



COIT20260 *Cloud Computing for Smart Applications*

Term 1 - 2017

Profile information current as at 21/04/2024 01:04 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

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 design, develop and deploy 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 design, develop and deploy various cloud applications. This is an elective unit covering emerging technologies.

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

Prerequisite 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 1 - 2017

- 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

The final assignment requirements need more detail clarification.

Recommendation

Assignment requirements should include more detail to assist students further.

Feedback from Students feedback

Feedback

The lectures could be improved further by introducing more real life case studies.

Recommendation

In our next offerings, lectures would be aligned further with real life case studies.

Feedback from Students feedback

Feedback

Final assignment should be group assignment.

Recommendation

In our next offering, we will introduce paired programming for the last assessment.

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)
- Radio frequency engineering (RFEN)
- Program ming/Software Development (PROG)
- Testing (TEST)
- Release and Deployment (RELM)
- Applications Support (ASUP).
- Systems integration (SINT)
- 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 - Practical and Written Assessment - 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 - Practical and Written Assessment - 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

COIT20260

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

[View textbooks at the CQUniversity Bookshop](#)

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

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

Schedule

Week 1 - 06 Mar 2017

| 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 - 13 Mar 2017

| 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 - 20 Mar 2017

| 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 - 27 Mar 2017

| 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 - 03 Apr 2017

| 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.' | Written assessment Due: Week 5 Friday (7 Apr 2017) 11:00 pm AEST |

Vacation Week - 10 Apr 2017

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

Week 6 - 17 Apr 2017

| 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 - 24 Apr 2017

| 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 - 01 May 2017

| 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' | |

Week 9 - 08 May 2017

| 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' | Group activity Due: Week 9 Friday (12 May 2017) 11:00 pm AEST |

Week 10 - 15 May 2017

| 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 - 22 May 2017

| 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 - 29 May 2017

| 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' | Practical and written assessment Due: Week 12 Friday (2 June 2017) 11:00 pm AEST |

Review/Exam Week - 05 Jun 2017

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

Exam Week - 12 Jun 2017

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

Term Specific Information

Welcome to Term 1, 2017!

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

There is a lot of material to cover during the term, so you are encouraged to get the recommended textbooks early and attend all classes. 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) Course Coordinator - T1, 2017 COIT20260 - Cloud Computing for Smart Applications
Ph: +61 7 4037 4734 | X 54734

Assessment Tasks

1 Written assessment

Assessment Type

Written Assessment

Task Description

In this assignment you will write a report that will let you compare and contrast between cloud providers and cloud services. You will also use recent literature in cloud computing to analyse their level of security for smart applications based on assignment criteria.

The assessment requires you to

1. Identify a cloud provider and investigate all the services it provides. You may create a trial account to try their services.

2. Compare and contract your chosen cloud provider and services with Bluemix services
3. Prepare a report based on given criteria in the assignment.

Details about this assessment are available on Moodle.

Assessment Due Date

Week 5 Friday (7 Apr 2017) 11:00 pm AEST
Online via Moodle

Return Date to Students

Week 7 Friday (28 Apr 2017)
Online via Moodle

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.

Referencing Style

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

Submission

Online

Submission Instructions

Between 1500 to 2000 words excluding references

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 Group activity

Assessment Type

Group Work

Task Description

A group of students will be given a business case/issue to come up with a smart application that will address the business problem.

The assessment requires you to

1. analyse the given business problem, then discuss with in the group for possible smart application that can address the issue/s.
2. detail the proposed solution and justify your choice to address the problem
3. write implementation plan in Bluemix and to show design of your application using screenshots.

Details about this assessment are available on Moodle.

Assessment Due Date

Week 9 Friday (12 May 2017) 11:00 pm AEST
Online via Moodle

Return Date to Students

Week 11 Friday (26 May 2017)
Online via Moodle

Weighting

30%

Assessment Criteria

The students are assessed mainly against their:

1. understanding and analytical capability of the given case
2. level of appropriateness of the solution and its justification
3. correctness level of implementation plan
4. quality of their design that best appropriateness with their submitted plan.

Referencing Style

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

Submission

Online

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 Practical and written assessment

Assessment Type

Practical and Written Assessment

Task Description

You need to implement your proposed solution you submitted in assessment two for testing and write a report with screenshots that explain the process the application uses to address the business issue/s given in assignment two. The assessment requires you to

1. implement the design concept you proposed in assessment two using Bluemix.
2. report the implementation and justify
3. give screenshots and justification of your implementation.
4. provide Bluemix login details for testing of your implementation.

Details about this assessment are available on Moodle.

Assessment Due Date

Week 12 Friday (2 June 2017) 11:00 pm AEST

Online via Moodle

Return Date to Students

Exam Week Friday (16 June 2017)

Online via Moodle

Weighting

50%

Assessment Criteria

The students are assessed mainly against

1. completeness of the deployment to address the business issue
2. degree of similarity of their proposed plan and design in assignment two.
3. quality of your report and strength of justification

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 Blumix 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