



# COIT12206 TCP/IP Principles and Protocols

## Term 1 - 2022

Profile information current as at 05/05/2024 02:56 am

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 - 2022

- Brisbane
- Cairns
- Melbourne
- Online
- Rockhampton
- Sydney
- Townsville

#### 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 Student feedback

##### Feedback

Some of the calculations in the course should be explained a little bit more clearly.

##### Recommendation

Provide additional supporting resources on the concepts such as subnetting and packet forwarding.

## 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)

## Alignment of Learning Outcomes, Assessment and Graduate Attributes



### 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						

## Alignment of Assessment Tasks to Graduate Attributes

Assessment Tasks	Graduate Attributes									
	1	2	3	4	5	6	7	8	9	10
1 - Written Assessment - 25%	•	•	•	•		•				
2 - Practical Assessment - 40%	•	•	•	•		•				
3 - Online Quiz(zes) - 35%		•	•	•		•				

## 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

#### Additional Textbook Information

Both the paper and eBook copies can be purchased at the CQUni Bookshop here: <http://bookshop.cqu.edu.au> (search on the Unit code)

[View textbooks at the CQUniversity Bookshop](#)

### IT Resources

**You will need access to the following IT resources:**

- CQUniversity Student Email
- Internet
- Unit Website (Moodle)
- Wireshark
- Cisco Packet Tracer 7.2.1

## 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

[k.howah@cqu.edu.au](mailto:k.howah@cqu.edu.au)

## Schedule

### Week 1 - 07 Mar 2022

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 - 14 Mar 2022

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 - 21 Mar 2022

Module/Topic	Chapter	Events and Submissions/Topic
Introduction to Network Layer; IPv4 Addressing	7	<b>Quiz 1</b> (in-class): Due in your allocated tutorial class in Week 3

**Week 4 - 28 Mar 2022**

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

**Week 5 - 04 Apr 2022**

Module/Topic	Chapter	Events and Submissions/Topic
IPv6 Addressing; IPv6 Protocol; Internet Control Message Protocol(ICMP)	7	<b>Quiz 2</b> (online): Due Week 5 Tuesday (6 April 2021) 10:00 am AEST

**Vacation Week - 11 Apr 2022**

Module/Topic	Chapter	Events and Submissions/Topic
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**Week 6 - 18 Apr 2022**

Module/Topic	Chapter	Events and Submissions/Topic
Introduction to the Transport Layer; User Datagram Protocol (UDP)	9	<b>Assignment 1:</b> Due Week 6 Friday (23 April 2021) 11:45 pm AEST  <b>Networking Assignment 1</b> Due: Week 6 Friday (22 Apr 2022) 11:59 pm AEST

**Week 7 - 25 Apr 2022**

Module/Topic	Chapter	Events and Submissions/Topic
Transmission Control Protocol (TCP)	9	<b>Quiz 3</b> (in-class): Due in your allocated tutorial class in Week 7

**Week 8 - 02 May 2022**

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

**Week 9 - 09 May 2022**

Module/Topic	Chapter	Events and Submissions/Topic
Unicast Routing Protocols (RIP, OSPF, and BGP)	8	<b>Quiz 4</b> (online): Due Week 9 Monday (10 May 2021) 10:00 am AEST

**Week 10 - 16 May 2022**

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 - 23 May 2022**

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 - 30 May 2022**

Module/Topic	Chapter	Events and Submissions/Topic
Review and Assignment Completion		<b>Quiz 5</b> (online): Due Week 12 Monday (31 May 2021) 10:00 am AEST <b>Assignment 2:</b> Due Week 12 Friday (4 June 2021) 11:45 pm AEST  <b>Networking Assignment 2</b> Due: Week 12 Friday (3 June 2022) 11:59 pm AEST

## Review/Exam Week - 06 Jun 2022

Module/Topic	Chapter	Events and Submissions/Topic
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## Exam Week - 13 Jun 2022

Module/Topic	Chapter	Events and Submissions/Topic
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## Term Specific Information

STUDENTS TAKE NOTE: **The textbook listed for this unit is NEW** -- is not the same textbook as in previous terms. Same author, but different more updated book.

## 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.

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

#### Assessment Due Date

Week 6 Friday (22 Apr 2022) 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 (6 May 2022)

Online via Moodle

#### Weighting

25%

#### Assessment Criteria

The assessment report will be marked based on the level of

- the correctness of the answer,
- accuracy and clarity of explanations.

More detailed marking criteria can be accessed from Moodle.

#### Referencing Style

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

#### Submission

Online

#### Submission Instructions

Assignments must be submitted online 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

## Graduate Attributes

- Communication
- Problem Solving
- Critical Thinking
- Information Literacy
- Information Technology Competence

## 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.

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

### Assessment Due Date

Week 12 Friday (3 June 2022) 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

This assignment will be returned on Certification of Grades day, as is required of units with no exam

### Weighting

40%

### Assessment Criteria

Assessment Criteria

The assessment report will be marked based on

- the correctness of simulated network configuration,
- the correctness of the answer written in the report,
- accuracy and clarity of explanations.

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.

## Graduate Attributes

- Communication
- Problem Solving
- Critical Thinking



- Information Literacy
- Information Technology Competence

### 3 Quizzes

#### Assessment Type

Online Quiz(zes)

#### Task Description

You will undertake five (5) quizzes on Moodle throughout the term: two (2) of the quizzes must be taken in your assigned tutorial class, while three (3) of the quizzes you may 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 any time 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. Changes to in-class quiz times can only be granted with approval by the Unit Coordinator.

For students studying via distance (online), the Unit Coordinator will negotiate with you a time at 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. Each quiz will be open for at least one (1) week, that is, it will open at least one week before the due date. You will be allowed multiple attempts (at least 2), 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.

#### Return Date to Students

One week after the due date

#### Weighting

35%

#### Assessment Criteria

In most cases, 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.

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 0.

**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

**Graduate Attributes**

- Problem Solving
- Critical Thinking
- Information Literacy
- Information Technology Competence

## 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