



# COIS13034 *Cloud Based Smart Applications*

## Management

### Term 1 - 2019

Profile information current as at 29/04/2024 07:58 pm

All details in this unit profile for COIS13034 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 devices, technologies, and techniques of emerging technologies such as cloud computing and Internet of Things (IoT), that enable you to deploy and manage smart applications. The fundamentals of cloud computing will be presented including cloud environment and services such as Infrastructure as a Service (IaaS), Platform as a Service (PaaS) and Software as a Service (SaaS). A cloud environment will be used to deploy and manage various cloud applications. This is an elective unit covering emerging technologies.

### 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

COIT11222 Programming Fundamentals and COIT11238 Networked Infrastructure Foundations

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 - 2019

- Brisbane
- Melbourne
- Online
- 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. **Written Assessment**

Weighting: 15%

#### 2. **Group Work**

Weighting: 25%

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

Weighting: 60%

### 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's and teaching team's feedback.

##### Feedback

Some of the textbook content is becoming out of date.

##### Recommendation

Update to a new edition of the textbook if available, or identify and select an alternative textbook.

#### Feedback from Students feedback.

##### Feedback

Some tutorial videos in Moodle need an update.

##### Recommendation

All tutorial videos of the unit will be assessed for an update if required.

## Unit Learning Outcomes

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

1. Describe cloud computing concepts and IoT components for smart applications/systems management
2. Demonstrate the use of cloud computing and IoT technologies in different scenarios
3. Apply a systematic approach to evaluate a real world business problem
4. Prepare and Demonstrate a design for a cloud based smart application
5. Apply techniques to deploy and manage cloud based smart applications

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:

IT management (ITMG)

Systems integration (SINT)

Configuration management (CFMG)

Program ming/Software Development (PROG)

Analytics (INAN)

Release and Deployment (RELM)

Emerging technology monitoring (EMRG)

## Alignment of Learning Outcomes, Assessment and Graduate Attributes

 N/A Level	 Introductory Level	 Intermediate Level	 Graduate Level	 Professional Level	 Advanced Level
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### Alignment of Assessment Tasks to Learning Outcomes

Assessment Tasks	Learning Outcomes				
	1	2	3	4	5
1 - Written Assessment - 15%	•	•			

Assessment Tasks	Learning Outcomes				
	1	2	3	4	5
2 - Group Work - 25%		•	•	•	
3 - Practical and Written Assessment - 60%	•		•	•	•

## 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					

## Alignment of Assessment Tasks to Graduate Attributes

Assessment Tasks	Graduate Attributes									
	1	2	3	4	5	6	7	8	9	10
1 - Written Assessment - 15%	•			•		•				
2 - Group Work - 25%	•	•	•	•	•	•		•		
3 - Practical and Written Assessment - 60%		•	•	•		•				

## Textbooks and Resources

### Textbooks

COIS13034

#### Prescribed

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

(2013)

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

Prentice Hall

USA

Binding: Hardcover

COIS13034

#### Prescribed

##### **The Internet of Things: How Smart TVs, Smart Cars, Smart Homes, and Smart Cities Are Changing the World**

(2015)

Authors: Miller, Michael

Que Publishing PTG

USA

Binding: Hardcover

#### Additional Textbook Information

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

However Cloud Computing can still be purchased from the CQUni Bookshop here: <http://bookshop.cqu.edu.au> (search on the Unit code)

### IT Resources

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

- CQUniversity Student Email
- Internet
- Unit Website (Moodle)
- 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 - 11 Mar 2019**

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

**Week 2 - 18 Mar 2019**

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 - 25 Mar 2019**

Module/Topic	Chapter	Events and Submissions/Topic
Cloud technologies	Chapter 5 from 'Cloud Computing: Concepts, Technology & Architecture by Erl, T., Mahmood, Z., and Puttini R.'	

