



# COIT20260 Cloud Computing for Smart Applications

## Term 2 - 2018

Profile information current as at 05/05/2024 02:50 am

All details in this unit profile for COIT20260 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

Emerging technologies, such as cloud computing and the Internet of Things (IoT), enable you to rapidly design, develop and deploy smart applications. In this unit you are introduced to the software, devices and techniques supporting these technologies. You will learn the fundamentals of cloud computing, as well as various cloud environments and services, such as Infrastructure as a Service (IaaS), Platform as a Service (PaaS) and Software as a Service (SaaS). You will use a Platform as a Service (PaaS) cloud environment, gaining practical experience designing, developing and deploying smart, cloud-based applications.

### 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 units: COIT20245 Introduction to Programming and COIT20246 ICT Services Management

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 - 2018

- Brisbane
- Distance
- Melbourne
- 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. **Group Work**

Weighting: 30%

#### 3. **Practical and Written Assessment**

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 Students feedback

##### Feedback

Assignment three can be broken down into smaller components to encourage continuous assessment and reduce the risk of failing based on one assessment.

##### Recommendation

The assignment three is equivalent of the final examination hence having 50% weighting is justified for this assessment.

#### Feedback from Students feedback

##### Feedback

Some of the content needs to be updated to include the latest technology developments.

##### Recommendation

The textbooks need to be updated.

## Unit Learning Outcomes

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

1. Evaluate cloud computing concepts and IoT components for smart applications/systems development
2. Analyse the application of cloud computing and IoT technologies in different scenarios
3. Design and develop cloud based smart applications for business solutions
4. Deploy a smart application using cloud computing and IoT technologies.

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:

- System Design (DESN)
- System Integration (SINT)
- Programming/Software Development (PROG)
- Testing (TEST)
- Release and Deployment (RELM)
- Applications Support (ASUP)
- Solution architecture (ARCH)
- IT Infrastructure (ITOP)

## Alignment of Learning Outcomes, Assessment and Graduate Attributes



### Alignment of Assessment Tasks to Learning Outcomes

Assessment Tasks	Learning Outcomes			
	1	2	3	4
1 - Written Assessment - 20%	•	•		
2 - Group Work - 30%	•	•	•	
3 - Project (applied) - 50%			•	•

## Alignment of Graduate Attributes to Learning Outcomes

Graduate Attributes	Learning Outcomes			
	1	2	3	4
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 - Group Work - 30%	○	○	○	○			○	
3 - Project (applied) - 50%	○	○	○					

## Textbooks and Resources

### Textbooks

COIT20260

#### Prescribed

#### Cloud Computing: Concepts, Technology & Architecture

(2013)

Authors: Erl, T., Mahmood, Z., and Puttini R.

Prentice Hall

USA

Binding: Hardcover

#### Additional Textbook Information

The second textbook 'Internet of Things by Miller' is now freely available as an ebook.

### IT Resources

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

- CQUniversity Student Email
- Internet
- Unit Website (Moodle)
- Bluemix CLI
- Cloud Foundry Command line with Diego run time plugin
- Eclipse IDE and IBM Eclipse Tools for Bluemix
- IBM Bluemix Cloud computing environment
- Node.js and NODE-RED

## Referencing Style

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

For further information, see the Assessment Tasks.

## Teaching Contacts

**Biplob Ray** Unit Coordinator

[b.ray@cqu.edu.au](mailto:b.ray@cqu.edu.au)

## Schedule

### Week 1 - 09 Jul 2018

Module/Topic	Chapter	Events and Submissions/Topic
Understanding the cloud computing	Chapter 3 from 'Cloud Computing: Concepts, Technology & Architecture by Erl, T., Mahmood, Z., and Puttini R.'	

### Week 2 - 16 Jul 2018

Module/Topic	Chapter	Events and Submissions/Topic
Fundamental concepts and models	Chapter 4 from 'Cloud Computing: Concepts, Technology & Architecture by Erl, T., Mahmood, Z., and Puttini R.'	

