Washtenaw Community College Comprehensive Report

CNT 226 Enterprise Networking, Security, and Automation (ENSA)
Effective Term: Winter 2021

Course Cover

Division: Business and Computer Technologies
Department: Computer Science & Information Technology
Discipline: Computer Networking Technology
Course Number: 226
Org Number: 13400
Full Course Title: Enterprise Networking, Security, and Automation (ENSA)
Transcript Title: Enterprise Networking
Is Consultation with other department(s) required: No
Publish in the Following: College Catalog , Time Schedule , Web Page
Reason for Submission: Course Change
Change Information:
Consultation with all departments affected by this course is required.
Course title
Course description
Outcomes/Assessment
Objectives/Evaluation
Rationale: The Cisco Networking Academy has updated the entire program. We must update our program and syllabi to match theirs in order to maintain our contract and remain an official Networking Academy. The program has been updated in consultation with Cisco's many channel partner companies.
Proposed Start Semester: Fall 2020
Course Description: The third course in the CCNAv7 curriculum describes the architectures and considerations related to designing, securing, operating, and troubleshooting enterprise networks. This course covers wide area network (WAN) technologies and quality of service (QoS) mechanisms used for secure remote access. Enterprise Networking, Security, and Automation (ENSA) also introduces software-defined networking, virtualization, and automation concepts that support the digitalization of networks. Students gain skills to configure and troubleshoot enterprise networks, and learn to identify and protect against cybersecurity threats. They are introduced to network management tools and learn key concepts of software-defined networking, including controller-based architectures and how application programming interfaces (APIs) enable network automation. The title of this course was previously Scaling Networks.

Course Credit Hours

Variable hours: No
Credits: 4
Lecture Hours: Instructor: 60 **Student:** 60
Lab: Instructor: 0 **Student:** 0
Clinical: Instructor: 0 **Student:** 0

Total Contact Hours: Instructor: 60 **Student:** 60
Repeatable for Credit: NO
Grading Methods: Letter Grades
Audit
Are lectures, labs, or clinicals offered as separate sections?: NO (same sections)

College-Level Reading and Writing

College-level Reading & Writing

College-Level Math

No Level Required

Requisites

Prerequisite
CNT 216 minimum grade "C-"
or
Prerequisite
equivalent

General Education

Degree Attributes
High School articulation approved
General Education Area 7 - Computer and Information Literacy
Assoc in Arts - Comp Lit
Assoc in Applied Sci - Comp Lit
Assoc in Science - Comp Lit

Request Course Transfer

Proposed For:
Eastern Michigan University

Student Learning Outcomes

1. Configure and troubleshoot routers and switches.
   Assessment 1
   Assessment Tool: Outcome-related questions on the Cisco online final exam
   Assessment Date: Fall 2021
   Assessment Cycle: Every Three Years
   Course section(s)/other population: All
   Number students to be assessed: All
   How the assessment will be scored: Answer key
   Standard of success to be used for this assessment: 70% of the students will score 70% or higher on the outcome-related questions
   Who will score and analyze the data: Departmental faculty will analyze the data.
   Assessment 2
   Assessment Tool: Outcome-related questions on the Cisco skills-based final exam
   Assessment Date: Fall 2021
   Assessment Cycle: Every Three Years
   Course section(s)/other population: Random sample of a minimum of three sections over the three-year period
   Number students to be assessed: All students
   How the assessment will be scored: The skills exam is scored by WCC faculty, using the CISCO-provided rubric.
   Standard of success to be used for this assessment: At least 70% of students must score 70% or higher on the Skills-Based Final Exam.
   Who will score and analyze the data: Department faculty and external sources (if available)

2. Implement Access Control Lists (ACLs) to filter traffic.
   Assessment 1

Assessment Tool: A Departmental Task List will be used to assess proficiency (pass/fail) in applying the concepts and in performing hands-on tasks.
Assessment Date: Fall 2021
Assessment Cycle: Every Three Years
Course section(s)/other population: All
Number students to be assessed: All
How the assessment will be scored: Departmentally-developed rubric
Standard of success to be used for this assessment: 70% of the students will successfully complete all of the tasks.
Who will score and analyze the data: Departmental faculty will score and analyze the data.