**Week 4 - 01 Apr 2019**

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 - 08 Apr 2019**

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 (12 Apr 2019) 11:59 pm AEST

**Vacation Week - 15 Apr 2019**

Module/Topic	Chapter	Events and Submissions/Topic
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**Week 6 - 22 Apr 2019**

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 - 29 Apr 2019**

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 - 06 May 2019**

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 (10 May 2019) 11:59 pm AEST

**Week 9 - 13 May 2019**

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'	Presentations

**Week 10 - 20 May 2019**

Module/Topic	Chapter	Events and Submissions/Topic
Smart homes: tomorrowland 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'	Presentations

**Week 11 - 27 May 2019**

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'	Presentations

**Week 12 - 03 Jun 2019**

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 Friday (7 June 2019) 11:59 pm AEST

**Review/Exam Week - 10 Jun 2019**

Module/Topic	Chapter	Events and Submissions/Topic
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**Exam Week - 17 Jun 2019**

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

Welcome to Term 1 2019!

During the term, if you are enrolled in a campus class, please contact the respective conducting lead lecturer on that campus with your questions. Their Unit Contact details are found on the unit page on Moodle ("Information" box, top left column). Distance and online students should contact me if you have any questions which are not suitable to be asked through the unit forums.

There is much reading to cover during the term, so you are encouraged to get your recommended textbook early, and not miss any classes and assessments. I look forward to your active participation in class and through the forums.

Have an enjoyable term!

Dr. Biplob Ray (b.ray@cqu.edu.au) Unit Coordinator - T1, 2019 COIS13034 Cloud Based Smart Application Management

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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. You may create a trial account to try their services;
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 (12 Apr 2019) 11:59 pm AEST

Online via Moodle

### Return Date to Students

Week 6 Friday (26 Apr 2019)

Online via Moodle

### Weighting

15%

### 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

- Describe cloud computing concepts and IoT components for smart applications/systems management
- Demonstrate the use of cloud computing and IoT technologies in different scenarios

### Graduate Attributes

- Communication
- Information Literacy
- Information Technology Competence

## 2 CloudIoT Assignment 2

### Assessment Type

Group Work

### Task Description

The assessment requires you to investigate topics related to our weekly unit content and answer a series of questions related to the topic(s). You will also need to write a case study relevant to the topic(s) which will demonstrate the impact of the topic in the industry. The investigation will be in a team environment which requires you to:

1. choose lecture topic(s) based on given instructions in the assignment;
2. research multiple resources (e.g. websites, articles, books) to answer a series of connected questions;
3. prepare a report to answer the questions according to the given guideline in the assignment;
4. write a case study which addresses assignment requirements.

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

### Assessment Due Date

Week 8 Friday (10 May 2019) 11:59 pm AEST

Online via Moodle



**Return Date to Students**

Week 10 Friday (24 May 2019)

Online via Moodle

**Weighting**

25%

**Assessment Criteria**

The students are assessed mainly against their:

1. investigation skill to gather authentic resources which support their answer in the report;
2. effective teamwork capability;
3. level of appropriateness of the answer and its justification;
4. relevance of the case study to the topic and current industry trends.

More detailed marking criteria can be accessed from Moodle.

**Referencing Style**

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

**Submission**

Online Group

**Submission Instructions**

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

**Learning Outcomes Assessed**

- Demonstrate the use of cloud computing and IoT technologies in different scenarios
- Apply a systematic approach to evaluate a real world business problem
- Prepare and Demonstrate a design for a cloud based smart application

**Graduate Attributes**

- Communication
- Problem Solving
- Critical Thinking
- Information Literacy
- Team Work
- Information Technology Competence
- Ethical practice

## 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 Friday (7 June 2019) 11:59 pm AEST

Online via Moodle

**Return Date to Students**

Certification of grades

**Weighting**

60%

**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**

Submit as per instructions on Moodle course website.

### **Learning Outcomes Assessed**

- Describe cloud computing concepts and IoT components for smart applications/systems management
- Apply a systematic approach to evaluate a real world business problem
- Prepare and Demonstrate a design for a cloud based smart application
- Apply techniques to deploy and manage cloud based smart applications

### **Graduate Attributes**

- Problem Solving
- Critical Thinking
- Information Literacy
- Information Technology Competence

## 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