### Week 3 - 23 Jul 2018

Module/Topic	Chapter	Events and Submissions/Topic
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Cloud technologies

Chapter 5 from 'Cloud Computing: Concepts, Technology & Architecture by Erl, T., Mahmood, Z., and Puttini R.'

#### Week 4 - 30 Jul 2018

Module/Topic	Chapter	Events and Submissions/Topic
Cloud infrastructure mechanisms	Chapter 7,8 and 9 from 'Cloud Computing: Concepts, Technology & Architecture by Erl, T., Mahmood, Z., and Puttini R.'	

#### Week 5 - 06 Aug 2018

Module/Topic	Chapter	Events and Submissions/Topic
Cloud security mechanisms	Chapter 6 and 10 from 'Cloud Computing: Concepts, Technology & Architecture by Erl, T., Mahmood, Z., and Puttini R.'	<b>CloudIoT Assignment 1</b> Due: Week 5 Friday (10 Aug 2018) 11:55 pm AEST

#### Vacation Week - 13 Aug 2018

Module/Topic	Chapter	Events and Submissions/Topic
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#### Week 6 - 20 Aug 2018

Module/Topic	Chapter	Events and Submissions/Topic
Cloud architectures	Chapter 11 and 12 from 'Cloud Computing: Concepts, Technology & Architecture by Erl, T., Mahmood, Z., and Puttini R.'	

#### Week 7 - 27 Aug 2018

Module/Topic	Chapter	Events and Submissions/Topic
Cloud delivery model, cost metrics and pricing models	Chapter 14 and 15 from 'Cloud Computing: Concepts, Technology & Architecture by Erl, T., Mahmood, Z., and Puttini R.'	

#### Week 8 - 03 Sep 2018

Module/Topic	Chapter	Events and Submissions/Topic
Introduction to Internet of Things(IoT) and smart applications	Chapter 1 and 4 from 'The Internet of Things: How Smart TVs, Smart Cars, Smart Homes, and Smart Cities Are Changing the World by Miller, Michael'	<b>CloudIoT Assignment 2</b> Due: Week 8 Friday (7 Sept 2018) 11:55 pm AEST

#### Week 9 - 10 Sep 2018

Module/Topic	Chapter	Events and Submissions/Topic
Smart technology: how IoT works	Chapter 2 from 'The Internet of Things: How Smart TVs, Smart Cars, Smart Homes, and Smart Cities Are Changing the World by Miller, Michael'	

#### Week 10 - 17 Sep 2018

Module/Topic	Chapter	Events and Submissions/Topic
Smart homes: tomorrow and today Smart warfare: rise of machines	Chapter 5 and 10 from 'The Internet of Things: How Smart TVs, Smart Cars, Smart Homes, and Smart Cities Are Changing the World by Miller, Michael'	

**Week 11 - 24 Sep 2018**

Module/Topic	Chapter	Events and Submissions/Topic
Smart world: the global Internet of Everything (IoE) Smart problems: big brother is watching you	Chapter 14 and 15 from 'The Internet of Things: How Smart TVs, Smart Cars, Smart Homes, and Smart Cities Are Changing the World by Miller, Michael'	

**Week 12 - 01 Oct 2018**

Module/Topic	Chapter	Events and Submissions/Topic
Smart businesses: better working through technology	Chapter 12 from 'The Internet of Things: How Smart TVs, Smart Cars, Smart Homes, and Smart Cities Are Changing the World by Miller, Michael'	<b>CloudIoT Assignment 3</b> Due: Week 12 Monday (1 Oct 2018) 11:55 pm AEST

**Review/Exam Week - 08 Oct 2018**

Module/Topic	Chapter	Events and Submissions/Topic
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**Exam Week - 15 Oct 2018**

Module/Topic	Chapter	Events and Submissions/Topic
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## Assessment Tasks

### 1 CloudIoT Assignment 1

**Assessment Type**

Written Assessment

**Task Description**

In this assignment, you will write a report that will let you compare and contrast between two Platform as a Service (PaaS) cloud providers and their services. You are also required to create a simple application in each of the cloud services as part of your comparative exercise. The assessment requires you to:

1. identify a PaaS cloud provider and investigate all the services it provides;
2. create a simple application in both of the cloud providers;
3. compare and contrast your chosen cloud provider and services with Bluemix services;
4. prepare a report based on given criteria in the assignment.

