



CIST-208 – Enterprise Networking, Security and Automation

Technology

Effective Term & Year: Fall 2024

Course Outline Review Date: 2029-03-01

Program Area: Information Technology

Description:

This course enhances understanding of wide area network (WAN) architecture, components, and functionalities, delving into dynamic routing, firewalls, VPN concepts, network automation, virtualization, and a variety of WAN technologies. This course, the culmination of a three-course series, aims to equip students with the requisite knowledge and skills to excel in the Cisco Certified Network Associate (CCNA) examination. Upon completion, students will demonstrate proficiency in configuring and troubleshooting OSPF, ACL, NAT, and IPsec across IPv4 and IPv6 wide area networks. Students will acquire the ability to discuss Metro Ethernet, MPLS, DMVPN, and other WAN technologies, configure single-area and multi-area OSPF in both IPv4 and IPv6 networks, troubleshoot OSPF in broadcast and point-to-point networks, engage in conversations surrounding network security issues and concepts, and configure and troubleshoot ACL and NAT. Additionally, they will describe IPsec protocol encapsulation, confidentiality, and integrity, showcasing comprehensive expertise in WAN technologies and network security practices.

Program Information:

This course is required for the second year of the Computer Information Systems Technology Program. Students will receive a certificate from Cisco Academy after this course.

Delivery Methods: Hybrid – On-campus (Face-to-Face) and Online

Credit Type: College of the Rockies Credits

Credits: 3

Instructional Activity and Hours:

Activity	Hours
Classroom, Directed Studies or Online Instruction	60
Seminar/Tutorials	
Laboratory/Studio	
Practicum/Field Experience	
Co-op/Work Experience	
Other	
Total	60

Course Requisites:

- Completed the following:
 - [CIST204](#) – Switching, Routing and Wireless Essentials (3)

Flexible Assessment: Yes

Students are able to request formal recognition of their prior learning or experience outside the classroom. Challenge examination, portfolio-assisted assessment, or work-based assessment are used to identify, assess, and recognize prior skills, competencies, and knowledge to achieve course credit. Tuition fees apply, refer to Policy [2.5.5 Prior Learning Assessment and Recognition \(PLAR\)](#) or contact an education advisor for more information.

Course Transfer Credit:

For information about receiving transfer credit for courses taken at either British Columbia or Alberta institutions, please see <https://www.bctransferguide.ca/> or <https://transferalberta.alberta.ca> . For more transfer credit information, please visit <https://www.cotr.bc.ca/Transfer>

All requests for course transfer credit from institutions in British Columbia or elsewhere should go to the College of the Rockies Enrolment Services office.

Textbook Resources:

Textbook selection varies by instructor and may change from year to year. At the Course Outline Effective Date the following textbooks were in use:

Cisco Academy Course Material and CCNA 200-301 Official Cert Guide.

Please see the instructor's syllabus or check COTR's online text calculator

<https://textbook.cotr.bc.ca/> for a complete list of the currently required textbooks.

Learning Outcomes:

Upon the successful completion of this course, students will be able to

- demonstrate a comprehensive understanding of wide area network (WAN) architectures, components, and functionalities, essential for effective network management and operation;
 - explore dynamic routing protocols, firewalls, and VPN concepts, gaining proficiency in their implementation and configuration to optimize network performance and security;
 - analyze various WAN technologies, including Metro Ethernet, MPLS, and DMVPN, and discuss their respective advantages and applications in real-world network environments;
 - configure OSPF (Open Shortest Path First) in both single-area and multi-area IPv4 and IPv6 networks, demonstrating the ability to troubleshoot OSPF issues in different network setups;
 - develop expertise in configuring and troubleshooting access control lists (ACLs) and network address translation (NAT), essential for controlling access and ensuring secure data transmission in WAN environments;
 - comprehend the principles of IPsec protocol encapsulation, confidentiality, and integrity, enabling effective network security implementation and management;
 - gain insight into network automation and virtualization technologies, understanding their role in optimizing network operations and resource utilization;
 - enhance expertise in network management and security, equipping students with the skills necessary to tackle complex network configurations, mitigate security threats, and ensure the reliability and availability of network resources; and
 - develop effective communication skills to articulate complex networking concepts and solutions to stakeholders in both technical and non-technical contexts.
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Course Topics:

- OSPF Concepts and Configuration
- Network Security Concepts
- ACL Concepts
- WAN Concepts
- VPN and IPsec Concepts
- QOS Concepts
- Network Management
- Network Design
- Network Troubleshooting
- Network Virtualization
- Network Automation

See instructor's syllabus for the detailed outline of weekly readings, activities and assignments.

Evaluation and Assessments

Assessment Type: On-Campus (face-to-face)

Assessment Type	% of Total Grade
Module Quizzes	15%
Participation	5%
Module Labs	30%
Project	20%
Final Exam	30%
Total	100%

Grade Scheme

A+	A	A-	B+	B	B-	C+	C	C-	D	F
>=90	89-85	84-80	79-76	75-72	71-68	67-64	63-60	59-55	54-50	<50

Evaluation Notes: A grade of "D" grants credit, but may not be sufficient as a prerequisite for sequential courses.

Evaluation Notes Comments:

Please see the instructor's syllabus for specific classroom policies related to this course, such as details of evaluation, penalties for late assignments and use of electronic aids.

Exam Attendance:

Students must attend all scheduled exams at the appointed time and place. Instructors may approve an alternate exam to accommodate an illness or personal crisis. Department heads will consider other written requests. Any student who misses a scheduled exam without prior approval will receive a "0" on the exam.

Academic Policies:

College of the Rockies policies related to courses can be found at <https://cotr.bc.ca/about-us/college-policies/> and include the following:

- Policy 2.1.4 Course Audit
- Policy 2.4.1 Credential Framework
- Policy 2.4.3 Students with Documented Disabilities
- Policy 2.4.4 Student Rights, Responsibilities and Conduct

- Policy 2.4.8 Academic Performance
 - Policy 2.4.9 Student Feedback and Concerns
 - Policy 2.4.11 Storage of Academic Works
 - Policy 2.5.3 Student Appeal
 - Policy 2.5.5 Prior Learning Assessment and Recognition (PLAR)
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Course Changes:

The College of the Rockies updates course outlines regularly to meet changing educational, employment and marketing needs. The instructor will notify students in writing of any updates to this outline during the semester. The instructor reserves the right to revise, add or delete material while meeting the learning outcomes of this course outline.