COIT11134 *Object Oriented Programming*
Term 1 - 2023

All details in this unit profile for COIT11134 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 is designed to extend your understanding of object-oriented programming principles, complex data structures and algorithms. You will learn to develop interactive software applications using a modern programming language, integrated development environment (IDE), and graphical user interface (GUI) components. The strengths and weaknesses of the techniques are also considered. You will develop skills in applying object-oriented programming concepts and algorithm development to implement software solutions. You will apply these skills in implementing software applications to solve practical problems.

Details

Career Level: *Undergraduate*
Unit Level: *Level 1*
Credit Points: *6*
Student Contribution Band: *8*
Fraction of Full-Time Student Load: *0.125*

Pre-requisites or Co-requisites

Prerequisite unit COIT11222.
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
- 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. **Practical and Written Assessment**
Weighting: 20%
2. **Practical and Written Assessment**
Weighting: 25%
3. **Project (applied)**
Weighting: 55%

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

Connecting the content to real-world problems helped students understand the usefulness of object-oriented concepts.

Recommendation

Continue providing examples and tutorial exercises relevant to real-world problems.

Feedback from Teaching Team Reflection

Feedback

Exemplar assignments and project proposals would help students have a clear understanding of what is expected in the assignments.

Recommendation

Provide exemplar assignments and project proposals on the Moodle unit site.

Unit Learning Outcomes

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

1. Explain the principles of object-oriented programming
2. Implement object-oriented programs using a modern programming language
3. Build interactive software applications using Graphical User Interface components
4. Apply self-designed and existing algorithms in problem solutions
5. Use complex data structures in software application development.

The Australian Computer Society (ACS) 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:

- Programming/Software development (PROG)
- Software Design (SWDN)
- Data Modelling and Design(DTAN)
- Testing (TEST)
- System Integration and Build (SINT)
- User Experience Design (HCEV)

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 - Practical and Written Assessment - 20%		●	●	●	●
2 - Practical and Written Assessment - 25%		●	●		●
3 - Project (applied) - 55%	●			●	

Alignment of Graduate Attributes to Learning Outcomes

Graduate Attributes	Learning Outcomes				
	1	2	3	4	5
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
COIT11134

Prescribed

Core Java Volume I--Fundamentals
Edition: 12th edn (2021)
Authors: Cay S. Horstmann
Oracle Press
Norman Park , Queensland , Australia
ISBN: 9780137673629
Binding: Other

Additional Textbook Information
Textbooks can be accessed online at the CQUniversity Library website. If you prefer your own copy, you can purchase either paper or eBook versions 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)
- Apache Netbeans IDE 13
- Scene Builder 18.0.0 from https://gluonhq.com/products/scene-builder/
- JavaFx 18.0.1 available from https://gluonhq.com/products/javafx/
- OpenJDK 18.0.1.1 from https://jdk.java.net/18/

Referencing Style

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

Teaching Contacts

Umapathy Venugopal Unit Coordinator
u.venugopal@cqu.edu.au

Schedule

Week 1 - 06 Mar 2023

Module/Topic	Chapter	Events and Submissions/Topic
Revision of Java Classes, Objects, and Methods	Chapter 4	Review

Week 2 - 13 Mar 2023

Module/Topic	Chapter	Events and Submissions/Topic
Inheritance	Chapter 5	Work on Practical Assignment 1

Week 3 - 20 Mar 2023

Module/Topic	Chapter	Events and Submissions/Topic

| Polymorphism | Chapter 5 | Work on Practical Assignment 1 |

Week 4 - 27 Mar 2023

Module/Topic	Chapter	Events and Submissions/Topic
GUI and Event Handling - Part A	Online resources	Work on Practical Assignment 1

Week 5 - 03 Apr 2023

Module/Topic	Chapter	Events and Submissions/Topic
GUI and Event Handling - Part B	Online resources	Work on Practical Assignment 1

