COIT20261 *Network Routing and Switching*
Term 1 - 2023

All details in this unit profile for COIT20261 have been officially approved by CQUniversity and represent a learning partnership between the University and you (our student). The information will not be changed unless absolutely necessary and any change will be clearly indicated by an approved correction included in the profile.

General Information

Overview
This unit provides you with fundamental skills and knowledge in the design and operation of computer networks. It deals in-depth with the techniques described in current Internet protocols to forward data packets from source to destination through different types of networks. You will focus on the Transport and Internet layer functions with emphasis on IPv4 addressing as well as switching and routing technologies. An introduction to IPv6 and transition issues is included. The unit covers these functions in both Local Area Networks (LANs) and Wide Area Networks (WANs). The function of the key protocols in wireless networks are also discussed, ensuring a well-rounded grounding to enable easier adaptation to imminent significant developments such as the global adoption of IPv6 and the growing dominance of wireless networking in business and everyday life. Delivery of this comprehensive content is through a weekly lecture and tutorial which includes theory and some hands-on lab activity where available.

Details
Career Level: *Postgraduate*
Unit Level: *Level 9*
Credit Points: *6*
Student Contribution Band: *8*
Fraction of Full-Time Student Load: *0.125*

Pre-requisites or Co-requisites
Prerequisite: COIT20246 Networking and Cyber Security Anti-requisite: COIT20229 Networking with TCI/IP.
Important note: Students enrolled in a subsequent unit who failed their pre-requisite unit, should drop the subsequent unit before the census date or within 10 working days of Fail grade notification. Students who do not drop the unit in this timeframe cannot later drop the unit without academic and financial liability. See details in the Assessment Policy and Procedure (Higher Education Coursework).

Offerings For Term 1 - 2023

- Brisbane
- Melbourne
- Online
- Rockhampton
- Sydney

Attendance Requirements
All on-campus students are expected to attend scheduled classes – in some units, these classes are identified as a mandatory (pass/fail) component and attendance is compulsory. International students, on a student visa, must maintain a full time study load and meet both attendance and academic progress requirements in each study period (satisfactory attendance for International students is defined as maintaining at least an 80% attendance record).

Website
This unit has a website, within the Moodle system, which is available two weeks before the start of term. It is important that you visit your Moodle site throughout the term. Please visit Moodle for more information.

Class and Assessment Overview

Recommended Student Time Commitment

Each 6-credit Postgraduate unit at CQUniversity requires an overall time commitment of an average of 12.5 hours of study per week, making a total of 150 hours for the unit.

Class Timetable

Regional Campuses

Bundaberg, Cairns, Emerald, Gladstone, Mackay, Rockhampton, Townsville

Metropolitan Campuses

Adelaide, Brisbane, Melbourne, Perth, Sydney

Assessment Overview

1. **Written Assessment**
Weighting: 20%
2. **Written Assessment**
Weighting: 30%
3. **Online Test**
Weighting: 50%

Assessment Grading

This is a graded unit: your overall grade will be calculated from the marks or grades for each assessment task, based on the relative weightings shown in the table above. You must obtain an overall mark for the unit of at least 50%, or an overall grade of 'pass' in order to pass the unit. If any 'pass/fail' tasks are shown in the table above they must also be completed successfully ('pass' grade). You must also meet any minimum mark requirements specified for a particular assessment task, as detailed in the 'assessment task' section (note that in some instances, the minimum mark for a task may be greater than 50%). Consult the University's Grades and Results Policy for more details of interim results and final grades.

CQUniversity Policies

All University policies are available on the CQUniversity Policy site.
You may wish to view these policies:

- Grades and Results Policy
- Assessment Policy and Procedure (Higher Education Coursework)
- Review of Grade Procedure
- Student Academic Integrity Policy and Procedure
- Monitoring Academic Progress (MAP) Policy and Procedure – Domestic Students
- Monitoring Academic Progress (MAP) Policy and Procedure – International Students
- Student Refund and Credit Balance Policy and Procedure
- Student Feedback – Compliments and Complaints Policy and Procedure
- Information and Communications Technology Acceptable Use Policy and Procedure

This list is not an exhaustive list of all University policies. The full list of University policies are available on the CQUniversity Policy site.

Previous Student Feedback

Feedback, Recommendations and Responses

Every unit is reviewed for enhancement each year. At the most recent review, the following staff and student feedback items were identified and recommendations were made.

Feedback from Reflection and discipline team discussion and feedback

Feedback
A more flexible online-based and less stressful end of term assessment could replace the current take-home exam.

Recommendation
Replace the take-home exam with a comprehensive Online Test utilising the extensive Moodle quiz facilities.

