COIT12206 *TCP/IP Principles and Protocols*
Term 1 - 2024

All details in this unit profile for COIT12206 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 an in-depth understanding of the role and function of TCP/IP protocols in contemporary network communication. The unit details the underlying technologies and relationships between the five network layers. You will gain an understanding of how data is encapsulated, addressed, and routed over networks. On completion of the unit, you will be able to explain the mechanisms used to facilitate communication between applications over the internet.

Details
Career Level: *Undergraduate*
Unit Level: *Level 2*
Credit Points: *6*
Student Contribution Band: *8*
Fraction of Full-Time Student Load: *0.125*

Pre-requisites or Co-requisites
Prerequisite: COIT11233 - Information and Communication Technology Foundations or COIT11238 - Networked Infrastructure Foundations Note: Students who are currently enrolled in or who have previously completed COIT13147 - Networks cannot enrol in this unit.
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 - 2024

- Brisbane
- Cairns
- 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 Undergraduate 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: 25%
2. **Practical Assessment**
Weighting: 40%
3. **Online Quiz(zes)**
Weighting: 35%

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 Staff Feedback

Feedback

The teaching material should be updated to eliminate outdated technologies.

Recommendation

The lecture slides should be revised to eliminate outdated information and integrate the most up-to-date networking technologies. For example, outdated network technologies like "Cable Modem," "T Line," and "SONET" should be removed, while contemporary technologies such as "Switched WAN," "Ethernet Over WAN," and "SD-WAN" should be introduced.

Feedback from Staff Feedback

Feedback

Too many PowerPoint slides in some of the lectures.

Recommendation

Condense lecture slides to approximately 50 slides for Weeks 4, 5, 10, and 11.

Unit Learning Outcomes

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

1. Apply routing and forwarding principles to interconnect multiple computer networks
2. Construct addressing schemes that achieve business goals while adhering to technical standards
3. Illustrate the operation of application and transport protocols that are commonly used in delivering internet applications
4. Justify the selection of network techniques and protocols to meet business requirements
5. Apply testing and analysis tools to solve network design problems
6. Explain the role of traditional networking protocols in contemporary technologies.

Australian Computer Society (ACS) recognises the Skills Framework for the Information Age (SFIA). SFIA is in use in over 100 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 at
https://www.acs.org.au/professionalrecognition/mysfia-b2c.html
This unit contributes to the following workplace skills as defined by SFIA. The SFIA code is included:

- Network Support (NTAS)
- Problem Management (PBMG)
- System Design (DESN)
- Service Desk and Incident Management (USUP)

The National Initiative for Cybersecurity Education (NICE) Framework defines knowledge, skills and tasks needed to perform various cyber security roles. Developed by the National Institute of Standards and Technology (NIST), the NICE Framework is used by organisations to plan their workforce, including recruit into cyber security positions.
This unit helps prepare you for roles such as Systems Security Analyst, Network Operations Specialist and Systems Administrator, contributing to the following knowledge and skills:

- K0001 Knowledge of computer networking concepts and protocols, and network security methodologies.
- K0050 Knowledge of local area and wide area networking principles and concepts including bandwidth management.
- K0061 Knowledge of how traffic flows across the network (e.g., Transmission Control Protocol [TCP] and Internet Protocol [IP], Open System Interconnection Model [OSI], Information Technology Infrastructure Library, current version [ITIL]).
- K0104 Knowledge of Virtual Private Network (VPN) security.
- K0159 Knowledge of Voice over IP (VoIP).
- K0180 Knowledge of network systems management principles, models, methods (e.g., end-to-end systems performance monitoring), and tools.
- K0322 Knowledge of embedded systems.
- K0332 Knowledge of network protocols such as TCP/IP, Dynamic Host Configuration, Domain Name System (DNS), and directory services.
- S0004 Skill in analyzing network traffic capacity and performance characteristics.
- S0035 Skill in establishing a routing schema.
- S0041 Skill in installing, configuring, and troubleshooting LAN and WAN components such as routers, hubs, and switches.
- S0056 Skill in using network management tools to analyze network traffic patterns (e.g., simple network management protocol).
- S0162 Skill in applying various subnet techniques (e.g., CIDR)

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	6
1 - Written Assessment - 25%		●		●		
2 - Practical Assessment - 40%	●		●		●	●
3 - Online Quiz(zes) - 35%	●	●	●	●		

Alignment of Graduate Attributes to Learning Outcomes

Graduate Attributes	Learning Outcomes					
	1	2	3	4	5	6
1 - Communication				●		●
2 - Problem Solving	●	●	●	●	●	
3 - Critical Thinking	●	●		●		●
4 - Information Literacy		●	●			●
5 - Team Work						
6 - Information Technology Competence	●	●	●		●	●
7 - Cross Cultural Competence						
8 - Ethical practice						
9 - Social Innovation						
10 - Aboriginal and Torres Strait Islander Cultures						

