COIT13235 *Enterprise Software Development*
Term 2 - 2024

All details in this unit profile for COIT13235 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 introduces you to the practical issues involved in the design and implementation of robust enterprise software applications enabling business-to-business and business-to-customer operations. You will learn data persistence and management of persistent objects extending your knowledge of object-oriented programming. You will learn to use well-known design patterns to build portable, highly available and maintainable software applications that require integrated use of several open-source tools. You will work in a small team to design and develop a 3-tier enterprise system with a data persistence tier, business logic layer, and a web-based presentation tier. Issues and consequences of complex computing will be discussed in the context of enterprise computing architecture and technology.

Details

Career Level: *Undergraduate*
Unit Level: *Level 3*
Credit Points: *6*
Student Contribution Band: *8*
Fraction of Full-Time Student Load: *0.125*

Pre-requisites or Co-requisites

Prerequisite: (COIT11237 - Database Design & Implementation and COIT12200 - Software Design & Development) OR (COIT12167 - Database Use and Design and COIT12200 - Software Design & Development)
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 2 - 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. **Practical and Written Assessment**
Weighting: 30%
2. **Practical and Written Assessment**
Weighting: 50%
3. **Reflective Practice Assignment**
Weighting: 20%

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 In-class student feedback

Feedback

More exercises would be helpful as students enjoy practical exercises.

Recommendation

Add more lab practice exercises where appropriate, especially in the last 2 weeks.

Feedback from Unit Coordinator

Feedback

Students are not assessed on enterprise programming until halfway through the term.

Recommendation

Change the first assessment from a purely written report into a practical plus report and use the practical part of Assessment 1 as formative.

Unit Learning Outcomes

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

1. Investigate and compare major enterprise software architectures and analyse the effectiveness of enterprise software systems for business operations involving diverse groups of stakeholders with varying needs
2. Use contemporary enterprise software development tools and techniques to design and develop appropriate solutions for business operations
3. Implement and build multi-tiered enterprise software systems in a distributed service-oriented architecture
4. Work collaboratively in a team contributing to productive complex software development.

The Australian Computer Society (ACS) recognises the Skills Framework for the Information Age (SFIA). SFIA provides a consistent definition of ICT skills. SFIA is adopted by organisations, governments and individuals in many countries and is increasingly 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 8. The SFIA code is included:

- Programming/Software Development (PROG)
- Data modelling and design (DTAN)
- Database design (DBDS)
- Software design (SWDN)
- Systems design (DESN)
- Testing (TEST)
- Systems integration and build (SINT)
- Release and deployment (RELM)
- Application support (ASUP)

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
1 - Reflective Practice Assignment - 20%	●	●		
2 - Practical and Written Assessment - 30%		●	●	
3 - Practical and Written Assessment - 50%		●	●	●

Alignment of Graduate Attributes to Learning Outcomes

Graduate Attributes	Learning Outcomes			
	1	2	3	4
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
COIT13235

Supplementary

Beginning EJB in Java EE 8: Building Applications with Enterprise JavaBeans
Edition: 1st (2018)
Authors: Wetherbee, Jonathan ; Nardone, Massimo ; Rathod, Chirag ; Kodali, Raghu
Berkeley, CA: Apress L. P
Berkeley , CA , USA
ISBN: 9781484235737
Binding: eBook
COIT13235

Supplementary

Spring Microservices in Action
Edition: 2nd (2021)
Authors: John Carnell, Illary Huaylupo Sánchez
Manning Publications
NY , USA
ISBN: 9781617296956
Binding: eBook
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Supplementary

Spring Start Here
Edition: 1st (2021)
Authors: Laurentiu Spilca
Manning Publications
ISBN: 9781617298691
Binding: eBook

View textbooks at the CQUniversity Bookshop

IT Resources

You will need access to the following IT resources:

- CQUniversity Student Email
- Internet
- Unit Website (Moodle)
- Zoom (both microphone and webcam capability)
- Apache NetBeans IDE 12.4 (available from https://netbeans.apache.org/download/nb124/nb124.html)
- OpenJDK 18.0.1.1 from https://jdk.java.net/18/
- MySQL Community Server 8.0.29 from https://dev.mysql.com/downloads/mysql
- Apache TomEE 8.0.0 TomEE Plus Web Server

Referencing Style

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

Teaching Contacts

Jamie Shield Unit Coordinator
j.shield@cqu.edu.au

Schedule

Week 1 - 08 Jul 2024

Module/Topic	Chapter	Events and Submissions/Topic
Intro to Enterprise (Ent.) SW Dev.	Refer to the unit website for readings. Chapter 1 of Fernando, C 2022, *Solution Architecture Patterns for Enterprise,* Apress. Chapter 1 of Deinum, M 2024, *Spring Boot 3 Recipes,* Apress.	

