UNIVERSITY OF CANBERRA

Enterprise and Cloud Computing

Unit code and version	9281.4
Unit offering option	218282
Study level	Level 3 - Undergraduate Advanced Unit
Credit points	3
Faculty	Faculty of Science and Technology
Discipline	Academic Program Area - Technology
Unit offering details	Semester 1, 2024 , ON-CAMPUS , UC - Canberra, Bruce
Unit convener name and contact details	Essam Debie E: essam.debie@canberra.edu.au
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Academic content

Unit description

This unit introduces the fundamental concepts of cloud computing from an industry-centric and vendor-neutral point of view. Service delivery models, enabling technologies and mechanisms, cloud architectures, cloud security, privacy issues, virtualisation, quality, metrics, case studies, and current technologies for working with clouds will be studied. This unit may be cotaught with 11510 Enterprise and Cloud Computing PG.

Learning outcomes

On completion of this unit, students should be able to:

1. Describe the fundamental concepts of Cloud Computing and applications;
2. Explain service deliverable models, enabling technologies and mechanisms, cloud architectures, privacy issues, quality and metrics;
3. Apply current technologies for working with clouds;
4. Assess the challenges faced by cloud deployments, and how they can be addressed;
5. Evaluate cloud solutions and vendor offerings; and

6. Comprehend technical capabilities and business benefits of virtualization and cloud computing.

Graduate attributes

1. UC graduates are professional
    - communicate effectively
    - display initiative and drive, and use their organisation skills to plan and manage their workload
    - employ up-to-date and relevant knowledge and skills
    - take pride in their professional and personal integrity
    - use creativity, critical thinking, analysis and research skills to solve theoretical and real-world problems
    - work collaboratively as part of a team, negotiate, and resolve conflict
2. UC graduates are global citizens
    - make creative use of technology in their learning and professional lives
3. UC graduates are lifelong learners
    - adapt to complexity, ambiguity and change by being flexible and keen to engage with new ideas
    - evaluate and adopt new technology
    - reflect on their own practice, updating and adapting their knowledge and skills for continual professional and academic development

The graduate attributes of this unit address communication, analysis and inquiry, problem solving, working independently and with others, professionalism and social responsibility.

Skills development

As students of the University of Canberra, you will develop your critical thinking skills, your ability to solve complex problems, your ability to work with others, your confidence to learn independently, your written communication skills, your spoken communication skills and a number of work-related knowledge and skills.

Prerequisites

11485 Introduction to Network Engineering

Corequisites

None.

Accreditation

This unit is a part of courses accredited by the ACS and EA. It meets the following skill categories:

Skills Framework for the Information Age (SFIA)

This unit meets the following SFIA skills specification

- Methods and Tools METL
- User Experience Evaluation USEV
- Security Operations SCAD
- IT infrastructure ITOP
- System integration and build SINT
- Software Configuration PORT
- Systems installation and removal HSIN
- Specialist advice TECH

SFIA skills are defined by levels of responsibility, based on autonomy, influence, complexity, business skills, and knowledge. Although this unit may cover knowledge and skills at higher levels, it is expected that graduates of undergraduate degrees will be capable of operating at Level 2 overall.

Seoul Accord

The UC generic skills address most of the requirements of the Seoul Accord. The remaining skills that are addressed in this unit are:

2. Knowledge for Solving Computing Problems
4. Design/Development of Solutions
5. Modern tool usage
6. Individual and Teamwork
10. Life-long learning

This unit addresses complex computing problems that have one or more of the following characteristics:

- involves wide-ranging or conflicting technical, computing, and other issues;
- a solution requires the use of in-depth computing or domain knowledge and an analytical approach that is based on well-founded principles;
- is a high-level problem possibly including many component parts or sub-problems;

These complex computing problems are assessed in the following assessment items:

- Mid-Term Assessment
- Final (Take-Home) Assignment

EA Accreditation

This unit assesses and exposes students to the following Professional Engineer Stage 1 Competencies:

1.1 Comprehensive, theory based understanding – Indicators Assessed: a

1.2 Conceptual understanding – Indicators Assessed: a

1.3 In-depth understanding – Indicators Exposed: a

1.4 Discernment – Indicators Exposed: a

1.5 Knowledge – Indicators Assessed: b

1.6 Understanding – Indicators Assessed: a

3.3 Creative, innovative and pro-active demeanour – Indicators Assessed: a; Exposed b

3.5 Orderly management of self, and professional conduct - Indicators Exposed: d, e, f

Timetable of activities

Week	Commencing (monday)	Activities	Assessments
1	5-Feb-24	Introduction to cloud computing	-