Textbooks and Resources

Textbooks

COIT12206

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

Referencing Style

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

Teaching Contacts

Kenneth Howah Unit Coordinator
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Schedule

Week 1 - 04 Mar 2024

Module/Topic	Chapter	Events and Submissions/Topic
Course Introduction; The OSI Model and the TCP/IP Protocol Suite; Numbering Systems	1 & Appendix B	

Week 2 - 11 Mar 2024

Module/Topic	Chapter	Events and Submissions/Topic
Underlying Technologies	3, 4, 5, and 6. Some sub-topics may be discussed in other chapters as well.	

Week 3 - 18 Mar 2024

Module/Topic	Chapter	Events and Submissions/Topic
Introduction to Network Layer; IPv4 Addressing	7	**Quiz 1** (on-line): This quiz will close on Friday, 24 March 2023, 8:00 PM AEST.

Week 4 - 25 Mar 2024

Module/Topic	Chapter	Events and Submissions/Topic
Internet Protocol Version 4 (IPv4)	7	

Week 5 - 01 Apr 2024

Module/Topic	Chapter	Events and Submissions/Topic
IPv6 Addressing; IPv6 Protocol; Internet Control Message Protocol(ICMP)	7	**Quiz 2** (online): This quiz will close on Friday, 7 April 2023, 8:00 PM AEST.

Vacation Week - 08 Apr 2024

Module/Topic	Chapter	Events and Submissions/Topic

Week 6 - 15 Apr 2024

Module/Topic	Chapter	Events and Submissions/Topic
Introduction to the Transport Layer; User Datagram Protocol (UDP)	9	**Networking Assignment 1** Due: Week 6 Friday (19 Apr 2024) 11:59 pm AEST

Week 7 - 22 Apr 2024

Module/Topic	Chapter	Events and Submissions/Topic
Transmission Control Protocol (TCP)	9	**Quiz 3** (on-line): This quiz will close on Friday, 28 April 2023, 8:00 PM AEST.

Week 8 - 29 Apr 2024

Module/Topic	Chapter	Events and Submissions/Topic
Delivery and Forwarding of IP Packets; Address Resolution Protocol (ARP)	7	

Week 9 - 06 May 2024

Module/Topic	Chapter	Events and Submissions/Topic
Unicast Routing Protocols (RIP, OSPF, and BGP)	8	**Quiz 4** (online): This quiz will close on Friday, 12 May 2023, 8:00 PM AEST.

Week 10 - 13 May 2024

Module/Topic	Chapter	Events and Submissions/Topic
Host Configuration - DHCP; Domain Name System (DNS)	DNS is discussed in Chapter 10. DHCP is discussed in the Lecture using alternative sources	

Week 11 - 20 May 2024

Module/Topic	Chapter	Events and Submissions/Topic
File Transfer - FTP and TFTP; World Wide Web and HTTP; Network Management: SNMP	10 and 12. Other chapters may mention these topics as well	

Week 12 - 27 May 2024

Module/Topic	Chapter	Events and Submissions/Topic
Review and Assignment Completion		**Quiz 5** (online): This quiz will close on Friday, 2 June 2023, 8:00 PM AEST. **Networking Assignment 2** Due: Week 12 Friday (31 May 2024) 11:59 pm AEST

Review/Exam Week - 03 Jun 2024		
Module/Topic	**Chapter**	**Events and Submissions/Topic**

Exam Week - 10 Jun 2024		
Module/Topic	**Chapter**	**Events and Submissions/Topic**

Assessment Tasks

1 Networking Assignment 1

Assessment Type
Written Assessment

Task Description
Task Description

This assignment requires you to answer multiple independent questions to test your understanding of topics such as
1. computer networking components and layers,
2. appropriate use of protocols in specific networking and transport layers,
3. IP addressing in the networking layer with IPv4,
4. execute network commands and understand the output,
Questions may require the basic use of networking tools like Cisco Packet Tracer, and Wireshark

Marks may be deducted or the work not marked if evidence exists of the inappropriate use of generative AI tools, or if evidence of any other form of plagiarism is found.

Detailed information about this assessment can be accessed from the unit website in Moodle.

Assessment Due Date
Week 6 Friday (19 Apr 2024) 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 (3 May 2024)

Online via Moodle

Weighting
25%

Assessment Criteria
Your answers will be marked based on technical correctness, completeness, clarity including overall presentation quality 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 or table), 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.
Marks may be deducted or the work not marked if evidence exists of the inappropriate use of generative AI tools, or if evidence of any other form of plagiarism is found.

Referencing Style

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

Submission
Online

Submission Instructions
Assignments must be submitted in Moodle in .doc or .docx format.