Week 2 - 15 Jul 2024

Module/Topic	Chapter	Events and Submissions/Topic
Ent. Persistence (ORM)	Chapter 14 of Spilcă, L 2021, *Spring start here*, Manning.	

Week 3 - 22 Jul 2024

Module/Topic	Chapter	Events and Submissions/Topic
Ent. Interoperability using REST	Chapter 10 of Reddy, K & Upadhyayula, S 2023, *Beginning Spring Boot 3*, Apress.	Ass1 Weekly apps due

Week 4 - 29 Jul 2024

Module/Topic	Chapter	Events and Submissions/Topic
Ent. Presentation using MVC	Chapter 4 of Reddy, K & Upadhyayula, S 2023, *Beginning Spring Boot 3*, Apress.	Ass1 Weekly apps due

Week 5 - 05 Aug 2024

Module/Topic	Chapter	Events and Submissions/Topic
Ent. Security	Chapter 12 of Reddy, K & Upadhyayula, S 2023, *Beginning Spring Boot 3*, Apress.	Ass1 Weekly apps due

Vacation Week - 12 Aug 2024

Module/Topic	Chapter	Events and Submissions/Topic
No classes		

Week 6 - 19 Aug 2024

Module/Topic	Chapter	Events and Submissions/Topic
Reactive Architectures	Chapter 11 of Reddy, K & Upadhyayula, S 2023, *Beginning Spring Boot 3*, Apress.	Ass1 Weekly apps due

Week 7 - 26 Aug 2024

Module/Topic	Chapter	Events and Submissions/Topic
Microservices	Chapter 6 of Macero García, M & Telang, T 2023, *Learn Microservices with Spring Boot 3*, Apress.	Ass 2 Project: weekly Git contribution due

Week 8 - 02 Sep 2024

Module/Topic	Chapter	Events and Submissions/Topic
Configuration Management	Chapter 5 of Heckler, M 2021, *Spring Boot*. O'Reilly.	Ass 2 Project: weekly Git contribution due

Week 9 - 09 Sep 2024

Module/Topic	Chapter	Events and Submissions/Topic
Aspect-Oriented Programming	Chapter 6 of Spilcă, L 2021, *Spring start here*, Manning.	Ass 2 Project: weekly Git contribution due

Week 10 - 16 Sep 2024		
Module/Topic	**Chapter**	**Events and Submissions/Topic**
No lecture		Ass 2 Project due

Week 11 - 23 Sep 2024		
Module/Topic	**Chapter**	**Events and Submissions/Topic**
No lecture		Ass 3 Selection criteria due **Wk10 Ass2 Project (50%)** Due: Week 11 Monday (23 Sept 2024) 1:00 am AEST **Wk11&12 Job Interview (20%)** Due: Week 11 Friday (27 Sept 2024) 11:45 pm AEST

Week 12 - 30 Sep 2024		
Module/Topic	**Chapter**	**Events and Submissions/Topic**
Job interviews		Ass 3 You must attend a class for your interview

Term Specific Information

Unit Coordinator: Jamie Shield, j.shield@cqu.edu.au, Cairns
You must attend tutorials in Weeks 7, 8, 9 and 10 or otherwise in your own time record team meetings to be eligible for full marks for Ass 2 Project.
You must attend an interview in a Week 12 class to be eligible for full marks for Ass 3 Job interview.

Assessment Tasks

1 Wk3 Ass1 Weekly apps (30%)

Assessment Type
Practical and Written Assessment

Task Description
There are four sets of weekly apps designed to prepare you for the project. Each week you will implement small enterprise apps to demonstrate features of libraries such as persistence, transaction, logging, testing, security, REST and MVC. For most apps, you will be provided with skeleton code and/or tests.

Assessment Due Date

Due weeks 3,4,5 and 6.

Return Date to Students

For most exercises, feedback will be returned immediately. Otherwise, feedback will be returned by Week 7.