3. Configure Network Address Translation (NAT).

Assessment 1

Assessment Tool: Outcome-related questions on the Cisco skills-based final exam
Assessment Date: Fall 2021
Assessment Cycle: Every Three Years
Course section(s)/other population: Random sample of a minimum of three sections over the three-year period
Number students to be assessed: All students
How the assessment will be scored: The skills exam is scored by WCC faculty, using the CISCO-provided rubric.
Standard of success to be used for this assessment: At least 70% of students must score 70% or higher on the Skills-Based Final Exam.
Who will score and analyze the data: Departmental faculty and external sources (if available)

Assessment 2

Assessment Tool: Outcome-related questions on the Cisco online final exam
Assessment Date: Fall 2021
Assessment Cycle: Every Three Years
Course section(s)/other population: All
Number students to be assessed: All
How the assessment will be scored: Answer key
Standard of success to be used for this assessment: 70% of the students will score 70% or higher on the outcome-related questions
Who will score and analyze the data: Departmental faculty will analyze the data.

4. Implement protocols to manage the network.

Assessment 1

Assessment Tool: Outcome-related questions on the Cisco skills-based final exam
Assessment Date: Fall 2021
Assessment Cycle: Every Three Years
Course section(s)/other population: Random sample of a minimum of three sections over the three-year period
Number students to be assessed: All students
How the assessment will be scored: The skills exam is scored by WCC faculty, using the CISCO-provided rubric.
Standard of success to be used for this assessment: At least 70% of students must score 70% or higher on the Skills-Based Final Exam.
Who will score and analyze the data: Departmental faculty and external sources (if available)

Assessment 2

Assessment Tool: Outcome-related questions on the Cisco online final exam
Assessment Date: Fall 2021
Assessment Cycle: Every Three Years
Course section(s)/other population: All
Number students to be assessed: All

How the assessment will be scored: Answer key
Standard of success to be used for this assessment: 70% of the students will score 70% or higher on the outcome-related questions
Who will score and analyze the data: Departmental faculty will analyze the data.

Course Objectives

1. Implement Single-Area Open Short Path First version 2 (OSPFv2) in both point-to-point and broadcast multiaccess networks.
2. Identify correct statements pertaining to the mitigation of vulnerabilities, threats and exploits of a network.
3. Identify correct statements pertaining to the use of Access Control Lists (ACLs) to filter traffic.
4. Implement ACLs to filter traffic and secure administrative access.
5. Configure Network Address Translation (NAT).
6. Identify correct statements pertaining to the use of Virtual Private Networks (VPNs) and Internet Protocol Security (IPsec) to secure site-to-site and remote access connectivity.
7. Identify correct statements pertaining to the implementation of Quality of Service (QoS).
8. Identify correct statements pertaining to the implementation of each protocol covered throughout the course.
9. Configure, monitor, and troubleshoot the various protocols covered throughout the course.
10. Troubleshoot enterprise networks.
11. Identify correct statements pertaining to network virtualization.
12. Identify correct statements pertaining to network automation.

New Resources for Course

Course Textbooks/Resources

Textbooks
Manuals
Periodicals
Software

Equipment/Facilities

Level III classroom

Reviewer	Action	Date
Faculty Preparer:		
John Trame	*Faculty Preparer*	*Apr 09, 2020*
Department Chair/Area Director:		
Cyndi Millns	*Recommend Approval*	*Apr 10, 2020*
Dean:		
Eva Samulski	*Recommend Approval*	*Apr 14, 2020*
Curriculum Committee Chair:		
Lisa Veasey	*Recommend Approval*	*Jul 14, 2020*
Assessment Committee Chair:		
Shawn Deron	*Recommend Approval*	*Jul 15, 2020*
Vice President for Instruction:		
Kimberly Hurns	*Approve*	*Jul 16, 2020*

Washtenaw Community College Comprehensive Report

CNT 226 Scaling Networks
Effective Term: Fall 2018

Course Cover

Division: Business and Computer Technologies
Department: Computer Instruction
Discipline: Computer Networking Technology
Course Number: 226
Org Number: 13400
Full Course Title: Scaling Networks
Transcript Title: Scaling Networks
Is Consultation with other department(s) required: No
Publish in the Following: College Catalog , Time Schedule , Web Page
Reason for Submission: Course Change
Change Information:
Course description
Objectives/Evaluation
Rationale: Cisco Networking Academy released version 6.0 of this course during July 2017. Objectives and outcomes need to be changed to align this course with the July 2017 Cisco Networking Academy curriculum release.
Proposed Start Semester: Fall 2018
Course Description: In this course, students learn how to configure and troubleshoot routers and switches and resolve common issues with Open Shortest Path First (OSPF), Enhanced Interior Gateway Routing Protocol (EIGRP), Spanning Tree Protocol (STP), and VLAN Trunking Protocol (VTP) in both IPv4 and IPv6 networks. Students will also develop the knowledge and skills needed to implement Etherchannel and Hot Standby Routing Protocol (HSRP) operations in a network. This course is part of the CISCO networking curriculum at WCC and helps students prepare for a portion of the CISCO Certified Network Associate (CCNA) certification examination. This course was previously CNT 235.

