

CSC303 **Cloud and DevOps**

School: School of Science, Technology and Engineering

2024 | Semester 2

UniSC Moreton Bay

**BLENDED
LEARNING**

Most of your course is on campus but you may be able to do some components of this course online.

Please go to usc.edu.au for up to date information on the teaching sessions and campuses where this course is usually offered.

1. What is this course about?

1.1. Description

This course teaches you how to use cloud services (IaaS, PaaS, SaaS) and DevOps practices to enable organisations to be more agile and adaptive. DevOps involves Development and Operations collaborating to build, evolve and operate rapidly-changing systems at scale. You will learn DevOps principles and some key DevOps practices, such as agile planning, continuous integration, continuous delivery, and continuous monitoring. You will gain experience at implementing automated continuous integration pipelines to build, test, analyse and deploy web-based applications.

1.2. How will this course be delivered?

| ACTIVITY | HOURS | BEGINNING WEEK | FREQUENCY |
|--|-------|----------------|-----------|
| BLENDED LEARNING | | | |
| Learning materials – Asynchronous Learning Material | 2hrs | Week 1 | 13 times |
| Tutorial/Workshop 1 – On-campus workshop | 2hrs | Week 1 | 13 times |

1.3. Course Topics

- What is DevOps?
- The Cloud as a Platform
- Operations
- Overall Architecture
- Building and Testing
- Deployment
- Monitoring
- Security and Security Audits
- Supporting Multiple Datacentres
- Implementing a Continuous Deployment Pipeline for Enterprises
- Migrating to Microservices
- Operations as a Process
- The Future of DevOps

2. What level is this course?

300 Level (Graduate)

Demonstrating coherence and breadth or depth of knowledge and skills. Independent application of knowledge and skills in unfamiliar contexts. Meeting professional requirements and AQF descriptors for the degree. May require pre-requisites where discipline specific introductory or developing knowledge or skills is necessary. Normally undertaken in the third or fourth full-time study year of an undergraduate program.

3. What is the unit value of this course?

12 units

4. How does this course contribute to my learning?

| COURSE LEARNING OUTCOMES | GRADUATE QUALITIES |
|--|--|
| On successful completion of this course, you should be able to... | Completing these tasks successfully will contribute to you becoming... |
| 1 Demonstrate advanced knowledge of DevOps principles, methods, practices in terms of Industry application. | Knowledgeable |
| 2 Select, develop and adapt cloud platforms to perform tasks, use tools and techniques to facilitate DevOps methodology. | Empowered |
| 3 Analyse, evaluate and configure cloud infrastructure to set up automation environments. | Creative and critical thinker |
| 4 Utilise cloud infrastructure for continuous deployment and integration of software. | Empowered |
| 5 Deploy and manage the process of DevOps utilising a range of automation and project management tools. | Engaged |

5. Am I eligible to enrol in this course?

Refer to the [UniSC Glossary of terms](#) for definitions of “pre-requisites, co-requisites and anti-requisites”.

5.1. Pre-requisites

CSC200 and CSC202

5.2. Co-requisites

Not applicable

5.3. Anti-requisites

Not applicable

5.4. Specific assumed prior knowledge and skills (where applicable)

Not applicable

6. How am I going to be assessed?

6.1. Grading Scale

Standard Grading (GRD)

High Distinction (HD), Distinction (DN), Credit (CR), Pass (PS), Fail (FL).

6.2. Details of early feedback on progress

Students will complete individual weekly workshop activities under the guidance of the workshop facilitator, providing opportunities for rapid formative feedback throughout the semester.

6.3. Assessment tasks

| DELIVERY MODE | TASK NO. | ASSESSMENT PRODUCT | INDIVIDUAL OR GROUP | WEIGHTING % | WHAT IS THE DURATION / LENGTH? | WHEN SHOULD I SUBMIT? | WHERE SHOULD I SUBMIT IT? |
|---------------|----------|--|---------------------|-------------|--------------------------------|-----------------------|--|
| All | 1 | Portfolio | Individual | 20% | 200 words per submission | Refer to Format | Online Submission |
| All | 2 | Artefact - Technical and Scientific, and Written Piece | Individual | 40% | Code plus 1500 words | Week 12 | Online Assignment Submission with plagiarism check |
| All | 3 | Examination - not Centrally Scheduled | Individual | 40% | 2 hours | Exam Period | Online Assignment Submission with plagiarism check |

