CS 182.21C Course Outline as of Fall 2015

CATALOG INFORMATION

Dept and Nbr: CS 182.21C Title: SCALING NETWORKS
Full Title: Scaling Networks (Cisco Networking 3)
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 82.21C

Catalog Description:
Scaling Networks (CCNA 3) is the third of the four courses that prepares students for the Cisco Certified Networking Associate (CCNA) certification. This course describes the architecture, components, and operations of routers and switches in a large and complex network. Students learn how to configure routers and switches for advanced functionality. By the end of this course, students will be able to configure and troubleshoot routers and switches and resolve common issues with single and multi-area Open Shortest Path First (OSPF), Enhanced Interior Gateway Routing Protocol (EIGRP) and Rapid Spanning Tree Protocol (RSTP), in both Internet Protocol version 4 (IPv4) and IPv6 networks.

Prerequisites/Corequisites:
Course Completion of CS 82.21B

Recommended Preparation:
Eligibility for ENGL 100 or ESL 100

Limits on Enrollment:

Schedule of Classes Information:
Description: Scaling Networks (CCNA 3) is the third of the four courses that prepares students

for the Cisco Certified Networking Associate (CCNA) certification. This course describes the architecture, components, and operations of routers and switches in a large and complex network. Students learn how to configure routers and switches for advanced functionality. By the end of this course, students will be able to configure and troubleshoot routers and switches and resolve common issues with single and multi-area Open Shortest Path First (OSPF), Enhanced Interior Gateway Routing Protocol (EIGRP) and Rapid Spanning Tree Protocol (RSTP), in both Internet Protocol version 4 (IPv4) and IPv6 networks. (Grade or P/NP)
Prerequisites/Corequisites: Course Completion of CS 82.21B
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:
Upon completion of the course, students will be able to:
1. Design, configure and troubleshoot Rapid Spanning Tree Protocol (RSTP) in a Local Area Network (LAN).
2. Analyze the needs and requirements of a complex business network and implement the appropriate routing protocol.
3. Adjust routing protocol metrics to more efficiently direct network traffic to its intended destination.

Objectives:
Upon completion of this course, students will be able to:
1. Understand, configure and troubleshoot enhanced switching technologies such as Virtual Local Area Networks (VLANs), Rapid Spanning Tree Protocol (RSTP), Per VLAN Spanning Tree Plus Protocol (PVST+), and EtherChannel
2. Understand, configure, and troubleshoot first Hot Standby Router Protocols (HSRP) in a switched network
3. Understand, configure, and troubleshoot wireless routers and wireless clients
4. Configure and troubleshoot routers in a complex routed Internet Protocol (IP) v4 or IPv6 network using single-area Open Shortest Path First (OSPF), multi-area OSPF, and Enhanced Interior Gateway Routing Protocol (EIGRP)

5. Manage Cisco Internetworking Operating System (IOS) Software licensing and configuration files

Topics and Scope:

Topics will include but not be limited to:
1. Growing the Network
   a. Scaling the Network
   b. Switched Network
2. LAN Redundancy
   a. Spanning Tree Concepts
   b. Varieties of Spanning Tree Protocols
   c. Spanning Tree Configuration
   d. First Hop Redundancy Protocols
3. Link Aggregation
   a. Link Aggregation Concepts
   b. Link Aggregation Configuration
4. Wireless LANs
   a. Wireless LAN Concepts
   b. Wireless LAN Operation
   c. Wireless LAN Security
   d. Wireless LAN Configuration
   e. Investigating Wireless Implementations
5. Adjust and Troubleshoot Single-Area OSPF
   a. Avanced Single-Area OSPF Configurations
   b. Troubleshooting Single-Area OSPF Implementations
6. Multiarea OSPF
   a. Multiarea OSPF Operation
   b. Configuring Multiarea OSPF
7. EIGRP
   a. Characteristics of EIGRP
   b. Configuring EIGRP for IPv4
   c. Operation of EIGRP
   d. Configuring EIGRP for IPv6
8. Adjust and Troubleshoot EIGRP
   a. Advanced EIGRP Configurations
   b. Troubleshoot EIGRP
9. IOS File Management
   a. Managing IOS System Files
   b. IOS Licensing

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:
Scaling Networks Companion Guide (1st). Cisco Networking Academy. Cisco Press: 2014