

CS 82.22B Course Outline as of Fall 2021**CATALOG INFORMATION**

Dept and Nbr: CS 82.22B Title: SW RT W ESSENT

Full Title: Switching, Routing and Wireless Essentials

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:

The second course in the Cisco Certified Network Associate (CCNA) curriculum focuses on switching technologies and router operations that support small-to-medium business networks and includes Wireless Local Area Networks (WLANs) and security concepts. Students learn key switching and routing concepts. Students will perform basic network configuration and troubleshooting, identify and mitigate Local Area Network (LAN) security threats, and configure and secure a basic WLAN.

Prerequisites/Corequisites:

Course Completion of CS 82.2A (or CS 82.22A)

Recommended Preparation:

Eligibility for ENGL 100 or ESL 100 or appropriate placement based on AB705 mandates

Limits on Enrollment:**Schedule of Classes Information:**

Description: The second course in the Cisco Certified Network Associate (CCNA) curriculum focuses on switching technologies and router operations that support small-to-medium business networks and includes Wireless Local Area Networks (WLANs) and security concepts. Students

learn key switching and routing concepts. Students will perform basic network configuration and troubleshooting, identify and mitigate Local Area Network (LAN) security threats, and configure and secure a basic WLAN. (Grade or P/NP)

Prerequisites/Corequisites: Course Completion of CS 82.2A (or CS 82.22A)

Recommended: Eligibility for ENGL 100 or ESL 100 or appropriate placement based on AB705 mandates

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:
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CSU Transfer: Transferable	Effective:	Fall 2021	Inactive:
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UC Transfer:	Effective:		Inactive:
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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 the processes routers and switches employ to enable communication through Virtual Local Area Networks.
2. Perform, with an increasing degree of proficiency, basic switch configurations, demonstrating increasing comprehension of switching metrics and protocols.
3. Design and implement a classless Internet Protocol (IP) addressing scheme, applying the skills and knowledge obtained in this class.

Objectives:

Students will be able to:

1. Configure Virtual Local Area Networks (VLANs) and Inter-VLAN routing applying security best practices.

2. Troubleshoot inter-VLAN routing on Layer 3 devices.
3. Configure redundancy on a switched network using Spanning Tree Protocol (STP) and EtherChannel.
4. Troubleshoot EtherChannel on switched networks.
5. Explain how to support available and reliable networks using dynamic addressing and first-hop redundancy protocols.
6. Configure dynamic address allocation in IPv4 and IPv6 networks.
7. Configure Wireless Local Area Networks (WLANs) using a Wireless Lan Controller and Layer 2 security best practices.
8. Configure switch security to mitigate LAN attacks.
9. Configure IPv4 and IPv6 static routing on routers.

Topics and Scope:

1. Basic Switch and End Device Configuration
2. Protocols and Models
3. Numbering Systems
4. Data Link Layer
5. Ethernet Switching including STP and EtherChannel
6. Network Layer
7. Address Resolution
8. Basic Router Configuration (such as VLAN)
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
4. Creation of security design diagrams and configurations

Other assignments include:

1. Quizzes (9 - 11) and skill demonstration exam
2. 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.

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	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:

Switching, Routing, and Wireless Essentials Companion Guide (CCNAv7). Cisco Networking Academy. Cisco Press. 2020

Switching, Routing, and Wireless Essentials Course Booklet (CCNAv7). Cisco Networking Academy. Cisco Press. 2020

OTHER REQUIRED ELEMENTS

STUDENT PREPARATION

Matric Assessment Required:	E	Requires English Assessment
Prerequisites-generate description:	A	Auto-Generated Text
Advisories-generate description:	A	Auto-Generated Text
Prereq-provisional:	N	NO
Prereq/coreq-registration check:	Y	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 8221B-8222B

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