COIT20260 *Cloud Computing for Smart Applications*
Term 1 - 2020

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.

Corrections

Unit Profile Correction added on 20-02-20

Please add the book below as a prescribed textbook in the unit profile. Thank you.

Cloud Computing: Concepts, Technology & Architecture (2013)

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

Prentice Hall

USA

ISBN:

Binding: Hardcover

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 1 - 2020
- 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 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. **Project (applied)**
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 via unit evaluation in Moodle

Feedback

Parts of some tutorial videos are out of date due to recent updates in the IBM Cloud service.

Recommendation

Due to the evolving nature of IBM Cloud, instructions change rapidly (sometimes weekly), resulting in recorded tutorial videos becoming out of date during the term. Rather than re-record new tutorial videos multiple times a term, it is recommended that students are given the ability to handle the changes themselves. This can include highlighting the differences between the current version and that covered in the tutorial video, as well as providing students resources to identify changes between versions and find the necessary fixes.

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.
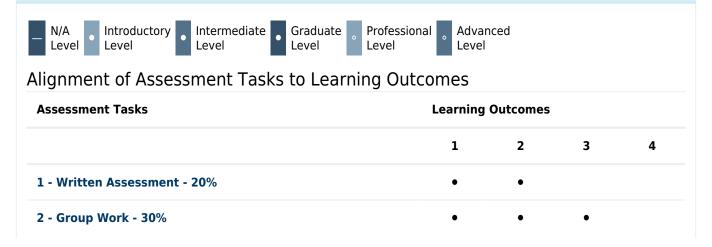ACS members can use the tool MySFIA to build a skills profile at

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

— 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
1 - Written Assessment - 20%	●	●		
2 - Group Work - 30%	●	●	●	

Assessment Tasks	Learning Outcomes			
	1	2	3	4
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

Foundations of Modern Networking: SDN, NFV, QoE, IoT, and Cloud
(2015)
Authors: Stallings, W
Pearson USA
Upper Saddle River , NJ , USA
ISBN: 9780134175393
Binding: Paperback
COIT20260

Supplementary

Architecting the Cloud: Design Decisions for Cloud Computing Service Models (SaaS, PaaS, and IaaS)
1st Edition (2014)
Authors: Kavis, MJ
Wiley US
Hoboken , NJ , USA
ISBN: 9781118617618
Binding: Paperback
COIT20260

Supplementary

CompTIA Cloud+ CV0-001 In Depth
Edition: 1st edn (2014)
Authors: Gilster, R
Cengage Learning
Florence , KY , USA
ISBN: 9781305097353
Binding: Paperback
COIT20260

Supplementary

The Internet of Things
1st Edition (2015)
Authors: Miller, M
Pearson
Upper Saddle River , NJ , USA
Binding: eBook

Additional Textbook Information
Paper versions of all of the above are available at the CQUni Bookshop here: http://bookshop.cqu.edu.au (search on the Unit code). The Internet of Things by Michael Miller is Out of Print and a link to the eBook will be put on the Moodle site.

View textbooks at the CQUniversity Bookshop

IT Resources

You will need access to the following IT resources:

- CQUniversity Student Email
- Internet
- Unit Website (Moodle)
- Node.js and NODE-RED
- IBM Cloud CLI
- Cloud Foundry Command Line Interface(CLI)
- Eclipse Oxygen with IBM Cloud Tool

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 - 09 Mar 2020

Module/Topic	Chapter	Events and Submissions/Topic
Cloud computing and modern networking	**Chapter 1 and 2 from 'Foundations of Modern Networking: SDN, NFV, QoE, IoT, and Cloud 1st Edition, by William Stallings'**	

Week 2 - 16 Mar 2020

Module/Topic	Chapter	Events and Submissions/Topic
Smart applications and modern networking	**Chapter 1 and 2 from 'Foundations of Modern Networking: SDN, NFV, QoE, IoT, and Cloud 1st Edition, by William Stallings'**	

Week 3 - 23 Mar 2020

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

Week 4 - 30 Mar 2020

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 Apr 2020

Module/Topic	Chapter	Events and Submissions/Topic
Cloud computing and virtualization	Chapter 7,8 and 9 from 'Foundations of Modern Networking: SDN, NFV, QoE, IoT, and Cloud 1st Edition, by William Stallings'	**CloudIoT Assignment 1** Due: Week 5 Friday (10 Apr 2020) 11:55 am AEST

Vacation Week - 13 Apr 2020

Module/Topic	Chapter	Events and Submissions/Topic

Week 6 - 20 Apr 2020

Module/Topic	Chapter	Events and Submissions/Topic

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.'	

Week 7 - 27 Apr 2020

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 8 - 04 May 2020

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 9 - 11 May 2020

Module/Topic	Chapter	Events and Submissions/Topic
Understanding the Internet of Things(IoT) and smart application	**Chapter 14 from 'Foundations of Modern Networking: SDN, NFV, QoE, IoT, and Cloud 1st Edition, by William Stallings'**	**CloudIoT Assignment 2** Due: Week 9 Friday (15 May 2020) 11:55 am AEST

Week 10 - 18 May 2020

Module/Topic	Chapter	Events and Submissions/Topic
The IoT: architecture and implementation for cloud	**Chapter 15 from 'Foundations of Modern Networking: SDN, NFV, QoE, IoT, and Cloud 1st Edition, by William Stallings'**	

Week 11 - 25 May 2020

Module/Topic	Chapter	Events and Submissions/Topic
A convergence of Cloud, IoT, and Bigdata	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 12 - 01 Jun 2020

Module/Topic	Chapter	Events and Submissions/Topic
Smart problems and Smart businesses	Chapter 12, 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	**CloudIoT Assignment 3** Due: Week 12 Friday (5 June 2020) 11:55 am AEST

Review/Exam Week - 08 Jun 2020

Module/Topic	Chapter	Events and Submissions/Topic

Exam Week - 15 Jun 2020

Module/Topic	Chapter	Events and Submissions/Topic

Welcome to Term 1 2020!

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, 2020 COIT20260 Cloud Computing for Smart Applications

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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 IBM Cloud PaaS 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 Apr 2020) 11:55 am AEST
Online via Moodle

Return Date to Students
Week 6 Friday (24 Apr 2020)
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.
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
- Analyse the application of cloud computing and IoT technologies in different scenarios

Graduate Attributes

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

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 9 Friday (15 May 2020) 11:55 am AEST
Online via Moodle

Return Date to Students
Week 11 Friday (29 May 2020)
Online via Moodle

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
- Design and develop cloud based smart applications for business solutions

Graduate Attributes

- Knowledge
- Communication
- Cognitive, technical and creative skills
- Research
- Leadership

3 CloudIoT Assignment 3

Assessment Type
Project (applied)

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 (5 June 2020) 11:55 am 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
Online via Moodle

Learning Outcomes Assessed

- 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

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