Learning Outcomes Assessed

- Construct addressing schemes that achieve business goals while adhering to technical standards
- Justify the selection of network techniques and protocols to meet business requirements

2 Networking Assignment 2

Assessment Type
Practical Assessment

Task Description
Task Description

This assignment requires you to perform a number of practical activities to answer multiple independent questions on topics such as
1. appropriateness of network configuration commands and IPv4 and/or IPv6 calculations to configure a network,
2. solve problems relating to the routing of a specific network,
3. evaluate the functions of protocols and standards in the network, transport, and application layers,
4. appropriateness of networking techniques and implementing them in a network,
Questions may require the use of networking tools like Cisco Packet Tracer, and Wireshark

Detailed information about this assessment can be accessed from the unit website in Moodle.

Assessment Due Date
Week 12 Friday (31 May 2024) 11:59 pm AEST

Your assignment must be submitted in the format specified in the assignment. See Moodle unit website for details.
Results available on Certification of Grades Day

Return Date to Students

This assignment will be returned on Certification of Grades day

Weighting
40%

Assessment Criteria
Assessment Criteria
Your answers will be marked based on technical correctness, completeness, clarity including overall presentation quality 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 or table), 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. Marks may be deducted or the work not marked if evidence exists of the inappropriate use of generative AI tools, or if evidence of any other form of plagiarism is found.
More detailed marking criteria can be accessed from Moodle.

Referencing Style

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

Submission
Online

Submission Instructions
Online

Learning Outcomes Assessed

- Apply routing and forwarding principles to interconnect multiple computer networks

- Illustrate the operation of application and transport protocols that are commonly used in delivering internet applications
- Apply testing and analysis tools to solve network design problems
- Explain the role of traditional networking protocols in contemporary technologies.

3 Quizzes

Assessment Type
Online Quiz(zes)

Task Description
You will complete five (5) quizzes in Moodle throughout the term: two (2) of the quizzes must be taken in your assigned tutorial class, while the remaining three (3) are take in your own time (within limits - see below). Each quiz will cover lecture and tutorial topics from the weeks leading up to that quiz. Each quiz will consist of multiple-choice questions, and/or calculations. There will be multiple independent questions in each quiz. All quizzes are individual assessments.

Each quiz will be time-limited, typically allowing you between 15 and 30 minutes to complete the quiz. Quiz time limits, topics, number of attempts allowed and open/close times can be found on Moodle. Read on for more details about in-class and out-of-class quizzes.

In-class quizzes

The two (2) in-class quizzes must be taken in your assigned tutorial class. The quiz will open shortly after the start of your tutorial class and will close after the time limit has been reached. You will be allowed only a single attempt at the in-class quiz, with the score for that attempt counting towards your grade.

In-class quizzes will be held during the tutorials in weeks: 3 and 7. In-class quizzes will be supervised. While they will be open book, you are not allowed to communicate with anyone while the quiz is open. You will not be allowed to take an in-class quiz at times outside of your assigned tutorial unless an Assessment Extension Request is approved. The quiz will close at the same time for all students in your tutorial. If you arrive late for the tutorial, you will not be granted extra time.

For students studying via distance (online), the Unit Coordinator will organise a time in which you can undertake a supervised quiz via Zoom screen sharing.

Out-of-class quizzes

The three (3) out-of-class quizzes may be taken between the open and close times that are specified in Moodle. Each quiz will be open at least one week before the due date. You will be allowed two attempts, with your highest score counting towards your grade.

Out-of-class quizzes will be due Monday at 10 am (AEST) on weeks: 5, 9, and 12. Out-of-class quizzes are unsupervised. While they will be open book, you are expected to complete the quiz on your own, without the assistance of others.

Number of Quizzes
5

Frequency of Quizzes
Other

Assessment Due Date

See the task description in Moodle or the Unit Profile for due dates/times

Return Date to Students

One week after the due date

Weighting
35%

Assessment Criteria
In most cases, all quiz answers will be automatically marked, with marks awarded based on the correctness of the answer within the context of topics covered in lectures and tutorials. Questions may be worth different marks, with the marks indicated in the quiz. If you believe an item has been incorrectly marked, please refer it to the Unit Coordinator who will investigate and resolve as

appropriate.
When multiple attempts are allowed on a quiz, the highest score of those attempts will count towards your grade. Making no attempts before the due date will result in a score of zero.

Referencing Style

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

Submission
Online

Submission Instructions
Online

Learning Outcomes Assessed

- Apply routing and forwarding principles to interconnect multiple computer networks
- Construct addressing schemes that achieve business goals while adhering to technical standards
- Illustrate the operation of application and transport protocols that are commonly used in delivering internet applications
- Justify the selection of network techniques and protocols to meet business requirements

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