COIT20260 *Cloud Computing and Things for Smarter Applications*
Term 2 - 2024

Profile information current as at 08/07/2025 06:03 pm

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 in designing, developing and deploying smarter 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 - 2024

- 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: 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 Student evaluations

Feedback

More practical-based assignments would be highly advantageous.

Recommendation

Introduce additional cloud/IoT practical activities into assessments.

Feedback from Student evaluations

Feedback

Improved student access to the cloud environments such as Microsoft Azure or IBM that are used in the unit

Recommendation

Identify the cloud environment with the best student access so it can be integrated into the unit activities.

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.

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)

- Systems design (DESN)
- Systems integration and build (SINT)
- Programming/software development (PROG)
- Testing (TEST)
- Release and deployment (RELM)
- Application 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%	●	●		

Assessment Tasks	Learning Outcomes			
	1	2	3	4
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

The Cloud Computing Book The Future of Computing Explained
Edition: First (2023)
Authors: Douglas Comer
Chapman & Hall
ISBN: 9780367706845

IT Resources

You will need access to the following IT resources:

- CQUniversity Student Email
- Internet
- Unit Website (Moodle)
- AWS Academy Student Accounts

Referencing Style

All submissions for this unit must use the referencing style: Harvard (author-date)
For further information, see the Assessment Tasks.

Teaching Contacts

Anwaar Ul-Haq Unit Coordinator
a.anwaarulhaq@cqu.edu.au

Schedule

Week 1 - 08 Jul 2024

Module/Topic	Chapter	Events and Submissions/Topic
Fundamentals of Cloud Computing and IoT	Chapters 1 and 2	Setting up AWS Cloud Foundations Login

Week 2 - 15 Jul 2024

Module/Topic	Chapter	Events and Submissions/Topic
Cloud-enabling technologies and Virtualization	Online resources will be provided on Moodle	Introduction to AWS cloud Lab

Week 3 - 22 Jul 2024

Module/Topic	Chapter	Events and Submissions/Topic
Data Centers & Managing Data in the Cloud	Online resources will be provided on Moodle	LAB : AWS Cloud

Week 4 - 29 Jul 2024

Module/Topic	Chapter	Events and Submissions/Topic
Cloud Architecture and Design Patterns	Online resources will be provided on Moodle	AWS Cloud Lab

Week 5 - 05 Aug 2024

Module/Topic	Chapter	Events and Submissions/Topic

| Designing cloud-based Networks | Online resources will be provided on Moodle | AWS VPC

Knowledge Check Due: Week 5 Friday (9 Aug 2024) 11:45 pm AEST |

Vacation Week - 12 Aug 2024

Module/Topic	**Chapter**	**Events and Submissions/Topic**
Session Break	Break	Break

Week 6 - 19 Aug 2024

Module/Topic	**Chapter**	**Events and Submissions/Topic**
Building Cloud Applications: Microservices	Online resources will be provided on Moodle	AWS Cloud Lab

Week 7 - 26 Aug 2024

Module/Topic	**Chapter**	**Events and Submissions/Topic**
IOT, Edge and Fog Computing	Online resources will be provided on Moodle	AWS IoT TwinMaker **Group Activity** Due: Week 7 Friday (30 Aug 2024) 11:45 pm AEST

Week 8 - 02 Sep 2024

Module/Topic	**Chapter**	**Events and Submissions/Topic**
IoT and Digital Twins	Online resources will be provided on Moodle	AWS IoT TwinMaker

Week 9 - 09 Sep 2024

Module/Topic	**Chapter**	**Events and Submissions/Topic**
Server-less Computing and Lambda Functions	Online resources will be provided on Moodle	AWS Academy Operations Lab

Week 10 - 16 Sep 2024

Module/Topic	**Chapter**	**Events and Submissions/Topic**
Machine Learning on Cloud	Online resources will be provided on Moodle	AWS Academy Machine Learning Foundations-Lab

Week 11 - 23 Sep 2024

Module/Topic	**Chapter**	**Events and Submissions/Topic**
Machine Learning on Cloud II	Online resources will be provided on Moodle	AWS Academy Machine Learning Foundations-Lab