Vacation Week - 10 Apr 2023

Module/Topic	Chapter	Events and Submissions/Topic
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Week 6 - 17 Apr 2023

Module/Topic	Chapter	Events and Submissions/Topic
Introduction to Git and Version Control	Supplementary resources	Work on Practical Assignment 1 and submit at the end of week **Practical Assignment 1** Due: Week 6 Friday (21 Apr 2023) 11:45 pm AEST

Week 7 - 24 Apr 2023

Module/Topic	Chapter	Events and Submissions/Topic
Java Exception Handling, and Revisit Files IO	Chapter 3 and 7	Work on Final Project Part A. Work on Practical Assignment 2

Week 8 - 01 May 2023

Module/Topic	Chapter	Events and Submissions/Topic
Interfaces, and Inner Classes	Chapter 6	Work on Practical Assignment 2. Work on Final Project Part A and submit at the end of week. **Final Project Part A** Due: Week 8 Friday (5 May 2023) 11:45 pm AEST

Week 9 - 08 May 2023

Module/Topic	Chapter	Events and Submissions/Topic
Generic Methods	Chapter 8	Work on Practical Assignment 2

Week 10 - 15 May 2023

Module/Topic	Chapter	Events and Submissions/Topic
Generic Classes	Chapter 8	Work on Practical Assignment 2 and submit at the end of week **Practical Assignment 2** Due: Week 10 Friday (19 May 2023) 11:45 pm AEST

Week 11 - 22 May 2023

Module/Topic	Chapter	Events and Submissions/Topic
Collection, Linked Lists, and Algorithms	Chapter 9	Work on Final Project Part B

Week 12 - 29 May 2023

Module/Topic	Chapter	Events and Submissions/Topic
Stacks, Queues, and Trees	Chapter 9	Work on Final Project Part B

Review/Exam Week - 05 Jun 2023

Module/Topic	Chapter	Events and Submissions/Topic

| | | Work on Final Project Part B and submit at the end of week **Final Project Part B** Due: Review/Exam Week Friday (9 June 2023) 11:45 pm AEST |

Exam Week - 12 Jun 2023

| Module/Topic | Chapter | Events and Submissions/Topic |

Term Specific Information

Unit coordinator: Umapathy Venugopal
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Phone: (02) 9324 5789

Assessment Tasks

1 Practical Assignment 1

Assessment Type
Practical and Written Assessment

Task Description
In this assignment, you are required to develop a Java console application to meet the requirements as per the given specification. You will develop the software solution using an Integrated Development Environment (IDE).

By completing this assignment you will demonstrate skills in:

- using more than one Java class to implement encapsulation, inheritance and polymorphism, and
- using complex data structures and algorithms to solve programming problems.

Apart from developing the application, a report describing how long it took to create the whole program, any problems encountered, and screenshots of the output produced including annotations of your testing has to be submitted.
The full specification of the assignment will be available on the Moodle unit website.

Assessment Due Date
Week 6 Friday (21 Apr 2023) 11:45 pm AEST

Return Date to Students
Week 8 Monday (1 May 2023)

Weighting
20%

Assessment Criteria
Your assignment solution will be marked mainly based on the following:
Development of suitable Java classes including constructors and other relevant methods. The classes adhere to the principles of OOP such as encapsulation, inheritance and aggregation (if required) and follow the best programming principles.
A running application that has the following:

- without logical and syntax errors
- receives correct inputs and produces appropriate outputs
- provides appropriate error messages

Your written report on the required aspects regarding your practical experience of the application development and testing.
Full details of the assessment criteria will be available on the Moodle unit website.

Referencing Style

- Harvard (author-date)

Submission
Online

Submission Instructions
The application code and the report must be submitted to Moodle as a single zip file.

Learning Outcomes Assessed

- Implement object-oriented programs using a modern programming language
- Build interactive software applications using Graphical User Interface components
- Apply self-designed and existing algorithms in problem solutions
- Use complex data structures in software application development.