All - Assessment Task 1: Reflective practice

| | | | |
|------------------------|---|--|----------------------------------|
| GOAL: | Complete a number of activities submitted over the course of the semester to reflect on your comprehension while forming a portfolio of devops solutions. | | |
| PRODUCT: | Portfolio | | |
| FORMAT: | You will submit five responses to stimulus materials. Each submission will be the equivalent of less than 200 words of text, code or documentation. Due Weeks 3, 5, 7, 9, and 11 | | |
| CRITERIA: | No. | | Learning Outcome assessed |
| | 1 | Select, develop and adapt cloud platforms | 2 |
| | 2 | Analyse, evaluate and configure cloud infrastructure | 1 3 |
| GENERIC SKILLS: | | | |

All - Assessment Task 2: DevOps Mastery

| | | | |
|------------------------|---|--|----------------------------------|
| GOAL: | Develop your ability to design, build, and deliver products using automation. | | |
| PRODUCT: | Artefact - Technical and Scientific, and Written Piece | | |
| FORMAT: | You will work on a case study and apply your knowledge of DevOps to design, justify and develop solutions to meet the given requirements. | | |
| CRITERIA: | No. | | Learning Outcome assessed |
| | 1 | Select, develop and adapt cloud platforms | 2 |
| | 2 | Analyse, evaluate and configure cloud infrastructure | 3 |
| | 3 | Utilise cloud infrastructure for continuous deployment and integration | 4 |
| | 4 | Deploy and manage the process of DevOps | 5 |
| GENERIC SKILLS: | | | |

All - Assessment Task 3: Exam

| | | |
|------------------------|--|--|
| GOAL: | Assess your ability to independently apply your skills and knowledge to solve problem-based questions within a set time limit. | |
| PRODUCT: | Examination - not Centrally Scheduled | |
| FORMAT: | This examination consists of a set of questions based on learning materials and workshop activities. | |
| CRITERIA: | No. | Learning Outcome assessed |
| | 1 | Comparison and evaluation of cloud platforms to perform tasks 1 2 |
| | 2 | Analyse, evaluate and configure cloud infrastructure 3 |
| GENERIC SKILLS: | | |

7. Directed study hours

A 12-unit course will have total of 150 learning hours which will include directed study hours (including online if required), self-directed learning and completion of assessable tasks. Student workload is calculated at 12.5 learning hours per one unit.

8. What resources do I need to undertake this course?

Please note: Course information, including specific information of recommended readings, learning activities, resources, weekly readings, etc. are available on the course Canvas site– Please log in as soon as possible.

8.1. Prescribed text(s) or course reader

Please note that you need to have regular access to the resource(s) listed below. Resources may be required or recommended.

| REQUIRED? | AUTHOR | YEAR | TITLE | EDITION | PUBLISHER |
|-------------|-----------------------------------|------|--|---------|-----------|
| Recommended | Len Bass,Ingo M. Weber,Liming Zhu | 2015 | DevOps: A Software Architect's Perspective | n/a | n/a |

8.2. Specific requirements

Not applicable

9. How are risks managed in this course?

Health and safety risks for this course have been assessed as low. It is your responsibility to review course material, search online, discuss with lecturers and peers and understand the health and safety risks associated with your specific course of study and to familiarise yourself with the University's general health and safety principles by reviewing the [online induction training for students](#), and following the instructions of the University staff.

10. What administrative information is relevant to this course?

10.1. Assessment: Academic Integrity

Academic integrity is the ethical standard of university participation. It ensures that students graduate as a result of proving they are competent in their discipline. This is integral in maintaining the value of academic qualifications. Each industry has expectations and standards of the skills and knowledge within that discipline and these are reflected in assessment.

Academic integrity means that you do not engage in any activity that is considered to be academic fraud; including plagiarism, collusion or outsourcing any part of any assessment item to any other person. You are expected to be honest and ethical by completing all work yourself and indicating in your work which ideas and information were developed by you and which were taken from others. You cannot provide your assessment work to others. You are also expected to provide evidence of wide and critical reading, usually by using appropriate academic references.

In order to minimise incidents of academic fraud, this course may require that some of its assessment tasks, when submitted to Canvas, are electronically checked through Turnitin. This software allows for text comparisons to be made between your submitted assessment item and all other work to which Turnitin has access.

