CS 182.21D Course Outline as of Fall 2015

CATALOG INFORMATION

Dept and Nbr: CS 182.21D   Title: CONNECTING NETWORKS
Full Title: Connecting Networks (Cisco Networking 4)
Last Reviewed: 5/11/2015

Units		Course Hours per Week		Nbr of Weeks	Course Hours Total	
Maximum	3.00	Lecture Scheduled	3.00	17.5	Lecture Scheduled	52.50
Minimum	3.00	Lab Scheduled	0	8	Lab Scheduled	0
		Contact DHR	0		Contact DHR	0
		Contact Total	3.00		Contact Total	52.50
		Non-contact DHR	0		Non-contact DHR	0

Total Out of Class Hours: 105.00   Total Student Learning Hours: 157.50

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: CS 82.21D

Catalog Description:
Connecting Networks (Cisco Networking 4) is the last of four courses that prepares students for the Cisco Certified Networking Associate (CCNA) certification. This course discusses the Wide Area Network (WAN) technologies and network services required by converged applications in a complex network. The course enables students to understand the selection criteria of network devices and WAN technologies to meet network requirements. Students learn how to configure and troubleshoot network devices and resolve common issues with data link protocols. Students also develop the knowledge and skills needed to implement Internet Protocol Security (IPSec) and Virtual Private Network (VPN) operations in a complex network.

Prerequisites/Corequisites:
Course Completion of CS 182.21C

Recommended Preparation:
Eligibility for ENGL 100 or ESL 100

Limits on Enrollment:

Schedule of Classes Information:
Description: Connecting Networks (Cisco Networking 4) is the last of four courses that prepares

students for the Cisco Certified Networking Associate (CCNA) certification. This course discusses the Wide Area Network (WAN) technologies and network services required by converged applications in a complex network. The course enables students to understand the selection criteria of network devices and WAN technologies to meet network requirements. Students learn how to configure and troubleshoot network devices and resolve common issues with data link protocols. Students also develop the knowledge and skills needed to implement Internet Protocol Security (IPSec) and Virtual Private Network (VPN) operations in a complex network. (Grade or P/NP)
Prerequisites/Corequisites: Course Completion of CS 182.21C
Recommended: Eligibility for ENGL 100 or ESL 100
Limits on Enrollment:
Transfer Credit:
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:		Effective:	Inactive:	
UC Transfer:		Effective:	Inactive:	

CID:

Certificate/Major Applicable:
Certificate Applicable Course

COURSE CONTENT

Student Learning Outcomes:
At the conclusion of this course, the student should be able to:
1. Evaluate and implement basic network security protocols in small to medium sized businesses.
2. Differentiate between and among the Quality of Service (QoS) requirements for various types of data network traffic.
3. Design and implement Wide Area Networks (WAN) and Virtual Private Networks (VPN).

Objectives:
Upon completion of this course, students will be able to:
1. Devise efficient network addressing schemes
2. Evaluate and implement basic network security in small to medium sized businesses
3. Differentiate between wide area network (WAN) and local area network (LAN) equipment and protocols
4. Plan and configure network connections from the LAN to the WAN
5. Construct Point-to-Point Protocol (PPP) connections to the WAN
6. Construct Frame Relay connections to the WAN
7. Differentiate between the Quality of Service (QoS) requirements for various types of network

traffic
8. Formulate a network plan and set up a Virtual Private Network (VPN)
9. Monitor and troubleshoot network operations using syslog, SNMP, and NetFlow

Topics and Scope:

Topics will include but not be limited to:
1. Hierarchical Network Design
   a. Hierarchical Network Design Overview
   b. Cisco Enterprise Architecture
   c. 3. Evolving Network Architectures
2. Connecting to the WAN
   a. WAN Technologies Overview
   b. Selecting a WAN Technology
3. Point-to-Point Connections
   a. Serial Point-to-Point Overview
   b. PPP Operation
   c. Configure PPP
   d. Troubleshoot WAN Connectivity
4. Frame Relay
   a. Introduction to Frame Relay
   b. Configure Frame Relay
   c. Troubleshoot Connectivity
5. Network Address Translation for IPv4
   a. NAT Operation
   b. Configuring NAT
   c. Troubleshooting NAT
6. Broadband Solutions
   a. Teleworking
   b. Comparing Broadband Solutions
   c. Configuring xDSL Connectivity
7. Securing Site-to-Site Connectivity
   a. VPNsImplementing GRE Tunnels
   b. LAB Configuring a Point-to-Point GRE VPN Tunnel
8. Monitoring the Network
   a. Syslog
   b. SNMP
   c. Netflow
   d. LAB Configuring Syslog and NTP
9. Troubleshoot the Network
   a. Troubleshooting with a Systematic Approach
   b. Network Troubleshooting

Assignment:

Reading assignments may include:
1. Online research of network devices and deployment practices
2. Approximately 50 pages weekly from the textbook
Homework problems may include:
1. Hands-on exercises to demonstrate proficiency with each topic
2. Online quizzes
3. Creation of network design diagrams

Other assignments may include:
1. 6-10 quizzes
2. Skill demonstration examinations
3. Classroom scenario based exercises

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.

None, This is a degree applicable course but assessment tools based on writing are not included because problem solving assessments and skill demonstrations are more appropriate for this course.

Writing
0 - 0%

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

Homework problems, Creation of network design diagrams and layouts

Problem solving
15 - 30%

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

Class performances of Network device configuration

Skill Demonstrations
20 - 30%

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

6-10 quizzes and Simulated equipment configuration

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
10 - 25%

Representative Textbooks and Materials:
Connecting Networks Companion Guide (1st). Cisco Networking Academy. Cisco Press: 2014