2 Practical Assignment 2

Assessment Type
Practical and Written Assessment

Task Description
In this assignment, you are required to develop a Java GUI based application (using JavaFX controls) that will extend the software solution, developed as part of your Assignment 1, with additional functionalities as required in the given specification. You will develop the software solution using an Integrated Development Environment (IDE).

By completing this assignment you will demonstrate skills in:

- implementing object-oriented concepts using a modern programming language,
- building interactive software applications with GUI components using JavaFX controls, and
- using complex data structures and algorithms to solve programming problems.

Apart from developing the application, a report describing how long it took to create the whole program, any problems encountered, and screenshots of the output produced including annotations of your testing has to be submitted.
The full specification of the assignment will be available on the Moodle unit website.

Assessment Due Date
Week 10 Friday (19 May 2023) 11:45 pm AEST

Return Date to Students
Week 12 Monday (29 May 2023)

Weighting
25%

Assessment Criteria

> The detailed assessment criteria will be provided along with the assignment specification. Your assignment submission will be assessed mainly on the following:
>
> - Developing Java classes that implement encapsulation, inheritance, aggregation and/or polymorphism
> - Using appropriate GUI controls and Listeners
> - Adhering to good programming practice.
>
> Your written report on the required aspects regarding your practical experience of the application testing and development.
> Penalties related to late submission and plagiarism will be applied as per university policy.

Referencing Style

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

Submission
Online

Submission Instructions
The application code and the report must be submitted to Moodle as a single zip file.

Learning Outcomes Assessed

- Implement object-oriented programs using a modern programming language
- Build interactive software applications using Graphical User Interface components
- Use complex data structures in software application development.

3 Final Project

Assessment Type
Project (applied)

Task Description
This is a group assignment. You will work in a group of **three (3)** members to accomplish a software development project.

By completing this assignment you will demonstrate skills in:

- translating user requirement into an object oriented design,
- using complex data structures and algorithms to solve programming problems, and
- working in a team to accomplish a software development project.

This assignment has two parts.

Part A: Project Proposal (20 marks)
You will come up with a project idea for a Java GUI based application. This needs to have some business value. The idea should not be too complex to implement by the given time frame. Your should develop a project proposal containing:

- A brief description of what the app is about and what you are aiming to deliver as output
- A brief discussion of the motivation for producing the app, i.e., who will use the app and why they will use the app (target audience)
- A list of high-level user requirements, e.g., user stories, use case diagrams
- Design of user interfaces, e.g. wireframes, hand-drawn prototypes
- Design of data structures, e.g., class diagrams
- A brief outline of the testing plan
- A summary of the major tasks and allocation of those tasks

Part B: Java Application and Report (35 marks)
You will develop a Java GUI based software application that implements the user requirements outlined in the Part A project proposal. The software application should adhere to the user interface, and data design mentioned in the project proposal. Any major deviation from the original proposal must be discussed with and approved by the tutor or the unit coordinator. The application code should not use concepts that were not taught in this unit or any of the prerequisite units.

Apart from the developing the application, a brief project report has to be submitted incorporating:

- Test results - screenshots of the testing and annotations
- A reflection on the project - problems encountered and lessons learnt

The full specification will be available on the Moodle unit website.

Assessment Due Date

You must submit Part A of the assignment by Week 8 Friday (5 May 2023) 11:45 pm AEST. Part B of the assignment must be submitted by Review/Exam Week Friday (9 June 2023) 11:45 pm AEST.

Return Date to Students

The marks and feedback for Part A will be returned in Week 10, while the same for Part B will be returned on the date of certificatation of grades.

Weighting
55%

Assessment Criteria
The assessment criteria will be available on the Moodle unit website.

Referencing Style

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

Submission
Online Group

Submission Instructions

For Part A, you are required to submit a Word file. For Part B, you are required to submit a zip file containing all your code and the report.

Learning Outcomes Assessed

- Explain the principles of object-oriented programming
- Apply self-designed and existing algorithms in problem solutions

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