes at various layers of data networks
7. Compare and contrast the protocols and services operating at the application layer in the Open Systems Interconnection (OSI) model and examine how this layer operates in sample networks
8. Analyze the operations and features of the transport layer protocols and services
9. Analyze the operations and feature of the network layer protocols and services and explain the fundamental concepts of routing
10. Design, calculate, and apply subnet masks and addresses to fulfill given requirements
11. Interpret the operation of protocols at the OSI data link layer and examine how they support communications
12. Inspect the physical layer protocols and services supporting communications across data networks
13. Distinguish fundamental Ethernet concepts such as media, services, and operation
14. Choose basic cabling and network designs to connect devices in accordance with stated objectives
15. Experiment with Cisco Command Line Interface (CLI) to perform basic router and switch configuration

Topics and Scope:

1. Basic Switch and End Device Configuration
2. Protocols and Models (such as OSI)
3. Numbering Systems
4. Data Link Layer
5. Ethernet Switching
6. Network Layer
7. Address Resolution
8. Basic Router Configuration
9. IPv4 and IPv6 Addressing
10. Internet Control Messaging Protocol (ICMP)
11. Transport and Application Layers
12. Network Security Fundamentals
13. Build a Small Network

Assignment:

Reading assignments include:
1. Online research of security devices and deployment practices
2. Approximately 50 pages weekly from the textbook

Homework problems include:
1. Weekly online discussion thread participation
2. Hands-on exercises and class performances to demonstrate proficiency with topics
3. Online quizzes

Other assignments include:
1. Quizzes (9 - 11) and skill demonstration exam
2. Classroom scenario-based performances and exercises

Optional Assignments:
1. Network operating system and security design diagrams and layout

Methods of Evaluation/Basis of Grade:

Writing: Assessment tools that demonstrate writing skills and/or require students to select, organize and explain ideas in writing.

Weekly written online discussions	Writing 5 - 10%

Problem Solving: Assessment tools, other than exams, that demonstrate competence in computational or non-computational problem solving skills.

Homework problems, Creation of network, operating system and security design diagrams and layouts (optional)	Problem solving 15 - 30%

Skill Demonstrations: All skill-based and physical demonstrations used for assessment purposes including skill performance exams.

Skill demonstration exam	Skill Demonstrations 20 - 30%

Exams: All forms of formal testing, other than skill performance exams.

Quizzes, skill demonstration exam	Exams 20 - 30%

Other: Includes any assessment tools that do not logically fit into the above categories.

Attendance and participation in scenario-based exercises	Other Category 5 - 20%

Representative Textbooks and Materials:

Introduction to Networks Companion Guide (CCNAv7). Cisco Networking Academy. Cisco Press. 2020

Introduction to Networks Course Booklet (CCNAv7). Cisco Networking Academy. Cisco Press. 2020

OTHER REQUIRED ELEMENTS

STUDENT PREPARATION

Matric Assessment Required:	E	Requires English Assessment
Prerequisites-generate description:	NP	No Prerequisite
Advisories-generate description:	U	User-Generated Text
Prereq-provisional:	N	NO
Prereq/coreq-registration check:	N	No Prerequisite Rules Exist
Requires instructor signature:	N	Instructor's Signature Not Required

BASIC INFORMATION, HOURS/UNITS & REPEATABILITY

Method of instruction:	02	Lecture
	71	Internet-Based, Simultaneous Interaction
	72	Internet-Based, Delayed Interaction
Area department:	CS	Computer Studies
Division:	72	Arts & Humanities
Special topic course:	N	Not a Special Topic Course
Program status:	2	Not Certificate/Major Applicable
Repeatability:	00	Two Repeats if Grade was D, F, NC, or NP
Repeat group id:		CS 8221A-8222A

SCHEDULING

Audit allowed:	N	Not Auditable
Open entry/exit:	N	Not Open Entry/Open Exit
Credit by exam:	N	Credit by examination not allowed
Budget code: Program:	0000	Unrestricted
Budget code: Activity:	0701	Computer & Information Science

OTHER CODES

Discipline:	Computer Information Systems	
Basic skills:	N	Not a Basic Skills Course
Level below transfer:	Y	Not Applicable
CVU/CVC status:	Y	Distance Ed, Not CVU/CVC Developed
Distance Ed Approved:	Y	Either online or hybrid, as determined by instructor
Emergency Distance Ed Approved:	N	None
Credit for Prior Learning:	N	Agency Exam
	N	CBE
	N	Industry Credentials
	N	Portfolio
Non-credit category:	Y	Not Applicable, Credit Course
Classification:	Y	Career-Technical Education
SAM classification:	C	Clearly Occupational
TOP code:	0708.00	Computer Infrastructure and Support
Work-based learning:	N	Does Not Include Work-Based Learning
DSPS course:	N	Not a DSPS Course
In-service:	N	Not an in-Service Course