



# COIT20259 Enterprise Computing Architecture

## Term 1 - 2024

Profile information current as at 19/05/2024 03:40 am

All details in this unit profile for COIT20259 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 components, architectures and industrial standards involved in the design and implementation of enterprise software applications. The focus will be on applications employing 3 tiers including a presentation tier, an application tier and a data persistence tier. You will work in a small team for the design and development of a 3-tier enterprise application project. In terms of technology, both traditional desktop applications and web-based applications will be covered and different technology platforms will be compared and contrasted. Emerging technologies and current research issues will be discussed.

### 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: COIT20256 Data Structures and Algorithms, COIT20247 Database Design and Development Co-requisites: COIT20257 Distributed Systems: Principles and Development, COIT20258 Software Engineering

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 - 2024

- 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. **Written Assessment**

Weighting: 20%

#### 2. **Practical and Written Assessment**

Weighting: 50%

#### 3. **Written Assessment**

Weighting: 30%

### 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 self reflection and teaching team feedback

##### Feedback

Upgrade Jakarta EE development and runtime environments

##### Recommendation

When JDK 21 LTS is released in Sep 2023, GlassFish can be updated to version 7 to support Jakarta EE 10

#### Feedback from Unit Coordinator self reflection and teaching team feedback

##### Feedback

Not enough depth in data exchange between systems so difficult for students to apply

##### Recommendation

Strengthen industry adopted data exchange standards in XML and JSON by introducing more on JAXP, JAXB, JSON-P, JSON-B and JAX-RS.

## Unit Learning Outcomes

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

1. Compare and contrast the major enterprise software architectures
2. Analyse and evaluate the design options available for a given scenario depicting a complex enterprise problem
3. Design and implement complex 3-tier applications
4. Work collaboratively and communicate effectively as part of a productive team
5. Assess the potential impact of emerging enterprise computing technologies to various stakeholders
6. Critically evaluate key research areas in enterprise computing.

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)
- Software Design (SWDN)
- Programming/Software Development (PROG)
- Data modelling and design (DTAN)
- Database design (DBDS)
- User experience design (HCEV)
- Testing (TEST)
- 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	5	6
1 - Written Assessment - 20%	•				•	•
2 - Practical and Written Assessment - 50%		•	•	•		
3 - Written Assessment - 30%	•	•			•	•

### 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 - Written Assessment - 20%	○	○		○				
2 - Practical and Written Assessment - 50%	○	○	○		○	○	○	
3 - Written Assessment - 30%	○	○		○				

## Textbooks and Resources

### Textbooks

COIT20259

#### Supplementary

##### Beginning Java EE 7

(2013)

Authors: Antonio Goncalves

Apress

New York , NY , USA

ISBN: 978-1-4302-4626-8

Binding: Other

[View textbooks at the CQUniversity Bookshop](#)

### IT Resources

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

- CQUniversity Student Email
- Internet
- Unit Website (Moodle)
- MySQL Server, MySQL Workbench, and MySQL Connector/J 8.0.29 or a higher version
- GlassFish Application Server 7.0.9
- JDK 21
- NetBeans IDE 20 or a higher version

## Referencing Style

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

For further information, see the Assessment Tasks.

## Teaching Contacts

**Wei Li** Unit Coordinator

[w.li@cqu.edu.au](mailto:w.li@cqu.edu.au)

## Schedule

### Week 1 - 04 Mar 2024

Module/Topic	Chapter	Events and Submissions/Topic
Enterprise Computing & Jakarta EE	Chapter 1 & 4	

### Week 2 - 11 Mar 2024

Module/Topic	Chapter	Events and Submissions/Topic
Object-Relational Mapping	Chapter 5	

### Week 3 - 18 Mar 2024

Module/Topic	Chapter	Events and Submissions/Topic
Managing Persistent Objects	Chapter 5 & 6	

### Week 4 - 25 Mar 2024

Module/Topic	Chapter	Events and Submissions/Topic
Callbacks and Listeners	Chapter 6	

**Week 5 - 01 Apr 2024**

Module/Topic	Chapter	Events and Submissions/Topic
Enterprise Beans	Chapter 7	<b>Assignment 1</b> Due: Week 5 Friday (5 Apr 2024) 11:59 pm AEST

**Vacation Week - 08 Apr 2024**

Module/Topic	Chapter	Events and Submissions/Topic
Vacation		

**Week 6 - 15 Apr 2024**

Module/Topic	Chapter	Events and Submissions/Topic
Session Beans	Chapter 7 & 8	

**Week 7 - 22 Apr 2024**

Module/Topic	Chapter	Events and Submissions/Topic
Callbacks, Timer Service and Authorization	Chapter 8	

**Week 8 - 29 Apr 2024**

Module/Topic	Chapter	Events and Submissions/Topic
Jakarta Faces	Chapter 10	

**Week 9 - 06 May 2024**

Module/Topic	Chapter	Events and Submissions/Topic
Pages and Components	Chapter 10	

**Week 10 - 13 May 2024**

Module/Topic	Chapter	Events and Submissions/Topic
Processing, Navigation and Web Security	Chapter 11	