10.2. Assessment: Additional Requirements

Eligibility for Supplementary Assessment

Your eligibility for supplementary assessment in a course is dependent of the following conditions applying:

The final mark is in the percentage range 47% to 49.4%

The course is graded using the Standard Grading scale

You have not failed an assessment task in the course due to academic misconduct

10.3. Assessment: Submission penalties

Late submission of assessment tasks may be penalised at the following maximum rate:

- 5% (of the assessment task's identified value) per day for the first two days from the date identified as the due date for the assessment task.

- 10% (of the assessment task's identified value) for the third day - 20% (of the assessment task's identified value) for the fourth day and subsequent days up to and including seven days from the date identified as the due date for the assessment task.

- A result of zero is awarded for an assessment task submitted after seven days from the date identified as the due date for the assessment task. Weekdays and weekends are included in the calculation of days late. To request an extension you must contact your course coordinator to negotiate an outcome.

10.4. SafeUniSC

UniSC is committed to a culture of respect and providing a safe and supportive environment for all members of our community. For immediate assistance on campus contact SafeUniSC by phone: [07 5430 1168](tel:0754301168) or using the [SafeZone](#) app. For general enquires contact the SafeUniSC team by phone [07 5456 3864](tel:0754563864) or email safe@usc.edu.au.

The SafeUniSC Specialist Service is a Student Wellbeing service that provides free and confidential support to students who may have experienced or observed behaviour that could cause fear, offence or trauma. To contact the service call [07 5430 1226](tel:0754301226) or email studentwellbeing@usc.edu.au.

10.5. Study help

For help with course-specific advice, for example what information to include in your assessment, you should first contact your tutor, then your course coordinator, if needed.

If you require additional assistance, the Learning Advisers are trained professionals who are ready to help you develop a wide range of academic skills. Visit the [Learning Advisers](#) web page for more information, or contact Student Central for further assistance: +61 7 5430 2890 or studentcentral@usc.edu.au.

10.6. Wellbeing Services

Student Wellbeing provide free and confidential counselling on a wide range of personal, academic, social and psychological matters, to foster positive mental health and wellbeing for your academic success.

To book a confidential appointment go to [Student Hub](#), email studentwellbeing@usc.edu.au or call 07 5430 1226.

10.7. AccessAbility Services

Ability Advisers ensure equal access to all aspects of university life. If your studies are affected by a disability, learning disorder mental health issue, injury or illness, or you are a primary carer for someone with a disability or who is considered frail and aged, [AccessAbility Services](#) can provide access to appropriate reasonable adjustments and practical advice about the support and facilities available to you throughout the University.

To book a confidential appointment go to [Student Hub](#), email AccessAbility@usc.edu.au or call 07 5430 2890.

10.8. Links to relevant University policy and procedures

For more information on Academic Learning & Teaching categories including:

- Assessment: Courses and Coursework Programs
- Review of Assessment and Final Grades
- Supplementary Assessment
- Central Examinations
- Deferred Examinations
- Student Conduct
- Students with a Disability

For more information, visit <https://www.usc.edu.au/explore/policies-and-procedures#academic-learning-and-teaching>

10.9. Student Charter

UniSC is committed to excellence in teaching, research and engagement in an environment that is inclusive, inspiring, safe and respectful. The [Student Charter](#) sets out what students can expect from the University, and what in turn is expected of students, to achieve these outcomes.

10.10.General Enquiries

In person:

- **UniSC Sunshine Coast** - Student Central, Ground Floor, Building C, 90 Sippy Downs Drive, Sippy Downs
- **UniSC Moreton Bay** - Service Centre, Ground Floor, Foundation Building, Gympie Road, Petrie
- **UniSC SouthBank** - Student Central, Building A4 (SW1), 52 Merivale Street, South Brisbane
- **UniSC Gympie** - Student Central, 71 Cartwright Road, Gympie
- **UniSC Fraser Coast** - Student Central, Student Central, Building A, 161 Old Maryborough Rd, Hervey Bay
- **UniSC Caboolture** - Student Central, Level 1 Building J, Cnr Manley and Tallon Street, Caboolture

Tel: +61 7 5430 2890

Email: studentcentral@usc.edu.au