2	12-Feb-24	Enabling Technologies Of Cloud Computing	Tut 1/Lab 1
3	19-Feb-24	Cloud Computing Models	Tut 2/Lab 2
4	26-Feb-24	Cloud Application Design	Tut 3/Lab 3; Quiz 1
5	4-Mar-24	Cloud Security	Tut 4/lab 4
6	11-Mar-24	Cloud Security Mechanisms	Tut 5/Lab 5
7	18-Mar-24	Service Level Agreement (sla)	Tut 6/lab 6; Midterm Assessment
8 (Class free)	25-Mar-24	-	-
9	1-Apr-24	Multimedia Cloud	Tut 7/Lab 7
10	8-Apr-24	Developing For Clouds	Tut 8/Lab 8
11	15-Apr-24	Cloud Case Studies	Tut 9/lab 9; Quiz 2
12	22-Apr-24	Cloud Case Studies	Tut 10/Lab 10
13	29-Apr-24	Assessment review	-

Unit resources

Required texts

- Bhowmik, Sandeep, (2017) Cloud Computing (Cambridge University Press).
- Dan C. Marinescu, (2018) Cloud Computing, Theory and Practice (Elsevier), 2nd edition.
- Thomas Erl. (2013) Cloud Computing: Concepts, Technology & Architecture (The Prentice Hall Service Technology Series by Thomas Erl), Prentice Hall, 1st edition.

Further reading materials will be provided during the semester.

Please consult the unit website for further information on texts/reading recommendations.

Materials and equipment

Library and web resources will be announced on the unit website.

Laptop computers are not mandatory for this unit, but students are highly encouraged to bring their own devices to enhance their learning experience during the lab classes.

Unit website

Each unit you are enrolled in has an online teaching site in the learning management system UCLearn. You access UCLearn through MyUC.

Social Media

Social media will be used as part of the teaching and learning of this unit, and relates to websites and applications that allow students and staff to create and share material, or interact via social networking activities. This can take many forms including text, images, audio, video, gestures (such as 'liking', 'favouriting', 'following') and other multimedia communications. Students and staff should be aware that social media creates an environment for limitless communication, collaboration, dialogue and information exchange but that there should be an awareness of the 'amplificatory' effect of popular content, which can portray both positive and negative outputs. Students should note that social media is not at the control of the University and, therefore, changes may be made to learning or assessment materials at late notice as a consequence of changes to content or access to the social media platform. Students are warned that there may be possible disturbing content that can be viewed when using social media, that is outside the control of the University. Students who are concerned with the use of social media for privacy or other issues are advised to speak with their unit convener as soon as possible.

For further information please refer to the section on Social Media in the Assessment Procedures.

Assessment

Assessment item details

Final Assignment (Take-Home Assignment)

Due date

Sunday 23:59, Week 13

Weighting

50%

Assessment details

The take-home assignment will cover the learning through weeks 1-12.

The students will take 1 week to complete it (Week 13) and the submission will be at the end of week 13 (Sunday 23:59).

Addresses learning outcomes

On completion of this unit, students should be able to:

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- 6. Comprehend technical capabilities and business benefits of virtualization and cloud computing.

Related graduate attributes

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Quizzes

Due date

Sunday 23:59 Weeks 4 and 11

Weighting

15%

Assessment details

There will be two online quizzes held in weeks 4 and 11. Quiz 1 will cover the material explained in weeks 1 to 4, while Quiz 2 will cover the materials explained in weeks 1 to 10. These quizzes will worth 5% and 10% of the final grades, respectively.

Late submissions will not be accepted. Extensions will not be granted for quizzes.

Addresses learning outcomes

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Mid-term Assessment

Due date

Sunday 23:59 Week 7 (Online)

Weighting

25%

Assessment details

The Mid-term Assessment will be online. Access to Canvas will be permitted, but no other materials will be allowed. A calculator (any kind) can be used.

A deferred mid-term assessment will only be considered for students who submit an assignment extension form, as well as documentary evidence to support the request (e.g., medical certificate). The request will only be granted if it is in accordance with the University's policies for extensions.

Please consult the unit website for further information on this assessment item.