Feedback from Reflection, students, and team discussion and feedback

Feedback
More practical networking activities in a computer lab would improve the engagement and skills of students.

Recommendation
Increase the number of hands-on networking activities by utilising the network labs.

Unit Learning Outcomes

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

1. Apply your knowledge in Network Routing to solve problems in wired and wireless networks
2. Develop IP addressing plans for organisational networks
3. Analyse the application of wireless network technologies in different scenarios
4. Compare and contrast the protocols and standards in routing and switching
5. Evaluate the complexities involved in transitioning to new technologies such as IPv6.

The Australian Computer Society (ACS), the professional association for Australia's ICT sector, recognises the Skills Framework for the Information Age (SFIA). SFIA is adopted by organisations, governments, and individuals in many countries and provides a widely used and consistent definition of ICT skills. SFIA is increasingly being used when developing job descriptions and role profiles. ACS members can use the tool MySFIA to build a skills profile.
This unit contributes to the following workplace skills as defined by SFIA 8 (the SFIA code is included):

- Systems Design (DESN)
- Systems integration and build (SINT)
- Network Support (NTAS)
- Configuration Management (CFMG).

Alignment of Learning Outcomes, Assessment and Graduate Attributes

— N/A Level ∘ Introductory Level ∘ Intermediate Level • Graduate Level ∘ Professional Level ∘ Advanced Level

Alignment of Assessment Tasks to Learning Outcomes

Assessment Tasks	Learning Outcomes				
	1	2	3	4	5
1 - Written Assessment - 20%	•	•			
2 - Written Assessment - 30%			•	•	•
3 - Online Test - 50%	•	•	•	•	•

Alignment of Graduate Attributes to Learning Outcomes

Graduate Attributes	Learning Outcomes				
	1	2	3	4	5
1 - Knowledge	∘	∘	∘	∘	∘
2 - Communication	∘	∘	∘	∘	∘
3 - Cognitive, technical and creative skills	∘	∘	∘	∘	∘
4 - Research	∘		∘	∘	
5 - Self-management	∘	∘	∘	∘	∘
6 - Ethical and Professional Responsibility	∘				
7 - Leadership					
8 - Aboriginal and Torres Strait Islander Cultures					

Textbooks and Resources

Textbooks
COIT20261

Prescribed

Data Comms And Networking With Tcp/Ip Protocol Suite
Edition: 6th edn (2021)
Authors: Forouzan, B
McGraw Hill
New York , NY , USA
ISBN: 9781260597820 print ; 9781264363353 ebook
Binding: Paperback

View textbooks at the CQUniversity Bookshop

IT Resources

You will need access to the following IT resources:

- CQUniversity Student Email
- Internet
- Unit Website (Moodle)
- Cisco Packet Tracer
- Wireshark - Network Protocol Analyser

Referencing Style

All submissions for this unit must use the referencing style: Harvard (author-date)
For further information, see the Assessment Tasks.

Teaching Contacts

Zhenglin Wang Unit Coordinator
z.wang@cqu.edu.au

Schedule

Week 1 - 06 Mar 2023

Module/Topic	Chapter	Events and Submissions/Topic
Introduction; TCP/IP Protocol Suite; Numbering Systems	Chapter 1 & Appendix B	

Week 2 - 13 Mar 2023

Module/Topic	Chapter	Events and Submissions/Topic
Introduction to the Transport Layer; User Datagram Protocol (UDP)	9	

Week 3 - 20 Mar 2023

Module/Topic	Chapter	Events and Submissions/Topic
Transmission Control Protocol (TCP)	9	

Week 4 - 27 Mar 2023

Module/Topic	Chapter	Events and Submissions/Topic

Introduction to the Network Layer; IPv4 Addresses Part I	7	

Week 5 - 03 Apr 2023

Module/Topic	Chapter	Events and Submissions/Topic
IPv4 Addresses Part II	7	

Vacation Week - 10 Apr 2023

Module/Topic	Chapter	Events and Submissions/Topic

Week 6 - 17 Apr 2023

Module/Topic	Chapter	Events and Submissions/Topic
Delivery and Forwarding of IP Packets; Address Resolution Protocol (ARP)	7	**WRITTEN ASSESSMENT 1: IP NETWORKING** Due: Week 6 Friday (21 Apr 2023) 11:59 pm AEST

Week 7 - 24 Apr 2023

Module/Topic	Chapter	Events and Submissions/Topic
Internet Protocol Version 4 (IPv4); Internet Control Message Protocol (ICMP)	7	

Week 8 - 01 May 2023

Module/Topic	Chapter	Events and Submissions/Topic
Unicast Routing Protocols (RIP, OSPF, and BGP)	8	

