



# COIT29223 *Blockchain Technologies for Sustainable Business Applications*

## Term 2 - 2023

Profile information current as at 24/04/2024 02:09 am

All details in this unit profile for COIT29223 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

Blockchain is a decentralised digital ledger with a growing list of records called blocks, which contain timestamp data, cryptographic information and transaction details. The use of blockchain technologies in cryptocurrency has grown rapidly in recent years. Besides cryptocurrencies in the financial industry, the potential for blockchain technologies in other industries is huge. In terms of achieving sustainability, blockchain has the ability to drive business process efficiency and transparency across industries, which in turn ensures better usage of resources and creates value. This unit will introduce you to the fundamentals and impact of blockchain technologies on businesses, relevant architectures, blockchain applications, and security implications. This unit aims to provide you with a solid theoretical foundation while also providing you with an opportunity to develop your own blockchain application for solving a real-world sustainability problem in relation to one of social, economic, environmental or technological issues.

### 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-requisite: COIT20246

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 - 2023

- Online

### 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: 25%

#### 2. **Presentation**

Weighting: 20%

#### 3. **Group Work**

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 Unit evaluation

**Feedback**

Some students struggled to develop their Blockchain solution.

**Recommendation**

Provide resources on Blockchain development tools and continue to demonstrate Blockchain tools during tutorials.

## Unit Learning Outcomes

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

1. Evaluate key concepts of blockchain technologies
2. Analyse the benefits of blockchain technologies and their applications for promoting sustainability
3. Evaluate the legal, regulatory and ethical concerns in relation to blockchain technologies
4. Critically analyse infrastructure and tools for building blockchain applications
5. Develop a blockchain application that solves a real-world sustainability problem
6. Evaluate future directions and industry outlooks on blockchain technology and its role in sustainability.

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 7](#) (the SFIA code is included):

Sustainability Management (SUMI)

Business Process Improvement (BPRE)

Innovation (INOV)

Information Security (SCTY)

IT Management (ITMG)



## Textbooks and Resources

### Textbooks

**There are no required textbooks.**

### IT Resources

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

- CQUniversity Student Email
- Internet
- Unit Website (Moodle)
- Access to a computer is recommended
- Geth (Go Ethereum)
- Ganache
- Node JS
- Truffle
- Visual Studio Code

## Referencing Style

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

For further information, see the Assessment Tasks.

## Teaching Contacts

**Srimannarayana Grandhi** Unit Coordinator  
[s.grandhi@cqu.edu.au](mailto:s.grandhi@cqu.edu.au)

## Schedule

### Week 1 - 10 Jul 2023

| Module/Topic                          | Chapter                    | Events and Submissions/Topic |
|---------------------------------------|----------------------------|------------------------------|
| Introduction to Blockchain Technology | Materials will be provided |                              |

### Week 2 - 17 Jul 2023

| Module/Topic        | Chapter                    | Events and Submissions/Topic |
|---------------------|----------------------------|------------------------------|
| Types of Blockchain | Materials will be provided |                              |

### Week 3 - 24 Jul 2023

| Module/Topic | Chapter                    | Events and Submissions/Topic |
|--------------|----------------------------|------------------------------|
| Cryptography | Materials will be provided |                              |

### Week 4 - 31 Jul 2023

| Module/Topic       | Chapter                    | Events and Submissions/Topic |
|--------------------|----------------------------|------------------------------|
| Blockchain Network | Materials will be provided |                              |

### Week 5 - 07 Aug 2023

| Module/Topic           | Chapter                    | Events and Submissions/Topic      |
|------------------------|----------------------------|-----------------------------------|
| Blockchain Development | Materials will be provided | Part 1 portfolio: Due this Friday |

### Vacation Week - 14 Aug 2023

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

Term break

#### Week 6 - 21 Aug 2023

| Module/Topic    | Chapter                    | Events and Submissions/Topic |
|-----------------|----------------------------|------------------------------|
| Smart Contracts | Materials will be provided |                              |

#### Week 7 - 28 Aug 2023

| Module/Topic            | Chapter                    | Events and Submissions/Topic  |
|-------------------------|----------------------------|---|
| Blockchain Applications | Materials will be provided | Assessment 2: Due this Friday<br><b>Presentation</b> Due: Week 7 Friday (1 Sept 2023) 10:59 pm AEST |

