

## Unit of Study: ICT5250 Computer Networks and Security

### Overview

Students will examine the hardware and system software components required to build computer systems. Students begin by considering how computers function as individual device and how networked systems are constructed and function. Standard network communication layer models are examined. A detailed examination of IP addressing and routing issues are undertaken to enable students to link, configure, evaluate various network components and protocols and to design moderately complex networks. Foundational concepts in computer and information security considered in earlier units are examined in more detail as are approaches to securing IT systems.

<b>Course</b>	Graduate Certificate in Information Technology Master of Information Technology
<b>Credit Points</b>	8 credit points
<b>Duration</b>	12 weeks (10 teaching weeks; 1 revision week; 1 final assessment week)
<b>Level</b>	Postgraduate Intermediate
<b>Student Workload</b>	Students should expect to spend approximately 13 hours per week over 12 weeks (totalling approximately 156 hours) on learning activities for this unit.
<b>Mode(s) of Delivery</b>	On campus, Blended
<b>Pre-Requisites</b>	ICT5150 Information Systems
<b>Unit Coordinator</b>	As per current <a href="#">timetable</a>
<b>Contact Information</b>	Consultation: 1 hour scheduled session

### Unit Learning Outcomes

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

- ULO1 Compare the architecture and components of CPUs, computer, and computer networks.
- ULO2 Design local area networks.
- ULO3 Appraise technical concepts and frameworks for securing information, computers, and networks.
- ULO4 Critique the essential elements of modern network security methodologies and technologies.

## Weekly Schedule

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

Week	Topic
Week 1	CPU and computer architecture, basic computer operations
Week 2	Data representation IT Infrastructure components
Week 3	Networking Fundamentals and the OSI model IP Addressing and the TCP/IP architecture part 1
Week 4	IP Addressing and the TCP/IP architecture part 2. LAN Switching Technologies
Week 5	The Application Layer Introduction to routing and network design
Week 6	Wireless Networks
Week 7	Computer and network security Application and Networking-Based Attacks
Week 8	Introduction to cryptography
Week 9	Essentials of network security and access control
Week 10	Ethics and hacking countermeasures
Week 11	Revision
Week 12	Final Assessments

## Assessments







- All assessments are compulsory.
- To pass the unit students must:
  - achieve a total of 50% or more of marks offered; and
  - pass all individual invigilated assessments; and
  - have attempted all assessments.

Where one or more of these requirements are not met, the Board of Examiners will consider a student's overall progress towards meeting the unit learning outcomes and any special circumstances before reaching a decision.

- The Board of Examiners may grant a supplementary assessment where a student:
  - achieves a total of 45% or more; and
  - has passed all individual invigilated assessments in the unit; and
  - has attempted all assessments; and
  - has a recommendation for supplementary assessment by the Unit Coordinator and the Head of Discipline.

Where one or more of these requirements are not met, the Board of Examiners will consider a student’s overall progress towards meeting the unit learning outcomes and any special circumstances before reaching a decision. Attendance and engagement in class will be considered.

4. APIC awards common result grades as set out in the [Award of Grade Policy](#).
5. Detailed information for each assessment can be found on the Unit’s Home Page and in the Assessment Brief.

Assessment Task	Type	Weighting	Due	Length	ULOs
<b>Assessment 1: Quiz</b> Quizzes assess students’ ability to understand theoretical materials. The quiz will be either multiple choice questions or short questions which are relevant to the lecture materials.	Individual  Invigilated 	10%	Weeks 4, 8	15 minutes  (equiv. 500 words)	ULO1 ULO2 ULO4
<b>Assessment 2: Laboratory Practicum</b> Students will complete in class workshop assessments including on-line situation analyses and practical applications of skills.	Individual  Invigilated 	20%	Weeks 3, 5, 6, 7	(equiv. 2000 words)	ULO1 ULO2 ULO4
<b>Assessment 3: Network simulation</b> Construct an efficient operating network for a small organisation within a simulation environment.	Individual 	40%	Week 10	1000 words + Design (equiv. 2000 words)	ULO2
<b>Assessment 4: System vulnerabilities and mitigation</b> Each group will research, share, and report to on recent information security attacks covering different types of attacks. The report should detail the mode and impact and outline potential mitigation strategies and technologies that could have prevented such attacks.  Students should discuss IT security, risk threats and management to a selected organization and implement simple cryptography algorithms.	Group 	30%	Week 12	3000 words	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):**

Fitzgerald, J., Dennis, A. & Durcikova, A., (2020). Business Data Communications and Networking. 14th ed. John Wiley & Sons.

Ciampa, M 2021, CompTIA Security+ guide to network security fundamentals, 7th edn, Cengage, learning.

**Recommended Readings:**

David L. Prowse. 2017. CompTIA Security+ Sy0-501 Cert Guide, Academic Edition (2nd Edition) (2nd ed.). Pearson IT Certification, USA.

SANS institute (sans.org) provides a set of policy templates that can be used to develop different cybersecurity policies for SME (<https://www.sans.org/security-resources/policies>). [Accessed 31 Jan 2022].

**Other Recommended Resources:**

Australian government-Australian signals directories, *Australian cyber security centre*, <https://www.cyber.gov.au/>.

**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><b>Special consideration</b></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 <a href="#">Assessment Policy</a> for further details.</p>	<p><b>Late submission</b></p> <p>Penalties apply when work is submitted after the due date without approval. Please refer to the <a href="#">Assessment Policy</a> for information about late submission.</p>
<p><b>Assessment appeals</b></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 <a href="#">Assessment Policy</a> for further details.</p>	<p><b>Award of grades</b></p> <p>APIC awards common result grades, set out in the <a href="#">Award of Grade Policy</a>.</p>

<p><b>Expectations of student conduct</b></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 <a href="#">Student Code of Conduct</a>.</p>	<p><b>Study resources</b></p> <p>APIC Library and Student Learning Support resources and services can be accessed via the <a href="#">Student Lounge</a> or your <a href="#">Dashboard on the OLS (Canvas)</a>.</p>
<p><b>Student Services</b></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 <a href="#">Student Services page on the OLS (Canvas)</a>.</p>	<p><b>Key dates</b></p> <p>Key dates through the academic year, including teaching periods, census, payment deadlines and exams can be found on the <a href="#">Academic Calendar</a> 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 13<sup>th</sup> May 2024.