



# **COIT20258 *Software Engineering***

## **Term 1 - 2020**

Profile information current as at 08/05/2024 06:57 pm

All details in this unit profile for COIT20258 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.

### **Corrections**

#### **Unit Profile Correction added on 24-04-20**

The end of term examination has now been changed to an alternate form of assessment. Please see your Moodle site for details of the assessment.

## General Information

### Overview

This unit aims to teach you both theoretical and practical aspects of software engineering which involves specification, development, management and evolution of software systems. Theory will focus on software processes, requirements engineering, system models and modelling, robustness analysis, architectural design, object-oriented design, and software development methodology. The theoretical and practical aspects of software testing, software evolution, and quality management including quality assurance, and quality control are also discussed. You will also be introduced to the principles of software evolution and configuration management. This unit has a strong practical focus and the theoretical aspects are reinforced with practical work. The software engineering life cycle support functionality provided by modern software development environments is also addressed.

### 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

Pre-requisites: COIT20247 Database Design and Development, COIT20256 Data Structures and Algorithms, and COIT20248 Information Systems Analysis and Design Anti-requisites: COIT20226 Software Design and Implementation

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 - 2020

- 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. **Practical Assessment**

Weighting: 20%

#### 2. **Practical Assessment**

Weighting: 30%

#### 3. **Examination**

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 Unit coordinator's personal reflection.

##### Feedback

User interface development should reflect best practice.

##### Recommendation

Employ JavaFX rather than Swing both in the case studies and in the assignments.

## Unit Learning Outcomes

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

1. Apply the principles of software design
2. Propose appropriate software management processes for a software engineering project
3. Employ Unified Modeling Language (UML) and design patterns in the design and documentation of software systems
4. Critique design alternatives and development methods available to a software developer
5. Design, develop, and test non-distributed, three layered software applications
6. Exploit the software engineering life cycle support functionality provided by modern software development environments.

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:

- Systems Design (DESN)
- System Integration (SINT)
- Programming/Software Development (PROG)
- Data Analysis (DTAN)
- Database/Repository Design (DBDS)
- Testing (TEST)
- Applications 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	6
1 - Practical Assessment - 20%			•		•	•
2 - Practical Assessment - 30%	•		•		•	•

Assessment Tasks	Learning Outcomes					
	1	2	3	4	5	6
3 - Examination - 50%	•	•		•		

## Alignment of Graduate Attributes to Learning Outcomes

Graduate Attributes	Learning Outcomes					
	1	2	3	4	5	6
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 - Practical Assessment - 20%	○	○	○		○	○		
2 - Practical Assessment - 30%	○	○	○		○	○		
3 - Examination - 50%	○	○	○		○	○		

## Textbooks and Resources

### Textbooks

COIT20258

#### Prescribed

##### Software Engineering

Edition: 10th. (2016)

Authors: Sommerville, I.

Pearson

Harlow , Essex , England

ISBN: 1-292-09613-6

Binding: Paperback

#### Additional Textbook Information

Copies can be purchased from the CQUni Bookshop here: <http://bookshop.cqu.edu.au> (search on the Unit code)

### IT Resources

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

- CQUniversity Student Email
- Internet
- Unit Website (Moodle)
- Java 8
- NetBeans 8.2
- Apache Derby 10.14.2.0

## 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

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**Steven Gordon** Unit Coordinator

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## Schedule

### Week 1 - 09 Mar 2020

Module/Topic	Chapter	Events and Submissions/Topic
Introduction; Software Processes.	Chapter 1; Chapter 2.	

### Week 2 - 16 Mar 2020

Module/Topic	Chapter	Events and Submissions/Topic
Agile Software Development; Requirements Engineering; Case Study	Chapter 3; Chapter 4; Online Material	
1 - AddressBook: Model/View (MV).		

### Week 3 - 23 Mar 2020

Module/Topic	Chapter	Events and Submissions/Topic
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System Modelling; Architectural Design; Case Study 1 - AddressBook: Model/View/Presenter (MVP) Chapter 5; Chapter 6; Online material

#### Week 4 - 30 Mar 2020

Module/Topic	Chapter	Events and Submissions/Topic
Robustness Analysis; Design of Layered Systems.	Online material; Online Material	

#### Week 5 - 06 Apr 2020

Module/Topic	Chapter	Events and Submissions/Topic
Design and Implementation (Part 1); Design Documents.	Chapter 7; Online Material.	