Addresses learning outcomes

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AWS Participation/Tutorials

Due date

Weekly

Weighting

10%

Additional information

Attendance (in person) is mandatory as this assessment item must be completed during the Lab class.

Assessment details

There will be 6 AWS labs and 6 tutorials.

Each Lab will be worth 1% of the final grade. The maximum grade for the 6 Labs will be 5%, corresponding to the 5 best marks for the fortnightly Labs.

Each tutorial will be worth 1% of the final grade. The maximum grade for the 6 tutorials will be 5%, corresponding to the 5 best marks for the fortnightly tutorials.

Late submissions will not be accepted. Extensions will not be granted for Labs and Tutorials

Addresses learning outcomes

On completion of this unit, students should be able to:

- 1. Describe the fundamental concepts of Cloud Computing and applications;
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Submission of assessment items

Approval of extenuating circumstances for late submission of assignments will be dependent upon the production of supporting documentation and at the discretion of the unit convener.

Unless supported by Inclusion & Welfare, extensions will not be granted for quizzes. A medical certificate will only be considered for quizzes if: a) it covers the entire period the quiz was open; and b) if the extension request happens before the answers to the quizzes have been published. Please consult the unit website to see the dates when the answers will be published.

No other forms of submission other than the indicated in each assessment item will be accepted. Submissions via email will be ignored. If a student chooses to submit his/her assignment via the Internet off the campus, it is the student's responsibility to guarantee the accessibility of the Internet. Not being able to access to the Internet at a location which is off campus is not an excuse for extension.

Students will be asked to confirm the following online declaration at the point of submission. I certify that:

1. The attached assignment is my own work and no part of this work has been written for me by any other person except where such collaboration has been authorised by the lecturer/s concerned;

2. Material drawn from other sources has been fully acknowledged as to author/creator, source and other bibliographic details according to unit-specific requirements for referencing; and

3. No part of this work has been submitted for assessment in any other unit in this or another Faculty except where authorised by the lecturer/s concerned.

Extensions

Students can apply for an extension to the submission due date for an assessment item due to extenuating, evidenced circumstances (specific details are found in the Assessment Procedures). An extension must be applied for before the due date. Documentary evidence (e.g. medical certificate) will be expected for an extension to be granted, however this will not guarantee that the application will be successful. The Unit Convener or relevant Program Director/Course Convener will decide whether to grant an extension and the length of the extension.

An Assignment Extension form is available from the Student Forms page.

Late submissions

The following late submission period and penalty is applicable to any teaching period commencing after 1 April 2024.

To support the provision of timely feedback to students within the unit, late penalties will apply for summative assessments where late submission is permitted. Late submissions without an approved extension or reasonable adjustment will result in a penalty of a mark reduction of 10% of the maximum available marks for the assessment item per day (or part thereof) up to and including three calendar days. If a student submits more than three calendar days late without an approved extension or reasonable adjustment, the student will be allocated a mark of zero for that assessment, with no feedback provided.

Approval of extensions based on extenuating circumstances will be dependent upon the production of supporting documentation and at the

discretion of the unit convener.

For teaching periods commencing prior to 1 April 2024, a late penalty of 5 % of the maximum available marks for the assessment item per day (or part thereof) was applied up to and including seven calendar days. An assignment submitted over 7 days late will not be accepted.

Special assessment requirements

OVERALL MARK & REQUIREMENTS TO PASS THE UNIT

Each assessment item will be given a grade and an associated percentage mark. The marks will be totaled to produce an overall coursework mark.

The Overall Mark will be calculated as follows:

Overall Mark =

Final Assignment (Take-Home Assignment) (50%) +

Mid-term Assessment (25%) +

Quizzes (15%) +

AWS participation/Tutorials (10%)

Conditions to PASS the unit:

1. Students need to obtain at least 50% in the Overall Mark, calculated as described above;

AND

2. Students need to satisfy one of the following conditions:

a. Students need to obtain at least 50% in the Final assignment (Take-Home Assignment) mark;

OR

b. Students need to obtain at least 40% in the Final assignment (Take-Home Assignment) AND at least 50% in all the other assessment items combined.

Satisfying only conditions 1 or 2 will not be enough to pass the unit.

Once a student has met the conditions for a Pass, higher grades will be awarded on the basis of the highest category shown below, in which your marks fit.