Week 12 - 30 Sep 2024

Module/Topic	**Chapter**	**Events and Submissions/Topic**
Revision		Q/A Session **Final Activity** Due: Week 12 Friday (4 Oct 2024) 11:45 pm AEST

Term Specific Information

We will move from Microsoft Azure to AWS Cloud services and IoT infrastructure and integrate AWS Academy curriculum.
For further information, please contact your instructor:
Unit Coordinator: Dr Anwaar Ulhaq (AWS Academy instructor)
Email: a.anwaarulhaq@cqu.edu.au

Assessment Tasks

1 Knowledge Check

Assessment Type
Written Assessment

Task Description
As part of this assessment, students will be invited to enroll in the AWS Academy Cloud Foundations course. Students need to complete any three quizzes (e.g., Module 2 Knowledge Check at the end of Module 2). Each module has a knowledge check. The average score of three quizzes will be scaled to 20% to calculate the mark for this assessment.

Assessment Due Date
Week 5 Friday (9 Aug 2024) 11:45 pm AEST

Return Date to Students
Week 7 Friday (30 Aug 2024)

Weighting
20%

Assessment Criteria
The first four modules are foundational, and students need to complete quizzes for any three of these modules. All students will be invited to enroll, and they should be able to complete the course online. Each quiz contains 10–15 multiple-choice questions, with no time restrictions on each quiz.

Referencing Style

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

Submission
Online

Submission Instructions
via AWS Academy portal

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

2 Group Activity

Assessment Type
Group Work

Task Description
This group assignment must be completed by a team of three members. The assignment requires selecting a topic from a provided list and conducting research on that topic. You should find scholarly articles (e.g., published journal articles, books, conference papers) and reports on current scientific developments relevant to the topic. The investigation should be conducted in a team environment and requires you to:
Choose a topic from the given list based on the instructions in the assessment specification.
Research multiple scholarly resources to report on the scientific developments relevant to the topic.
Please prepare a six-minute video presentation in which all group members participate. Share the video by providing an online link.
Detailed information about this assignment, including the list of topics and rubrics, will be provided in a detailed assessment description on the unit website in Moodle.

Assessment Due Date
Week 7 Friday (30 Aug 2024) 11:45 pm AEST

Return Date to Students
Week 9 Friday (13 Sept 2024)

Weighting
30%

Assessment Criteria
Detailed information about this assignment, including the list of topics and marking rubrics, will be provided in a detailed assessment description on the unit website in Moodle.

Referencing Style

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

Submission
Online Group

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
- Research
- Leadership

3 Final Activity

Assessment Type
Project (applied)

Task Description
This detailed exam assessment will put all subject learning into practice with a focus on three main technologies: IoT, cloud, and spatial digital twins. It has two parts. In Part 1, students will be presented with a business case study and tasked with designing a complete application for a cloud-based implementation. This will include the identification of components, architecture design, security mechanisms, identification of communication protocols, and the selection of cloud services and IoT devices for project delivery. In Part 2, students must complete three labs from the AWS Cloud Academy course in which they are enrolled. To keep consistency, the assessment implementation will be based on AWS infrastructure and platform.

Assessment Due Date
Week 12 Friday (4 Oct 2024) 11:45 pm AEST

Submit via Moodle

Return Date to Students

Upon grade certification

Weighting
50%

Assessment Criteria
The Design and Architecture criterion focuses on assessing the quality of the proposed application design and system architecture. This involves identifying and organizing components effectively, designing a scalable and efficient system structure, and ensuring alignment with industry best practices and standards. Lab Completion evaluates students' practical skills in cloud computing and AWS services through the successful completion of three labs from the AWS Cloud Academy course. This component demonstrates students' ability to apply theoretical knowledge to real-world scenarios, configure cloud environments, deploy applications, and troubleshoot common issues, showcasing their proficiency in cloud technologies and tools.

Referencing Style

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

Submission
Online

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
- Cognitive, technical and creative skills
- 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