



COIT20257 *Distributed Systems: Principles and Development*

Term 1 - 2017

Profile information current as at 18/08/2022 02:20 am

All details in this unit profile for COIT20257 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 aims to teach both the principles and practice of distributed systems, but with an emphasis on the practical side. Theory will focus on architectural, communication, synchronisation issues (e.g. client/server and peer to peer architectures, message-oriented communication, naming, threads, remote method invocation). The issues involved in the provision of reliable and secure distributed systems will also be addressed, as will the social impact arising from the ubiquity of distributed systems. Practice will involve consolidation of the key theoretical material through the development of software applications. Note: If you have undertaken COIT23005 Distributed Systems Development then this unit cannot be enrolled.

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 unit: COIT20256 Data structures and Algorithms

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 - 2017

- Brisbane
- Distance
- Melbourne
- 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. **Practical and Written Assessment**

Weighting: 35%

3. **Examination**

Weighting: 45%

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 Moodle course website

Feedback

Assessments should be returned in time with clear feedback

Recommendation

Assessment marking and return should be closely monitored.

Action

Assessment returns are closely monitored and followed up to avoid any delays.

Unit Learning Outcomes

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

1. Compare and contrast distributed systems with non-distributed systems.
2. Discuss the social issues arising from ubiquitous distributed systems.
3. Solve problems in the distributed systems domain by applying the principles taught in the unit to real problems.
4. Develop distributed applications.
5. Critique the issues involved in developing reliable and secure distributed systems.

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:

- Systems Design (DESN)
- Systems Integration (SINT)
- Programming/Software Development (PROG),
- Database/Repository Design (DBDS)
- Testing (TEST)
- Network Support (NTAS)
- Release and Deployment (RELM),
- Application Support (ASUP).

Alignment of Learning Outcomes, Assessment and Graduate Attributes



Alignment of Assessment Tasks to Learning Outcomes

Assessment Tasks	Learning Outcomes				
	1	2	3	4	5
1 - Written Assessment - 20%	•	•			•
2 - Practical and Written Assessment - 35%			•	•	

Assessment Tasks	Learning Outcomes				
	1	2	3	4	5
3 - Examination - 45%	•	•	•		•

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					

Alignment of Assessment Tasks to Graduate Attributes

Assessment Tasks	Graduate Attributes							
	1	2	3	4	5	6	7	8
1 - Written Assessment - 20%	○		○		○			
2 - Practical and Written Assessment - 35%	○	○	○		○			
3 - Examination - 45%	○	○	○					

Textbooks and Resources

Textbooks

COIT20257

Prescribed

Distributed Systems Concepts and Design

5th Edition (2012)

Authors: George Coulouris, Jean Dollimore, Tim Kindberg and Gordon Blair

Addison-Wesley

Boston , MA , USA

ISBN: 978-0-13-214301-1

Binding: Hardcover

[View textbooks at the CQUniversity Bookshop](#)

IT Resources

You will need access to the following IT resources:

- CQUniversity Student Email
- Internet
- Unit Website (Moodle)
- Java Development Kit (JDK) 1.8
- MySQL Database Server version 5.7 or later

Referencing Style

All submissions for this unit must use the referencing style: [Harvard \(author-date\)](#)

For further information, see the Assessment Tasks.

Teaching Contacts

Mary Tom Unit Coordinator

m.tom@cqu.edu.au

Schedule

Week 1 - 06 Mar 2017

Module/Topic	Chapter	Events and Submissions/Topic
An Introduction to Distributed Systems	Chapter 1 & Chapter 2	

Week 2 - 13 Mar 2017

Module/Topic	Chapter	Events and Submissions/Topic
Interprocess Communication	Chapter 4	

Week 3 - 20 Mar 2017

Module/Topic	Chapter	Events and Submissions/Topic
Communication - Remote Invocation	Chapter 5	

Week 4 - 27 Mar 2017

Module/Topic	Chapter	Events and Submissions/Topic
Process and Thread Management - Operating System Support	Chapter 7	