Course Credit Hours

Variable hours: No
Credits: 4
Lecture Hours: Instructor: 60 **Student:** 60
Lab: Instructor: 0 **Student:** 0
Clinical: Instructor: 0 **Student:** 0

Total Contact Hours: Instructor: 60 **Student:** 60
Repeatable for Credit: NO
Grading Methods: Letter Grades
Audit
Are lectures, labs, or clinicals offered as separate sections?: NO (same sections)

College-Level Reading and Writing

College-level Reading & Writing

College-Level Math

No Level Required

Requisites

Prerequisite
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or
Prerequisite
equivalent

General Education

Degree Attributes
High School articulation approved
General Education Area 7 - Computer and Information Literacy
Assoc in Arts - Comp Lit
Assoc in Applied Sci - Comp Lit
Assoc in Science - Comp Lit

Request Course Transfer

Proposed For:
Eastern Michigan University

Student Learning Outcomes

1. Configure and troubleshoot routers and switches.
   Assessment 1
   Assessment Tool: The Cisco Systems online final exam (blind-scored)
   Assessment Date: Winter 2018
   Assessment Cycle: Every Three Years
   Course section(s)/other population: All
   Number students to be assessed: All
   How the assessment will be scored: Answer key
   Standard of success to be used for this assessment: 70% of the students will score 70% or higher on the outcome related questions
   Who will score and analyze the data: Departmental faculty will analyze the data.

2. Resolve common issues with OSPF, EIGRP, and STP in both IPv4 and IPv6 networks.
   Assessment 1
   Assessment Tool: A Departmental Task List will be used to assess proficiency (pass/fail) in applying the concepts and in performing hands-on tasks.
   Assessment Date: Winter 2018
   Assessment Cycle: Every Three Years
   Course section(s)/other population: All
   Number students to be assessed: All
   How the assessment will be scored: Departmentally-developed rubric
   Standard of success to be used for this assessment: 70% of the students will successfully complete all of the tasks.
   Who will score and analyze the data: Departmental faculty will score and analyze the data.

3. Implement a WLAN in a small-to-medium network.
   Assessment 1
   Assessment Tool: The Cisco Systems online final exam (blind-scored)
   Assessment Date: Winter 2018
   Assessment Cycle: Every Three Years
   Course section(s)/other population: All

Number students to be assessed: All
How the assessment will be scored: Answer key
Standard of success to be used for this assessment: 70% of the students will score 70% or higher on the outcome related questions.
Who will score and analyze the data: Departmental faculty will analyze the data.

Course Objectives

1. Select network devices based on feature compatibility and network requirement.
2. Implement inter-VLAN routing using Layer 3 switching to forward data in a small to medium-sized business LAN.
3. Configure PVST+ and Rapid PVST+ in a switched LAN environment.
4. Configure link aggregation to improve performance on high-traffic switch links.
5. Implement Hot Standby Routing Protocol (HSRP).
6. Implement EIGRP for IPv4 in a small to medium-sized business network.
7. Implement EIGRP for IPv6 in a small to medium-sized business network.
8. Configure EIGRP to improve network performance.
9. Troubleshoot common EIGRP configuration issues in a small to medium-sized business network.
10. Implement single-area OSPFv2 and OSPFv3.
11. Implement multi-area OSPFv2 and OSPFv3.
12. Configure OSPF to improve network performance.
13. Troubleshoot common OSPF configuration issues in a small to medium-sized business network.

New Resources for Course

Course Textbooks/Resources

Textbooks
Manuals
Periodicals
Software

Equipment/Facilities

Level III classroom

Reviewer	Action	Date
Faculty Preparer:		
John Trame	*Faculty Preparer*	*Oct 27, 2017*
Department Chair/Area Director:		
Philip Geyer	*Recommend Approval*	*Oct 30, 2017*
Dean:		
Eva Samulski	*Recommend Approval*	*Oct 31, 2017*
Curriculum Committee Chair:		
David Wooten	*Recommend Approval*	*Feb 26, 2018*
Assessment Committee Chair:		
Michelle Garey	*Recommend Approval*	*Feb 27, 2018*
Vice President for Instruction:		
Kimberly Hurns	*Approve*	*Feb 28, 2018*