Detailed information about this assignment can be accessed from the unit website in Moodle.

**Assessment Due Date**

Week 5 Friday (10 Aug 2018) 11:55 pm AEST

Online via Moodle

**Return Date to Students**

Week 6 Friday (24 Aug 2018)

**Weighting**

20%

**Assessment Criteria**

The students are assessed mainly against their:

1. knowledge about existing cloud providers;
2. ability to identify and evaluate available services of a cloud provider;
3. analytical capability to compare and contrast between services of different service providers.

More detailed marking criteria can be accessed from Moodle.

**Referencing Style**

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

**Submission**

Online

**Submission Instructions**

Assignments must be submitted online in .doc or .docx format.

**Learning Outcomes Assessed**

- Evaluate cloud computing concepts and IoT components for smart applications/systems development.

**Graduate Attributes**

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

## 2 CloudIoT Assignment 2

**Assessment Type**

Group Work

**Task Description**

The assessment requires you to select the topic(s) from a given list and research about the topic(s). You should find scholarly articles (e.g. published journals, books, conference articles) and report current scientific developments relevant to the topic(s). The investigation will be in a team environment which requires you to:

1. choose the topic(s) from the given list based on given instructions in the assignment;
2. research multiple scholarly resources to report the scientific developments relevant to the topic(s);
3. prepare a report according to the given guidelines in the assignment.

Detailed information about this assignment can be accessed from the unit website in Moodle.

**Assessment Due Date**

Week 8 Friday (7 Sept 2018) 11:55 pm AEST

**Return Date to Students**

Week 10 Friday (21 Sept 2018)

**Weighting**

30%

**Assessment Criteria**

The students are assessed mainly against their:

1. research skills to locate and use quality scholarly articles relevant to their topic(s);
2. capability to understand and analyse scientific articles in depth;
3. quality and level of detail in the report;
4. effective teamwork skills.

More detailed marking criteria can be accessed from Moodle.

**Referencing Style**

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

**Submission**

Online Group

**Submission Instructions**

Group submission

**Learning Outcomes Assessed**

- Evaluate cloud computing concepts and IoT components for smart applications/systems development.
- Analyse the application of cloud computing and IoT technologies in different scenarios.

**Graduate Attributes**

- Knowledge
- Communication
- Cognitive, technical and creative skills



- Research
- Ethical and Professional Responsibility
- Leadership

### 3 CloudIoT Assignment 3

#### Assessment Type

Practical and Written Assessment

#### Task Description

In this assignment, you need to analyse a given business case and issues within it, to come up with a smart application that will address the business problem(s). You also need to write a report to show the process you followed to create the smart application. The assessment requires you to:

1. analyse the given case study and identify issues associated with the business;
2. design a smart application based solution to address identified issues;
3. develop and deploy the application in IBM Bluemix;
4. prepare a document to report (as per given instructions in the assignment) your activities using text and multimedia ( for example screenshots, videos).

Detailed information about this assignment can be accessed from the unit website in Moodle.

#### Assessment Due Date

Week 12 Monday (1 Oct 2018) 11:55 pm AEST

Online via Moodle

#### Return Date to Students

Certification of grades

#### Weighting

50%

#### Assessment Criteria

The students are assessed mainly against:

1. depth of the analysis to identify current and upcoming issues;
2. level of appropriateness of the solution and its justification;
3. completeness of the development and deployment of the solution;
4. quality and level of detail in the report.

More detailed marking criteria can be accessed from Moodle.

#### Referencing Style

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

#### Submission

Online

#### Submission Instructions

There is no page limit and word limit for this submission but your submission must include your Bluemix username and password

#### Learning Outcomes Assessed

- Evaluate cloud computing concepts and IoT components for smart applications/systems development.
- Design and develop cloud based smart applications for business solutions.
- Deploy a smart application using cloud computing and IoT technologies.

#### Graduate Attributes

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

## 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