

Unit of Study: ICT3050 Routing and Switching

Overview

Routing and switching is one of the components at the heart of networking. In this unit, students will build on the networking concepts developed earlier in the course through exploring the components, operations, architecture, and security of Local Area Networks (LANs) and basic wireless LANs. Students will also build their skill in being able to configure and secure routers and switches. Techniques to resolve common issues and mitigate LAN security threats in single-area and multi-area networks are also considered. The use and limitation of several industry standard networking protocols will be examined in detailed.

Course(s)	Bachelor of Information Technology
Credit Points	6 credit points
Duration	12 weeks (10 teaching weeks; 1 revision week; 1 final assessment week)
Level	Undergraduate Advanced
Student Workload	Students should expect to spend approximately 10 hours per week over 12 weeks (totalling approximately 120 hours) on learning activities for this unit.
Mode(s) of Delivery	On campus, Blended
Pre-Requisites	BIS2001 Infrastructure and Networking
Unit Coordinator	As per current timetable
Contact Information	Consultation: Friday, 4:00 to 5:00 pm or by appointment

Unit Learning Outcomes

On successful completion of this unit, students will be able to:

- ULO1 Justify appropriate routing and switching protocols in common business environments.
- ULO2 Recommend enhancements for networking configurations to improve performance and redundancy.
- ULO3 Design solutions and configurations for secure medium sized networks.
- ULO4 Explain the key concepts, issues, and approaches when designing and securing wireless LANs.

Weekly Schedule




Detailed information for each week's activities can be found on Unit's Weekly Modules in Canvas.

Week	Topic
Week 1	Ethernet switching and LANS
Week 2	Subnetting and Inter-VLAN Routing
Week 3	IPv4 Vs IPv6 addressing, RIPv1 and RIPv2 part 1
Week 4	RIPv1 and RIPv2 part 2 EtherChannel
Week 5	Dynamic Host Configuration Protocol (DHCP)
Week 6	LAN Security
Week 7	Single area and multi area OSPF
Week 8	Virtual Local Area Networks (VLANs) and inter-VLAN routing in both IPv4 and IPv6 networks. Stateless auto-configuration using DHCPv6, address resolution protocol (ARP)
Week 9	Spanning Tree Protocol (STP)
Week 10	Wireless LAN and their configuration
Week 11	Revision
Week 12	Final Assessments

Assessments

APIC awards common result grades, set out in the [Award of Grade Policy](#).

Detailed information for each assessment can be found on the Unit's Home Page in the Assessment Brief

Assessment Task	Type	Weighting	Due	Length	ULO's
Assessment 1: Laboratory Practicum Students will complete in class workshop assessments including on-line quizzes, situation analysis and practical application of skills including building networks in a simulator	Individual 	35%	Weeks 3, 5, 6, 7, 8, 9	(equiv. 2000 words)	ULO1 ULO2 ULO3 ULO4
Assessment 2: Case Study Design, implement and justify a solution to a medium-sized networking problem (using a simulator) justifying design choices and approaches.	Individual 	35%	Week 7	Design (equiv. 1000 + Justification 1000 words)	ULO1 ULO3
Assessment 3: Design Critique and Enhancement Part A: Critique the network design solution proposed by another student's submission to assessment 2. Part B: Refine this design and implementation to address additional performance, redundancy, security and WLAN requirements.	Group 	30%	Week 11	Design (equiv. 1500 + Justification 2000 words)	ULO2 ULO3 ULO4

Equiv. – equivalent word count based on the Assessment Load Equivalence Guide.

Course Reserve

Course Reserve includes all required resources and reading material for the unit of study. You can access Course Reserve via [APIC Library](#) or via the Course Reserve link on the unit's homepage.

Prescribed text(s):

Cisco Networking Academy, 2021, Switching, Routing, and Wireless Essentials Companion Guide (CCNAv7), Cisco Press ISBN-10: 0-13-672936-3, ISBN-13: 978-0-13-672936-5

Odom, W. (2019) CCNA 200-301 Official Cert Guide, Volume 1, Cisco Press

Academic integrity

Ethical conduct and academic integrity and honesty are fundamental to the mission of APIC and academic misconduct will not be tolerated by the College. It is the responsibility of every student to make sure that they understand what constitutes academic misconduct and to refrain from engaging in it. Please refer to APIC's [Academic Integrity Policy](#) for further details.

Other Important Information and Links

<p>Special consideration</p> <p>If your academic work is impacted by significant documented illness, hardship, or other adverse circumstances beyond your control, you may make an application for Special Consideration. Please refer to the Assessment Policy for further details.</p>	<p>Late submission</p> <p>Penalties apply when work is submitted after the due date without approval. Please refer to the Assessment Policy for information about late submission.</p>
<p>Assessment appeals</p> <p>If you are concerned about a mark you have received for an assessment or final grade, you may apply to formally appeal the grade. Please see the Assessment Policy for further details.</p>	<p>Award of grades</p> <p>APIC awards common result grades, set out in the Award of Grade Policy.</p>
<p>Expectations of student conduct</p> <p>Students are expected to conduct themselves in a manner that is consistent with a safe and respectful study environment. More information can be found in the Student Code of Conduct.</p>	<p>Study resources</p> <p>APIC Library and Student Learning Support resources and services can be accessed via the Student Lounge or your Dashboard on the OLS (Canvas).</p>
<p>Student Services</p> <p>The Student Services team provides administrative support for students and handles enquiries about enrolment, timetables, important dates and submitting forms. More information can be found on the Student Services page on the OLS (Canvas).</p>	<p>Key dates</p> <p>Key dates through the academic year, including teaching periods, census, payment deadlines and exams can be found on the Academic Calendar section of the APIC website.</p>

Changes and Updates to the Unit of Study Guide

This Unit of Study Guide may be updated and amended from time to time. Students will be notified of any changes to the unit via the Online Learning System (Canvas) space for the unit.

This Unit of study Guide was last modified on 13th May 2024.