



# COIT20275 Systems Science and Engineering

## Term 2 - 2017

Profile information current as at 21/04/2024 01:13 am

All details in this unit profile for COIT20275 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

Systems engineering considers both the business and the technical needs of all customers, with the goal of providing a quality product that meets the user requirements. In this unit you will focus on the realisation and deployment of successful systems through the structured development process that proceeds through the entire systems life-cycle.

### 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

Prerequisite or Corequisite BUSN20016 Research in Business

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 - 2017

- Brisbane
- Distance
- Melbourne
- 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. **Written Assessment**

Weighting: 30%

#### 3. **Examination**

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 Personal reflection

##### Feedback

Project management

##### Recommendation

Replace the content on project management, as this is covered in more detail in PPMP20007, which all students in CC74 must take.

## Unit Learning Outcomes

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

1. Describe the processes of development and management of systems over the systems life cycle
2. Critically evaluate the importance of feedback control loop and human factors in the preliminary and detailed system design
3. Critically evaluate and report the common management processes used in the development, implementation and disposal of real or simulated systems
4. Apply appropriate processes in the optimisation of systems using reliability testing, sustainability and evaluation

N/A

## Alignment of Learning Outcomes, Assessment and Graduate Attributes



### Alignment of Assessment Tasks to Learning Outcomes

Assessment Tasks	Learning Outcomes			
	1	2	3	4
1 - Written Assessment - 20%	•	•	•	•
2 - Written Assessment - 30%	•	•	•	•
3 - Examination - 50%	•	•	•	•

### Alignment of Graduate Attributes to Learning Outcomes

Graduate Attributes	Learning Outcomes			
	1	2	3	4
1 - Knowledge	○	○	○	○
2 - Communication	○	○	○	○

Graduate Attributes	Learning Outcomes			
	1	2	3	4
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 - Written Assessment - 30%	○	○	○	○	○	○		
3 - Examination - 50%	○	○	○		○	○		

## Textbooks and Resources

### Textbooks

COIT20275

#### Prescribed

#### Systems Engineering and Analysis

2011 Fifth Edition (2011)

Authors: Benjamin S. Blanchard, Wolter J. Fabrycky

Pearson

Upper Saddle River , New Jersey , United States

Binding: Paperback

[View textbooks at the CQUniversity Bookshop](#)

### IT Resources

**You will need access to the following IT resources:**

- CQUniversity Student Email
- Internet
- Unit Website (Moodle)
- MS Office
- MS Visio

## Referencing Style

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

## Teaching Contacts

**Dennis Jarvis** Unit Coordinator  
[d.jarvis@cqu.edu.au](mailto:d.jarvis@cqu.edu.au)

## Schedule

### Week 1 - 10 Jul 2017

Module/Topic	Chapter	Events and Submissions/Topic
Systems and engineering	Chapter 1	

### Week 2 - 17 Jul 2017

Module/Topic	Chapter	Events and Submissions/Topic
Overview of the engineering systems development process	Chapter 2	

### Week 3 - 24 Jul 2017

Module/Topic	Chapter	Events and Submissions/Topic
Conceptual system design	Chapter 3	

### Week 4 - 31 Jul 2017

Module/Topic	Chapter	Events and Submissions/Topic
Preliminary system design	Chapter 4	

### Week 5 - 07 Aug 2017

Module/Topic	Chapter	Events and Submissions/Topic
Detailed design and development	Chapter 5	

### Vacation Week - 14 Aug 2017

Module/Topic	Chapter	Events and Submissions/Topic

### Week 6 - 21 Aug 2017

Module/Topic	Chapter	Events and Submissions/Topic
System test, evaluation and validation	Chapter 6	<b>Written Assessment</b> Due: Week 6 Friday (25 Aug 2017) 5:00 pm AEST

### Week 7 - 28 Aug 2017

Module/Topic	Chapter	Events and Submissions/Topic
Optimisation in design and operations	Chapter 9	

### Week 8 - 04 Sep 2017

Module/Topic	Chapter	Events and Submissions/Topic
Control concepts	Chapter 11	

### Week 9 - 11 Sep 2017

Module/Topic	Chapter	Events and Submissions/Topic
Design for reliability and maintainability	Chapters 12, 13	

