



WIST-107 – Switching, Routing, and Wireless Essentials

Technology

Effective Term & Year: Fall 2022
Course Outline Review Date: 2027-03-01

Program Area: Information Technology

Description:

Switching, Routing, and Wireless Essentials is the second course in a 3-course Cisco Networking Academy (CCNA) series. Students perform basic network configuration and troubleshooting, identify and mitigate LAN security threats, and configure and secure a basic WLAN. This course focuses on switching technologies and router operations that support small to medium business networks, including wireless local area networks (WLAN) and security concepts. Recommended preparation is WIST 106 Introduction to Networks. After completing all three Cisco Networking Academy courses, students are able to take the Cisco Networking Academy Certification (CCNA) exam.

Program Information:

This course is required for the first year of the Wireless Systems Technician program.

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

Credit Type: College of the Rockies Credits

Credits: 4

Instructional Activity and Hours:

Activity	Hours
Classroom, Directed Studies or Online Instruction	60
Seminar/Tutorials	

Laboratory/Studio	60
Practicum/Field Experience	
Co-op/Work Experience	
Other	
Total	120

Course Requisites:

- Earned a minimum grade of C- (55%) in each of the following:
 - [WIST106](#) – Introduction to Networks (4)

Flexible Assessment: Yes

In some cases students may be able to apply for recognition of prior learning outside the classroom. This flexible assessment process provides equivalent course credit. It is a rigorous process that may include external evaluation, worksite assessment, demonstration, standardized test, self-assessment, interview, products/portfolio, and challenge exam, or other measures as appropriate. Tuition fees apply. Contact an education advisor for more information.

Course Transfer Credit:

For information about receiving transfer credit for courses taken at other BC institutions, please see <http://www.bctransferguide.ca>. All requests for course transfer credit from institutions in BC or elsewhere should go to the College of the Rockies Enrollment 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 Networking Academy online course materials

Companion Guide text from Cisco Press (Optional)

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

- implement basic device configuration using security best practices;
- explain how Layer 2 switches forward data;
- implement VLANs and trunking in a switched network;
- troubleshoot inter-VLAN routing issues on Layer 3 devices;
- explain how STP enables redundancy in an Layer 2 network;
- implement EtherChannel to improve performance and redundancy on switched links;
- implement DHCPv4 to operate across multiple LANs;
- explain the operation of dynamic address allocation in IPv6 networks;
- explain how FHRPs provide default gateway services in a redundant network;
- explain how vulnerabilities compromise LAN security;
- configure switch security to mitigate LAN attacks;
- explain how WLANs enable network connectivity;
- implement a WLAN using a wireless router and WLC;
- explain how routers use information in packets to make forwarding decisions;
- implement IPv4 static routing to enable connectivity; and
- troubleshoot static and default route configurations.

Course Topics:

- Small Routed Networks
- Static and Dynamic Routing
- Virtual LANs,
- Virtual Trunking
- Inter VLAN Routing
- Network Address Translation NAT
- Dynamic Host Configuration Protocol, DHCP
- Port Security
- Standard Access Control Lists
- Device Discovery Protocols

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

Evaluation and Assessments

Assessment Type: On-Campus (face-to-face) and Online, or Hybrid

Assessment Type	% of Total Grade
Labs	20%

Lab Tests (x2 @ 10% each)	20%
CISCO Chapter Exam	10%
CISCO Exam	10%
Mid-term Exams (x2 @ 10% each)	20%
Final Exam	20%
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

Pass requirements: None

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 2.4.3 Students with Documented Disabilities
- Policy 2.4.4 Student Conduct (plagiarism, other cheating, behavioral misconduct)
- Policy 2.5.8 Academic Performance
- Policy 2.5.3 Grade Appeal
- Policy 2.4.9 Student Concerns Re Faculty

Equivalent Course(s) and Course Code Changes

Prior Course Code: AUST 108

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.