Washtenaw Community College Comprehensive Report

CNT 226 Enterprise Networking, Security, and Automation (ENSA)
Effective Term: Spring/Summer 2024

Course Cover

College: Business and Computer Technologies
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:
Change Information:
   Consultation with all departments affected by this course is required.
   Outcomes/Assessment
Rationale: Syllabus update/review based on course assessment.
Proposed Start Semester: Winter 2024
Course Description: In this course, students gain the skills necessary to configure and troubleshoot enterprise networks, and learn to identify and protect against cybersecurity threats utilizing wide area network (WAN) technologies and quality of service (QoS) mechanisms 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 are also 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. This is the third course in the Cisco Certified Network Associate (CCNA) curriculum at WCC and helps students prepare for a portion of the CCNA certification examination.

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: Winter 2025
   Assessment Cycle: Every Three Years
   Course section(s)/other population: All
   Number students to be assessed: All
   How the assessment will be scored: External evaluation
   Standard of success to be used for this assessment: 70% of students will score 70% or higher on the outcome-related questions.
   Who will score and analyze the data: The exam will be automatically graded by the Cisco Networking Academy server. The results will be analyzed by our full-time faculty.

2. Implement Access Control Lists (ACLs) to filter traffic.
   Assessment 1
   Assessment Tool: Outcome-related questions on the Cisco online final exam
   Assessment Date: Winter 2025
   Assessment Cycle: Every Three Years
   Course section(s)/other population: All
   Number students to be assessed: All
   How the assessment will be scored: External evaluation
   Standard of success to be used for this assessment: 70% of students will score 70% or higher on the outcome-related questions.
   Who will score and analyze the data: The exam will be automatically graded by the Cisco Networking Academy server. The results will be analyzed by our full-time faculty.

3. Configure Network Address Translation (NAT).
   Assessment 1
   Assessment Tool: Outcome-related questions on the Cisco online final exam
   Assessment Date: Winter 2025
   Assessment Cycle: Every Three Years
   Course section(s)/other population: All
   Number students to be assessed: All

How the assessment will be scored: External evaluation
Standard of success to be used for this assessment: 70% of students will score 70% or higher on the outcome-related questions.
Who will score and analyze the data: The exam will be automatically graded by the Cisco Networking Academy server. The results will be analyzed by our full-time faculty.

4. Implement protocols to manage the network.
   Assessment 1
   Assessment Tool: Outcome-related questions on the Cisco online final exam
   Assessment Date: Winter 2025
   Assessment Cycle: Every Three Years
   Course section(s)/other population: All
   Number students to be assessed: All
   How the assessment will be scored: External evaluation
   Standard of success to be used for this assessment: 70% of students will score 70% or higher on the outcome-related questions.
   Who will score and analyze the data: The exam will be automatically graded by the Cisco Networking Academy server. The results will be analyzed by our full-time faculty.

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*	*Aug 02, 2023*
Department Chair/Area Director:		
Scott Shaper	*Recommend Approval*	*Aug 04, 2023*

Dean:

Eva Samulski   *Recommend Approval*   *Aug 04, 2023*

Curriculum Committee Chair:

Randy Van Wagnen   *Recommend Approval*   *Mar 09, 2024*

Assessment Committee Chair:

Jessica Hale   *Recommend Approval*   *Mar 13, 2024*

Vice President for Instruction:

Brandon Tucker   *Approve*   *Mar 15, 2024*

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
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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
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How the assessment will be scored: Answer key
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Course Objectives

1. Implement Single-Area Open Short Path First version 2 (OSPFv2) in both point-to-point and broadcast multiaccess networks.
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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