**Week 11 - 20 May 2024**

Module/Topic	Chapter	Events and Submissions/Topic
Restful Web Service	Chapter 15	<b>Assignment 2</b> Due: Week 11 Friday (24 May 2024) 11:59 pm AEST

**Week 12 - 27 May 2024**

Module/Topic	Chapter	Events and Submissions/Topic
Microservices	Unit developed materials	

**Review/Exam Week - 03 Jun 2024**

Module/Topic	Chapter	Events and Submissions/Topic
Assignment 3 Submission		<b>Assignment 3</b> Due: Review/Exam Week Friday (7 June 2024) 11:59 pm AEST

**Exam Week - 10 Jun 2024**

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

This is an advanced unit in MIT Course, covering theory and practice of enterprise computing architecture. Students' commitment is very important for your success of this unit. Please attend each lecture and tutorial to build your knowledge and skills for enterprise software development.

The unit coordinator contact information for this term:

DR Wei Li

School of Engineering & Technology

Central Queensland University

Rockhampton QLD 4702, Australia

Phone: + 61 7 4930 9686

Email: w.li@cqu.edu.au

## Assessment Tasks

### 1 Assignment 1

#### Assessment Type

Written Assessment

#### Task Description

Your task for this assignment is to write a research report to critically review major enterprise computing architecture: Jakarta EE, Spring Framework, and .NET. The purpose of this assignment is to assess your review competence on the basis of critiquing ability, clarification of technical issues and formal academic report writing.

The detailed assignment specification and marking criteria can be found under the Assessment block of the unit website.

#### Assessment Due Date

Week 5 Friday (5 Apr 2024) 11:59 pm AEST

Assignment 1 Due

#### Return Date to Students

Week 6 Friday (19 Apr 2024)

Assignment 1 results release two weeks after submission

#### Weighting

20%

#### Assessment Criteria

The students are assessed mainly against formatting, technical contents and citation quality of the report.

The detailed assessment description and marking criteria can be found under the Assessment block of the unit website.

#### Referencing Style

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

#### Submission

Online

#### Submission Instructions

You must submit your assignment via the online submission system on the unit Moodle site.

#### Learning Outcomes Assessed

- Compare and contrast the major enterprise software architectures
- Assess the potential impact of emerging enterprise computing technologies to various stakeholders

- Critically evaluate key research areas in enterprise computing.

### **Graduate Attributes**

- Knowledge
- Communication
- Research

## **2 Assignment 2**

### **Assessment Type**

Practical and Written Assessment

### **Task Description**

You will be tasked with a team-based software development project. You will be part of a small team to design, implement, test and document a secured three-tier enterprise application system. The purpose of this assignment is to assess your competence in enterprise computing paradigms, including Jakarta Faces (JSF), Enterprise Jakarta Beans (EJB), Jakarta Persistence API (JPA), and Jakarta Web Security programming, and the interoperations between layers of an enterprise application. Your ability to work collaboratively in a small team will also be assessed by this assignment.

The assignment specification and marking criteria can be accessed on the unit Moodle site.

### **Assessment Due Date**

Week 11 Friday (24 May 2024) 11:59 pm AEST

Assignment 2 Due

### **Return Date to Students**

Review/Exam Week Friday (7 June 2024)

Assignment 2 results release two weeks after submission

### **Weighting**

50%

### **Assessment Criteria**

The students are assessed mainly against their documentation (design and test) quality, software implementation correctness and teamwork report.

The detailed assessment description and marking criteria can be found under the Assessment block of the unit website.

### **Referencing Style**

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

### **Submission**

Online

### **Submission Instructions**

You must submit your assignment via the online submission system on the unit Moodle site.

### **Learning Outcomes Assessed**

- Analyse and evaluate the design options available for a given scenario depicting a complex enterprise problem
- Design and implement complex 3-tier applications
- Work collaboratively and communicate effectively as part of a productive team

### **Graduate Attributes**

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



## 3 Assignment 3

### **Assessment Type**

Written Assessment

### **Task Description**

Your task for this assignment is to address some key issues in the area of enterprise computing architecture. The purpose of this assignment is to assess your understanding to the key issues and competence to apply the key principles to enterprise computing.

The detailed assignment specification and marking criteria can be found under the Assessment block of the unit website.

### **Assessment Due Date**

Review/Exam Week Friday (7 June 2024) 11:59 pm AEST

Assignment 3 Due

### **Return Date to Students**

The marked assignment will be returned on the day of Certification of Grades

### **Weighting**

30%

### **Assessment Criteria**

The students are assessed mainly against their understanding to the given key issues and competence to apply the key principles.

The detailed assessment description and marking criteria can be found under the Assessment block of the unit website.

### **Referencing Style**

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

### **Submission**

Online

### **Submission Instructions**

You must submit your assignment via the online submission system on the unit Moodle site.

### **Learning Outcomes Assessed**

- Compare and contrast the major enterprise software architectures
- Analyse and evaluate the design options available for a given scenario depicting a complex enterprise problem
- Assess the potential impact of emerging enterprise computing technologies to various stakeholders
- Critically evaluate key research areas in enterprise computing.

### **Graduate Attributes**

- Knowledge
- Communication
- Research

## 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