Week 9 - 08 May 2023

Module/Topic	Chapter	Events and Submissions/Topic
IPv6 Addressing; IPv6 Protocol; Routing in IPv6; ICMPv6	7	

Week 10 - 15 May 2023

Module/Topic	Chapter	Events and Submissions/Topic
Routing in Wireless Networks	Chapter 4 discusses basic WiFi Lecture will discuss wireless routing protocols using other sources	**WRITTEN ASSESSMENT 2: ROUTING AND SWITCHING** Due: Week 10 Friday (19 May 2023) 11:59 pm AEST

Week 11 - 22 May 2023

Module/Topic	Chapter	Events and Submissions/Topic
Host Configuration: DHCP; Domain Name System (DNS)	Chapter 10 discusses DNS. Lecture will discuss DHCP using other sources	

Week 12 - 29 May 2023

Module/Topic	Chapter	Events and Submissions/Topic
Switching in LANs and WANs; Multi-Protocol Label Switching (MPLS)	Chapter 7 and online sources	

Review/Exam Week - 05 Jun 2023

Module/Topic	Chapter	Events and Submissions/Topic

Exam Week - 19 Jun 2023

Module/Topic	Chapter	Events and Submissions/Topic
Check for notifications of details of the exam in the unit website.		

For any term-specific information, please contact your Unit Coordinator via E-mail at z.wang@cqu.edu.au

Assessment Tasks

1 WRITTEN ASSESSMENT 1: IP NETWORKING

Assessment Type
Written Assessment

Task Description
You are required to demonstrate your knowledge of IP networking, including IP addressing and subnetting, by completing a number of exercise questions. There will be multiple questions requiring a mix of numerical and descriptive answers. Exploratory exercises using common networking tools may also be presented. The assessment and further description of the requirements can be found in Moodle. This is an individual assignment, and no group work or group submission applies.

Assessment Due Date
Week 6 Friday (21 Apr 2023) 11:59 pm AEST
Your assignment must be submitted in the format specified in the assignment. See Moodle unit website for details.

Return Date to Students
Week 8 Friday (5 May 2023)

Weighting
20%

Assessment Criteria
Your answers will be marked based on technical correctness, completeness, clarity and relevance. Questions that ask you to show your working or calculations or the steps you took to arrive at your answers, may have marks deducted if such information is not provided. If a question requires you to submit a graphic (e.g. a screenshot or a diagram), the graphic must have sufficient resolution to show all its details clearly and be of a reasonable size for normal reader viewing, with all or any text within the graphic being legible and readable, in order to be marked. If a question asks for an explanation or discussion followed by "(essential)", it means that at least 50% of the allocated mark is for the explanation or discussion, the rest is for the balance of the answer.

Referencing Style

- [Harvard (author-date)](#)

Submission
Online

Submission Instructions
The assignment must be submitted online in Moodle.

Learning Outcomes Assessed

- Apply your knowledge in Network Routing to solve problems in wired and wireless networks
- Develop IP addressing plans for organisational networks

2 WRITTEN ASSESSMENT 2: ROUTING AND SWITCHING

Assessment Type
Written Assessment

Task Description
You are required to demonstrate your knowledge of routing and switching in networks, by completing a number of exercise questions. There will be multiple questions requiring a mix of numerical and descriptive answers. Questions that ask you to show your working or calculations or the steps you took to arrive at your answers, may have marks deducted if such information is not provided. Some

questions may require research of technologies or relevant technology trends not covered in lectures or the textbook. The assessment and detailed description of the requirements can be found in Moodle. This is an individual, not a group, assignment.

Assessment Due Date
Week 10 Friday (19 May 2023) 11:59 pm AEST
Your assignment must be submitted in the format specified in the assignment. See Moodle unit website for details.

Return Date to Students
Week 12 Friday (2 June 2023)

Weighting
30%

Assessment Criteria
Your answers will be marked based on technical correctness, completeness, clarity, originality and relevance. Proper use of referencing conventions are expected and marks may be deducted for failure to comply. For discussion or research-based questions, if you decide to submit a graphic (e.g. a screenshot or a diagram) in support of your answer, the graphic must be relevant to your discussion, be appropriately referenced, and must have sufficient resolution to show all its details clearly and be of a reasonable size for normal reader viewing, with any text within the graphic being legible and readable. Originality means the work is your own and is expressed in your own words. An answer is unacceptable if it is composed mostly of quoted material from other sources, and may receive no marks as a result.
Questions that ask you to show your working or calculations or the steps you took to arrive at your answers, may have marks deducted if such information is not provided. If a question asks for an explanation or discussion followed by "(essential)", it means that at least 50% of the allocated mark is for the explanation or discussion, the rest is for the balance of the answer.