### Week 10 - 18 Sep 2017

Module/Topic	Chapter	Events and Submissions/Topic

Human factors Chapter 14

### Week 11 - 25 Sep 2017

Module/Topic	Chapter	Events and Submissions/Topic
Producibility, disposability and sustainability	Chapter 16	<b>Written Assessment</b> Due: Week 11 Friday (29 Sept 2017) 10:00 am AEST

### Week 12 - 02 Oct 2017

Module/Topic	Chapter	Events and Submissions/Topic
Systems engineering management	Chapters 18, 19	

### Review/Exam Week - 09 Oct 2017

Module/Topic	Chapter	Events and Submissions/Topic
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### Exam Week - 16 Oct 2017

Module/Topic	Chapter	Events and Submissions/Topic
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## Assessment Tasks

### 1 Written Assessment

#### Assessment Type

Written Assessment

#### Task Description

In this assessment, you are required to write a report which critically analyses the conceptual design phase of a systems engineering project. Projects might include designing a light rail network for a city, more environmentally-conscious buildings or a mine facility. You may not have been involved in the project personally, but some connection with the project would make the analysis more meaningful. The report should analyse the following:

- Needs definition
- Conceptual system design

The details of this assessment will be available on the unit website in Week 1.

#### Assessment Due Date

Week 6 Friday (25 Aug 2017) 5:00 pm AEST

#### Return Date to Students

Week 8 Friday (8 Sept 2017)

#### Weighting

20%

#### Assessment Criteria

Marking Assessment Criteria: Weighted 20%

1. Introduction (5 Marks)
2. Needs definition (10 Marks)
3. Conceptual design (10 Marks)
4. Conclusion (5 marks)
5. Research skills (5 marks)
6. Grammar and spelling (5 Marks)

#### Referencing Style

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

#### Submission

Online

#### Learning Outcomes Assessed

- Describe the processes of development and management of systems over the systems life cycle
- Critically evaluate the importance of feedback control loop and human factors in the preliminary and detailed system design

- Critically evaluate and report the common management processes used in the development, implementation and disposal of real or simulated systems
- Apply appropriate processes in the optimisation of systems using reliability testing, sustainability and evaluation

### Graduate Attributes

- Knowledge
- Communication
- Cognitive, technical and creative skills
- Research
- Self-management
- Ethical and Professional Responsibility

## 2 Written Assessment

### Assessment Type

Written Assessment

### Task Description

You have already analysed the conceptual design of a project in assignment 1. In this assessment, you are required to write a report which critically analyses the preliminary design and detailed design and production phases of the project discussed in assignment 1. Particular attention is to be paid to the system test, evaluation and validation processes employed and any optimisation that was required.

The details of this assessment will be available on the unit website in Week 1.

### Assessment Due Date

Week 11 Friday (29 Sept 2017) 10:00 am AEST

### Return Date to Students

Review/Exam Week Friday (13 Oct 2017)

### Weighting

30%

### Assessment Criteria

Marking Assessment Criteria: Weighted 30%

1. Introduction (10 Marks)
2. Preliminary design (10 Marks)
3. Detailed design and development (10 Marks)
4. System test, evaluation & validation and optimisation (10 Marks)
5. Conclusion (5 marks)
6. Research skills (10 marks)
7. Grammar and spelling (5 Marks)

### Referencing Style

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

### Submission

Online

### Learning Outcomes Assessed

- Describe the processes of development and management of systems over the systems life cycle
- Critically evaluate the importance of feedback control loop and human factors in the preliminary and detailed system design
- Critically evaluate and report the common management processes used in the development, implementation and disposal of real or simulated systems
- Apply appropriate processes in the optimisation of systems using reliability testing, sustainability and evaluation

### Graduate Attributes

- Knowledge
- Communication
- Cognitive, technical and creative skills
- Research
- Self-management
- Ethical and Professional Responsibility

# Examination

**Outline**

Complete an invigilated examination.

**Date**

During the examination period at a CQUniversity examination centre.

**Weighting**

50%

**Length**

180 minutes

**Exam Conditions**

Closed Book.

**Materials**

Calculator - non-programmable, no text retrieval, silent only

Dictionary - non-electronic, concise, direct translation only (dictionary must not contain any notes or comments).

## 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