#### Week 8 - 04 Sep 2023

| Module/Topic                   | Chapter                    | Events and Submissions/Topic |
|--------------------------------|----------------------------|------------------------------|
| Blockchain and Cloud Computing | Materials will be provided |                              |

#### Week 9 - 11 Sep 2023

| Module/Topic                                   | Chapter                    | Events and Submissions/Topic |
|--|----------------------------|------------------------------|
| Blockchain and Other Emerging Technologies - I | Materials will be provided |                              |

#### Week 10 - 18 Sep 2023

| Module/Topic                                    | Chapter                    | Events and Submissions/Topic      |
|---|----------------------------|-----------------------------------|
| Blockchain and Other Emerging Technologies - II | Materials will be provided | Part 2 portfolio: Due this Friday |

#### Week 11 - 25 Sep 2023

| Module/Topic              | Chapter                    | Events and Submissions/Topic  |
|---------------------------|----------------------------|-------------------------------|
| Blockchain Best Practices | Materials will be provided | Assessment 3: Due this Friday |

#### Week 12 - 02 Oct 2023

| Module/Topic | Chapter | Events and Submissions/Topic        |
|--------------|---------|-------------------------------------|
| Revision     |         | Complete the unit evaluation survey |

#### Review/Exam Week - 09 Oct 2023

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

#### Exam Week - 16 Oct 2023

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

## Term Specific Information

Unit Coordinator:  
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## Assessment Tasks

### 1 ePortfolios

**Assessment Type**  
Written Assessment

## Task Description

This unit uses an ePortfolio as a reflection process on your learning. We use the PORTFOLIUM system, which is accessible via the Moodle unit site.

The purpose of this assessment task is for you to develop a portfolio reflecting your understanding of the subject material. As part of this assessment, you are required to maintain an online reflective portfolio for the topics mentioned below. You need to read the relevant material(s) or reading, and complete your portfolio entry following the instructions provided on the Moodle unit website. The due date of ePortfolios are provided on the Moodle unit website.

### **This assessment has 2 submission parts:**

Part 1- Week 5: Due on Friday midnight of Week 5

Part 2- Week 10: Due on Friday midnight of Week 10

### **Please refer to the unit's Moodle site for a detailed description of the task.**

All marked portfolios will contribute equally to the final 25% mark. Standard University assessment guidelines and policies apply i.e. (late penalty, assessment extension, and plagiarism).

You can complete your portfolios before the due dates but feedback will not be released until 2 weeks after the due date of each portfolio. Marks and feedback on your work will be returned to you via Moodle. No comment on your work will be posted on your portfolio for viewing by the general public.

### **Please refer to the unit's Moodle site for a detailed description of the task.**

## Assessment Due Date

As per the schedule presented on the Moodle unit website

## Return Date to Students

Within two weeks from the date of submission

## Weighting

25%

## Assessment Criteria

The marking criteria are based on:

- Knowledge & understanding of the topic as depicted by collection in the view
- Communication skills and information literacy as demonstrated by the discussion
- Technical literacy as demonstrated by the selection of items
- Discussion of appropriateness for inclusion in view
- References/citations included

### **Please refer to the unit's Moodle site for a detailed description of the task.**

## Referencing Style

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

## Submission

Online

## Submission Instructions

via PORTFOLIUM and the Moodle unit website

## Learning Outcomes Assessed

- Evaluate key concepts of blockchain technologies
- Analyse the benefits of blockchain technologies and their applications for promoting sustainability
- Critically analyse infrastructure and tools for building blockchain applications
- Evaluate future directions and industry outlooks on blockchain technology and its role in sustainability.

## Graduate Attributes

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

## 2 Presentation

### Assessment Type

Presentation

### Task Description

This is a group based assessment worth 20% of the total available marks for this unit. The aim of this assessment is to improve your industry based practical research skills as well as team based working and learning, understanding about recent developments in the Blockchain area and the use of Blockchain technologies in the real world. In this assessment task, as future ICT professionals, you are required to research recent developments in the Blockchain area and prepare a presentation as a group of up to 3 members during the class time.

NOTE: Assessment item 2 has slightly different requirements for Distance (FLEX) students. For more detailed information on this assessment, please refer to the Moodle unit website.

Submission: Online - Group submission (up to 3 students in each group).