Referencing Style

- [Harvard (author-date)](#)

Submission
Online

Submission Instructions
The assignment must be submitted online in Moodle.

Learning Outcomes Assessed

- Analyse the application of wireless network technologies in different scenarios
- Compare and contrast the protocols and standards in routing and switching
- Evaluate the complexities involved in transitioning to new technologies such as IPv6.

3 WRITTEN ASSESSMENT 3: COMPREHENSIVE ONLINE TEST

Assessment Type
Online Test

Task Description
This final assessment will consist of an Online Test presented in the form of a Moodle Quiz. The test consists of 25 questions including a mix of multiple-choice and short answer items drawn from the range of topics studied during the term. The test is time-limited to 3 hours, will be open-book, and will be available during the scheduled Exam Week on a date to be announced.
The assessment questions may include terms and concepts learned during term, practical problems relating to routing and switching operations, protocols, or functions.

Assessment Due Date

The exact date and time the assessment will become available in Moodle will be announced some time from week 10 onwards.

Return Date to Students

Not returned, but viewable on request. Overall results become available on Certification Date (see Academic Calendar).

Weighting
50%

Assessment Criteria
Your answers will be marked based on technical correctness, completeness, clarity, originality and relevance. Proper use of referencing conventions are expected and marks may be deducted for failure to comply. For discussion or research-based questions, if you decide to submit a graphic (e.g. a screenshot or a diagram) in support of your answer, the graphic must be relevant to your discussion, be appropriately referenced, and must have sufficient resolution to show all its details clearly and be of a reasonable size for normal reader viewing, with any text within the graphic being legible and readable. Originality means the work is your own and is expressed in your own words. An answer is unacceptable if it is composed mostly or solely of quoted material from other sources, and may receive no marks as a result.

Questions that ask you to show your working or calculations or the steps you took to arrive at your answers, may have marks deducted if such information is not provided. If a question asks for an explanation or discussion followed by "(essential)", it means that at least 50% of the allocated mark is for the explanation or discussion, the rest is for the balance of the answer.

Referencing Style

- Harvard (author-date)

Submission
Online

Submission Instructions
This assessment must be submitted in Moodle.

Learning Outcomes Assessed

- Apply your knowledge in Network Routing to solve problems in wired and wireless networks
- Develop IP addressing plans for organisational networks
- Analyse the application of wireless network technologies in different scenarios
- Compare and contrast the protocols and standards in routing and switching
- Evaluate the complexities involved in transitioning to new technologies such as IPv6.

Academic Integrity Statement

As a CQUniversity student you are expected to act honestly in all aspects of your academic work.

Any assessable work undertaken or submitted for review or assessment must be your own work. Assessable work is any type of work you do to meet the assessment requirements in the unit, including draft work submitted for review and feedback and final work to be assessed.

When you use the ideas, words or data of others in your assessment, you must thoroughly and clearly acknowledge the source of this information by using the correct referencing style for your unit. Using others' work without proper acknowledgement may be considered a form of intellectual dishonesty.

Participating honestly, respectfully, responsibly, and fairly in your university study ensures the CQUniversity qualification you earn will be valued as a true indication of your individual academic achievement and will continue to receive the respect and recognition it deserves.

As a student, you are responsible for reading and following CQUniversity's policies, including the **Student Academic Integrity Policy and Procedure**. This policy sets out CQUniversity's expectations of you to act with integrity, examples of academic integrity breaches to avoid, the processes used to address alleged breaches of academic integrity, and potential penalties.

What is a breach of academic integrity?
A breach of academic integrity includes but is not limited to plagiarism, self-plagiarism, collusion, cheating, contract cheating, and academic misconduct. The Student Academic Integrity Policy and Procedure defines what these terms mean and gives examples.

Why is academic integrity important?
A breach of academic integrity may result in one or more penalties, including suspension or even expulsion from the University. It can also have negative implications for student visas and future enrolment at CQUniversity or elsewhere. Students who engage in contract cheating also risk being blackmailed by contract cheating services.

Where can I get assistance?
For academic advice and guidance, the Academic Learning Centre (ALC) can support you in becoming confident in completing assessments with integrity and of high standard.

What can you do to act with integrity?

Be Honest
If your assessment task is done by someone else, it would be dishonest of you to claim it as your own

Seek Help
If you are not sure about how to cite or reference in essays, reports etc, then seek help from your lecturer, the library or the Academic Learning Centre (ALC)

Produce Original Work
Originality comes from your ability to read widely, think critically, and apply your gained knowledge to address a question or problem