85 <= Final mark <= 100Final grade = HD

75 <= Final mark < 85 Final grade = DI

65 <= Final mark < 75 Final grade = CR

50 <= Final mark < 65 Final grade = P

0 <= Final mark < 50 Final grade = FAIL (NX, NS, NC or NN)

The unit convener reserves the right to question students orally on any of their submitted work.

Supplementary assessment

Refer to the Assessment Policy and Assessment Procedures

Academic integrity

Students have a responsibility to uphold University standards on ethical scholarship. Good scholarship involves building on the work of others and use of others' work must be acknowledged with proper attribution made. Cheating, plagiarism, and falsification of data are dishonest practices that contravene academic values. Refer to the University's Student Charter for more information.

To enhance understanding of academic integrity, all students are expected to complete the Academic Integrity Module (AIM) at least once during their course of study. You can access this module within UCLearn (Canvas) through the 'Academic Integrity and Avoiding Plagiarism' link in the Study Help site.

Use of Text-Matching Software

The University of Canberra uses text-matching software to help students and staff reduce plagiarism and improve understanding of academic integrity. The software matches submitted text in student assignments against material from various sources: the internet, published books and journals, and previously submitted student texts.

Student responsibility

Learner engagement

Activities	Estimated hours
Weekly lectures: 2 hours/week, 12 times	24
Weekly tutorial classes (1 hour) and online engagement: 2 hours/week, 11 times	22
Weekly study commitment: 3 hours/week, 12 times	36
Final Assignment: 38 hours	38
Assessment preparation and submission: 30 hours	30
Total	150

Inclusion and engagement

It is strongly recommended that students who need assistance in undertaking the unit because of disability or an ongoing health condition register with the Inclusion and Engagement Office as soon as possible so that reasonable adjustment arrangements can be made.

Participation requirements

Your participation in both class and online activities will enhance your understanding of the unit content and therefore the quality of your assessment responses. Lack of participation may result in your inability to satisfactorily pass assessment items.

Your attendance and participation in tutorials and labs is mandatory and will be marked.

Withdrawal

If you are planning to withdraw please discuss with your Unit Convener. UC College students must also seek advice from the College.

Required IT skills

IT skills commensurate with advanced study of information technology are assumed.

Work integrated learning

None

Student feedback

All students enrolled in this unit will have opportunities to provide anonymous feedback on the unit through the InterFace Student Experience Questionnaire (ISEQ). The request for your feedback will be posted on your InterFace page at least twice during a teaching period. InterFace can be accessed through MyUC.

Changes to unit based on student feedback

In the light of feedback from previous student surveys/evaluation, the quiz and exam questions have been revised to better assist students' learning. Also the assessment items have also been revised to improve the learning outcomes. In addition, the number of quizzes has been reduced with a higher weight given to each quiz.

Authority of this unit outline

This unit outline must be read in conjunction with the University of Canberra's Policies and Procedures, including the Assessment Policy and associated Procedure. The Assessment Policy and Assessment Procedure include information on matters such as plagiarism, grade descriptors, moderation, feedback, and deferred exams.

Any change to the information contained in the Academic content and Assessment sections of this document, will only be made by the Unit Convener if the written agreement of the Program Director and a majority of students has been obtained; and if written advice of the change is then provided on the teaching site in UCLearn. If this is not possible, written advice of the change must be then forwarded to each student enrolled in the unit at their registered term address. Any individual student who believes themselves to be disadvantaged by a change is encouraged to discuss the matter with the Unit Convener.

Authority Text

Main

> Exception – Potential changes to a unit's learning activities and assessment items (Approved Academic Board 2020)
>
> In the event of Australian Government and/or ACT Government directive, such as those requiring physical distancing and restrictions on movement because of a pandemic, learning activities and/or assessment items in some units may change. These changes will not be updated in the published Unit Outline but will be communicated to students via the unit's UCLearn (Canvas) teaching site. The new learning activities and/or assessment items will continue to meet the unit's learning outcomes, as described in the Unit Outline.
>
> New learning activities and/or assessment items will be available on the unit's UCLearn (Canvas) teaching site. Please contact the Unit Convener with any questions.

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CRICOS 00212K

TEQSA Provider ID: PRV12003 (Australian University)

UC acknowledges the Ngunnawal people, traditional custodians of the lands where Bruce campus is situated. We wish to acknowledge and respect their continuing culture and the contribution they make to the life of Canberra and the region. We also acknowledge all other First Nations Peoples on whose lands we gather.