**As students are given the opportunity to select their group members, separate groups are not created for this assessment task. Hence, all group members are required to submit the same assessment through the Moodle submission link. Please refer to the unit's Moodle site for a detailed description of the task.**

### Assessment Due Date

Week 7 Friday (1 Sept 2023) 10:59 pm AEST

All group members are required to submit the same assignment file(s) through the Moodle submission link.

### Return Date to Students

Week 9 Friday (15 Sept 2023)

Within two weeks from the date of submission

### Weighting

20%

### Assessment Criteria

The assessment criteria includes aspects such as:

- Insightful analysis of blockchain technologies in the context of the chosen industry.
- Audience has a clear understanding of implications of blockchain technology for the chosen industry.
- Insightful choice and application of evaluation with due consideration of the industry's context.
- Your presentation has a strong and engaging introduction, good flow of the body of the presentation, conclusion effectively wraps up the work. Presentation structure includes title slide, conclusion or summary slide and a reference list.
- Meticulous presentation framing, e.g., ideas in point form; not in sentence form; slide numbers; footers; fast and efficient transitions; few words per slide; large font sizes; only relevant animation and images; consistent colour, fonts and layouts; contrast between text and background.
- Stage presence including well prepared, stands up straight, loud clear voice, good eye contact, does not speak too fast or too slow; appropriate use of cue cards: does not read; appropriate use of time.
- Mechanics, e.g., spelling, grammar and referencing.

The complete assessment criteria will be provided on the Moodle unit website.

### Referencing Style

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

### Submission

Online Group

### Submission Instructions

Include the names of your group members when you submit your assessment. All group members are required to submit the same presentation and handout files. All group members will receive the same mark.



## Learning Outcomes Assessed

- Evaluate key concepts of blockchain technologies
- Analyse the benefits of blockchain technologies and their applications for promoting sustainability
- Evaluate the legal, regulatory and ethical concerns in relation to blockchain technologies
- Critically analyse infrastructure and tools for building blockchain applications
- Develop a blockchain application that solves a real-world sustainability problem

## Graduate Attributes

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

## 3 Solution/Application development

### Assessment Type

Group Work

### Task Description

This assessment is worth 55% of the total available marks for this unit. The aim of this assessment item is for you to prepare a report relating to the strategies/approaches required to ensure a smooth implementation of blockchain technology solution for the chosen industry. More information relating to the description of the task and the requirements will be made available on the unit website. If you have any queries regarding this assessment, you should consult your local lecturer/tutor.

Submission: Online - Group submission (max. 3 students in each group).

NOTE: Assessment item 3 has slightly different requirements for Distance (FLEX) students. For more detailed information on this assessment please refer to the Moodle unit website.

**Students who are interested in developing a Blockchain application for the chosen industry, will be given the opportunity. Please refer to the unit's Moodle site for a detailed description of the task.**

**As students are given the opportunity to select their group members, separate groups are not created for this assessment task. Hence, all group members are required to submit the same assessment through the Moodle submission link. Please refer to the unit's Moodle site for a detailed description of the task.**

### Assessment Due Date

Include the names of your group members when you submit your assessment. All group members are required to submit the same presentation and handout files. All group members will receive the same mark.

### Return Date to Students

On certification date

### Weighting

55%

### Assessment Criteria

The marking criteria are based on:

- Knowledge & understanding of the topic as depicted by collection in the view
- Communication skills and information literacy as demonstrated by the discussion
- Technical literacy as demonstrated by the selection of items for discussion
- Discussion of appropriateness for inclusion in view
- References/citations included

**Please refer to the unit's Moodle site for a detailed description of the assessment criteria.**

Your assessment solution will be assessed mainly on your ability to:

- Analyse the challenges faced by the chosen industry
- Benefits and limitations of blockchain technologies in the context of the chosen industry
- Argument for blockchain technology, e.g., convincing, well-structured argument with due consideration of industry environment

- Design and develop a plan to adopt blockchain technology
- Organisation of your document, e.g., well-structured document

### **Referencing Style**

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

### **Submission**

Online Group

### **Submission Instructions**

Include the names of your group members when you submit your assessment. All group members are required to submit the same file(s). All group members will receive the same mark.

### **Learning Outcomes Assessed**

- Evaluate the legal, regulatory and ethical concerns in relation to blockchain technologies
- Develop a blockchain application that solves a real-world sustainability problem
- Evaluate future directions and industry outlooks on blockchain technology and its role in sustainability.

### **Graduate Attributes**

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

## 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