Week 5 - 03 Apr 2017

Module/Topic	Chapter	Events and Submissions/Topic
Security in Distributed Systems	Chapter 11	
Vacation Week - 10 Apr 2017		
Module/Topic	Chapter	Events and Submissions/Topic
Vacation		
Week 6 - 17 Apr 2017		
Module/Topic	Chapter	Events and Submissions/Topic
Distributed File Systems and Name Services	Chapters 12 and 13	
Week 7 - 24 Apr 2017		
Module/Topic	Chapter	Events and Submissions/Topic
Coordination and Agreement	Chapter 15	Assignment 1 Due: Week 7 Monday (24 Apr 2017) 11:45 pm AEST
Week 8 - 01 May 2017		
Module/Topic	Chapter	Events and Submissions/Topic
Transactions and Concurrent Control	Chapter 16	
Week 9 - 08 May 2017		
Module/Topic	Chapter	Events and Submissions/Topic
Distributed Transactions	Chapter 17	
Week 10 - 15 May 2017		
Module/Topic	Chapter	Events and Submissions/Topic
Replication and Fault Tolerance	Chapter 18	Assignment 2 Due: Week 10 Friday (19 May 2017) 11:45 pm AEST
Week 11 - 22 May 2017		
Module/Topic	Chapter	Events and Submissions/Topic
Mobile and Ubiquitous Computing	Chapter 19	
Week 12 - 29 May 2017		
Module/Topic	Chapter	Events and Submissions/Topic
Web Services	Chapter 9	
Review/Exam Week - 05 Jun 2017		
Module/Topic	Chapter	Events and Submissions/Topic
Exam Week - 12 Jun 2017		
Module/Topic	Chapter	Events and Submissions/Topic

Term Specific Information

Unit Coordinator

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 Brisbane
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Assessment Tasks

1 Assignment 1

Assessment Type

Written Assessment

Task Description

Cloud computing has become the largely distributed system which is growing and becoming the most used form of distributed systems. Transition to this computing paradigm also raises many security concerns. Your task in this assignment is to write a review article describing the major threats, and vulnerabilities, and discuss the current state of technology to deal with such security issues. Follow the full assignment specification available from the unit website.

Assessment Due Date

Week 7 Monday (24 Apr 2017) 11:45 pm AEST

Assignment 1 Due

Return Date to Students

Monday (8 May 2017)

Assignment 1 Results Release

Weighting

20%

Assessment Criteria

The assignment will be assessed by the format, technical contents, and referencing. The detailed marking criteria can be found from the unit web site.

Referencing Style

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

Submission

Online

Submission Instructions

Please submit one .doc or .docx file using the Assignment Submission link available at the unit website.

Learning Outcomes Assessed

- Compare and contrast distributed systems with non-distributed systems.
- Discuss the social issues arising from ubiquitous distributed systems.
- Critique the issues involved in developing reliable and secure distributed systems.

Graduate Attributes

- Knowledge
- Cognitive, technical and creative skills
- Self-management

2 Assignment 2

Assessment Type

Practical and Written Assessment

Task Description

Your task for this assignment is to design, implement, test and document a client/server system which allows concurrent access to multiple clients. The purpose of this assignment is to assess your competency in Java TCP networking, multi-threading, object serialization, concurrency, and use of database for data persistence.

The assignment specification and marking criteria can be found from the unit web site.

Assessment Due Date

Week 10 Friday (19 May 2017) 11:45 pm AEST

Assignment 2 Due

Return Date to Students

Week 12 Friday (2 June 2017)

Assignment 2 Results Release

Weighting

35%

Assessment Criteria

The assignment will be assessed by the design, software implementation, and documentation. The detailed marking

criteria can be found from the unit web site.

Referencing Style

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

Submission

Online

Submission Instructions

Submit from the Moodle unit website

Learning Outcomes Assessed

- Solve problems in the distributed systems domain by applying the principles taught in the unit to real problems.
- Develop distributed applications.

Graduate Attributes

- Knowledge
- Communication
- Cognitive, technical and creative skills
- Self-management

Examination

Outline

Complete an invigilated examination.

Date

During the examination period at a CQUniversity examination centre.

Weighting

45%

Length

120 minutes

Exam Conditions

Open Book.

Materials

Calculator - non-programmable, no text retrieval, silent only

Dictionary - non-electronic, concise, direct translation only (dictionary must not contain any notes or comments).

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