Weighting
30%

Assessment Criteria
The assessment consists of enterprise exercises that you will implement apps for. Each exercise will be marked according to the correctness of the answer, for example, the quality of the database artefacts produced for a persistence exercise. There are four sets of weekly exercises; each worth 7.5%.

Referencing Style

- Harvard (author-date)

Submission
Online

Submission Instructions
You must submit weekly via the Moodle unit site.

Learning Outcomes Assessed

- Use contemporary enterprise software development tools and techniques to design and develop appropriate solutions for business operations
- Implement and build multi-tiered enterprise software systems in a distributed service-oriented architecture

2 Wk10 Ass2 Project (50%)

Assessment Type
Practical and Written Assessment

Task Description
You will work as part of a small team to analyse requirements, design, implement, build, test, and document a complete enterprise application.
Groupwork
You must work in groups of 4 to 6 people for this assignment. It is likely that your group will include people from other campuses. All group members must be identified in the groupwork artefacts. Your team must choose a technical leader and a, different, group leader who will act as the project manager. Evidence must be provided that all group members contributed adequately to the final submissions. You must attend tutorials in Weeks 7, 8, 9 and 10 or otherwise in your own time record team meetings to be eligible for full marks for Ass 2 Project. All group members must submit via the unit website. The moderation process might allocate group members different marks. Sharing of artefacts, for example, code, between groups is not permitted.
Repository
Create a private code repository and invite your tutor and the unit coordinator. One code repository is to be used by all group members. Each member of the group must make at least four weekly contributions to a private Git repository prior to the due date.

Assessment Due Date
Week 11 Monday (23 Sept 2024) 1:00 am AEST
The project is due in Week 10 - before Week 11 starts.

Return Date to Students

The marks and feedback will be returned on the day of certification of grades.

Weighting
50%

Assessment Criteria
The assignment criteria includes documentation quality (design, code and test), software implementation correctness and process and groupwork artefacts. Process, groupwork and code compilation and execution are aspects of each criteria. For example, to be eligible for full marks for each criteria, you must have committed quality contribution to your team's private Git over 4 weeks, you must have evidence of your contribution to the team and your code must run and execute. You must attend tutorials in Weeks 7, 8, 9 and 10 or otherwise in your own time record team meetings to be eligible for full marks for Ass 2 Project.

Referencing Style

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

Submission
Online

Submission Instructions
Submit artefacts to your private Git repository weekly from at least Week 7. Every member of the group should also submit to Moodle by the due date.

Learning Outcomes Assessed

- Use contemporary enterprise software development tools and techniques to design and develop appropriate solutions for business operations
- Implement and build multi-tiered enterprise software systems in a distributed service-oriented architecture
- Work collaboratively in a team contributing to productive complex software development.

3 Wk11&12 Job Interview (20%)

Assessment Type
Reflective Practice Assignment

Task Description
In this assignment you will apply for a job as an applications developer. You will:

- Develop answers to selection criteria
- Attend an interview during a Week 12 class (lecture or tutorial) during which you will answer interview questions. The interview will be recorded for moderation purposes.

The interview will ask questions for topics such as the following:

- Groupwork, laws & ethics
- Technical, e.g. identify the code in your project that is used to implement a feature, e.g. persistence, and explain how that code works and the organisational benefits
- Compare how alternative enterprise software architectures can used to balance the needs of different stakeholders in an organisation.

Assessment Due Date
Week 11 Friday (27 Sept 2024) 11:45 pm AEST
Your selection criteria are due in Week 11. The interview is due in-class in your Week 12 lecture or tutorial.

Return Date to Students

Feedback will be returned within a fortnight of the due date.

Weighting
20%

Assessment Criteria
The assignment criteria includes quality of selection criteria answers and answers to interview questions that include topics such as groupwork, laws, ethics, technical (design and coding) questions, and to compare how alternative enterprise software architectures can be used to balance the needs of different organisational stakeholders.

Referencing Style

- Harvard (author-date)

Submission
Online

Submission Instructions
Submit your selection criteria to the unit website in Week 11. Attend your interview in Week 12.

Learning Outcomes Assessed

- Investigate and compare major enterprise software architectures and analyse the effectiveness of enterprise software systems for business operations involving diverse groups of stakeholders with varying needs
- Use contemporary enterprise software development tools and techniques to design and develop appropriate solutions for business operations

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