#### Vacation Week - 13 Apr 2020

Module/Topic	Chapter	Events and Submissions/Topic

#### Week 6 - 20 Apr 2020

Module/Topic	Chapter	Events and Submissions/Topic
OOD Principles; Case Study 1 - AddressBook: Further Refactoring.	Online material; Online Material.	<b>Assignment 1</b> Due: Week 6 Friday (24 Apr 2020) 11:59 pm AEST

#### Week 7 - 27 Apr 2020

Module/Topic	Chapter	Events and Submissions/Topic
Design and Implementation (Part 2); Unit Testing.	Chapter 7; Online Material.	

#### Week 8 - 04 May 2020

Module/Topic	Chapter	Events and Submissions/Topic
Software Testing; Case Study 2: Wumpus - Project Brief	Chapter 8; Online Material	

#### Week 9 - 11 May 2020

Module/Topic	Chapter	Events and Submissions/Topic
Software Evolution; Refactoring; Case Study 1 - Wumpus - Design (Part 1).	Chapter 9; Online Material; Online Material	

#### Week 10 - 18 May 2020

Module/Topic	Chapter	Events and Submissions/Topic
Software Reuse; Component-Based Software Engineering.	Chapter 15; Chapter 16.	<b>Assignment 2</b> Due: Week 10 Friday (22 May 2020) 11:59 pm AEST

#### Week 11 - 25 May 2020

Module/Topic	Chapter	Events and Submissions/Topic
Quality Management; Case Study 2 - Wumpus: Design (Part 2)	Chapter 24; Online Material	

#### Week 12 - 01 Jun 2020

Module/Topic	Chapter	Events and Submissions/Topic
Configuration Management; Review	Chapter 25; Online Material	

#### Review/Exam Week - 08 Jun 2020

Module/Topic	Chapter	Events and Submissions/Topic

#### Exam Week - 15 Jun 2020

Module/Topic	Chapter	Events and Submissions/Topic

## Assessment Tasks

## 1 Assignment 1

### Assessment Type

Practical Assessment

### Task Description

Students will use Robustness Analysis in the design of a three-layered Java application. The requirements for the application will be provided on the unit web site.

### Assessment Due Date

Week 6 Friday (24 Apr 2020) 11:59 pm AEST

### Return Date to Students

Two weeks after the due date.

### Weighting

20%

### Assessment Criteria

Criteria	Marks Available
Use case specifications	1.5
Robustness Analysis	8
Screens (one per use case)	3
Data access class (specification)	1.5
Sequence Diagrams (one per use case)	3
Report	3
<b>Total</b>	<b>20</b>

### Referencing Style

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

### Submission

Online

### Learning Outcomes Assessed

- Employ Unified Modeling Language (UML) and design patterns in the design and documentation of software systems
- Design, develop, and test non-distributed, three layered software applications
- Exploit the software engineering life cycle support functionality provided by modern software development environments.

### Graduate Attributes

- Knowledge
- Communication
- Cognitive, technical and creative skills
- Self-management
- Ethical and Professional Responsibility

## 2 Assignment 2

### Assessment Type

Practical Assessment

### Task Description

Students will implement a Java application that conforms to the MVP (Model View Presenter) pattern and to the coding guidelines provided on the unit web site. The view will contain a Swing based GUI and the model will interact with a Java DB database. The specification of the application to be built (including the design document) will be provided on the unit web site.



**Assessment Due Date**

Week 10 Friday (22 May 2020) 11:59 pm AEST

**Return Date to Students**

Two weeks after the due date.

**Weighting**

30%

**Assessment Criteria**

Criteria	Marks Available
Functionality <b>and</b> conformance to design document	15
Conformance to coding/documentation guidelines	5
Testing	5
Source code documentation	5
<b>Total</b>	<b>30</b>

**Referencing Style**

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

**Submission**

Online

**Learning Outcomes Assessed**

- Apply the principles of software design
- Employ Unified Modeling Language (UML) and design patterns in the design and documentation of software systems
- Design, develop, and test non-distributed, three layered software applications
- Exploit the software engineering life cycle support functionality provided by modern software development environments.

**Graduate Attributes**

- Knowledge
- Communication
- Cognitive, technical and creative skills
- Self-management
- Ethical and Professional Responsibility

**Examination****Outline**

Complete an invigilated examination.

**Date**

During the examination period at a CQUniversity examination centre.

**Weighting**

50%

**Length**

180 minutes

**Exam Conditions**

Open Book.

**Materials**

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