

In Progress

Please note that this Unit Profile is still in progress. The content below is subject to change.



COIT29224 *Evolutionary Computation*

Term 1 - 2022

Profile information current as at 25/04/2024 07:35 am

All details in this unit profile for COIT29224 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

Evolutionary Computation, an area of Artificial Intelligence, comprises machine learning optimisation and classification paradigms based on principles from biological sciences. In this unit, you will explore how principles from theories of evolution and natural selection can be used to construct intelligent systems. You will learn the theoretical concepts of representation, selection, reproduction, and recombination. You will apply evolutionary algorithms, such as evolution strategies, genetic programming, and particle swarm optimisation to tackle science, engineering, social, and business problems and opportunities.

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: COIT20277 Introduction to Artificial Intelligence

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 - 2022

No offerings for COIT29224

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. **Practical Assessment**

Weighting: 25%

2. **Practical Assessment**

Weighting: 35%

3. **Written Assessment**

Weighting: 40%

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 evaluation

Feedback

Expect to see more examples for particle swarm optimisation.

Recommendation

Include more example solutions on particle swarm optimisation.

Unit Learning Outcomes

On successful completion of this unit, you will be able to:

1. Formulate an evolutionary computation search or optimisation problem by analysing an authentic case or scenario
2. Design an evolutionary algorithm for a problem applying the core evolutionary computation concepts and mechanisms
3. Build a software application to implement an evolutionary algorithm for a complex search or optimisation problem
4. Write an article that evaluates the performance and interprets the results of your software application of evolutionary computation paradigm to an authentic problem.

The Skills Framework for the Information Age (SFIA) standard covers the skills and competencies related to information and communication technologies. SFIA defines levels of responsibility and skills. SFIA is adopted by organisations, governments and individuals in many countries. SFIA is increasingly being used when developing job descriptions and role profiles. SFIA can be used by individuals for creating personal skills profile. The Australian Computer Society (ACS) recognises the SFIA and provides [MySFIA](#) for ACS members to build a skills profile.

This unit contributes to the following workplace skills as defined by [SFIA 7](#) (the SFIA code is included):

- Software design (SWDN)
- Programming/software development (PROG)
- Testing (TEST)
- Application Support (ASUP).

Alignment of Learning Outcomes, Assessment and Graduate Attributes



Alignment of Assessment Tasks to Learning Outcomes

Assessment Tasks	Learning Outcomes			
	1	2	3	4
1 - Practical Assessment - 25%	•	•	•	
2 - Practical Assessment - 35%	•	•	•	
3 - Written Assessment - 40%				•

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 - Practical Assessment - 25%	○	○	○		○			
2 - Practical Assessment - 35%	○	○	○		○		○	
3 - Written Assessment - 40%	○	○		○		○		

Textbooks and Resources

Textbooks

Information for Textbooks is not yet available.

The textbooks have not yet been finalised.

IT Resources

You will need access to the following IT resources:

Referencing Style

Information for Referencing Style has not been released yet.

This unit profile has not yet been finalised.

Teaching Contacts

Information for Teaching Contacts has not been released yet.

This unit profile has not yet been finalised.

Assessment Tasks

Information for Assessment Tasks has not been released yet.

This unit profile has not yet been finalised.

Academic Integrity Statement

Information for Academic Integrity Statement has not been released yet.

This unit profile has not yet been finalised.