



OCHS13019 *Prevention Through Design*

Term 2 - 2022

Profile information current as at 14/12/2025 04:57 am

All details in this unit profile for OCHS13019 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

You will develop competence and confidence in using prevention through design (PtD) strategies and tools. PtD, or 'safe design', is a process of hazard identification and risk assessment to eliminate or minimize risk of injury and anticipate failure modes throughout the life of the product or system. You will be given the knowledge needed to optimise human performance and enhance safety in a socio-technical environment. Topics include safe design principles, optimisation of the design process, life cycle analysis, hazard and operability studies, Fault Tree Analysis, Failure Modes and Effect Analysis and strategic design risk assessment using the Safety Case. There is an emphasis on human factors engineering, the principles of technology adoption and consideration of the notion of disruptive technologies.

Details

Career Level: *Undergraduate*

Unit Level: *Level 3*

Credit Points: 6

Student Contribution Band: 8

Fraction of Full-Time Student Load: 0.125

Pre-requisites or Co-requisites

Pre-Requisite:- 72 credit points including successful completion of AINV11002 and either OCHS13008 or OCHS12019

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 - 2022

- Online
- Rockhampton

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 Undergraduate 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. **Portfolio**

Weighting: 50%

2. **Group Work**

Weighting: 20%

3. **Presentation and Written Assessment**

Weighting: 30%

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 Unit & Teaching Evaluation survey

Feedback

Students enjoyed examining the various design strategies for safety outcomes.

Recommendation

Continue to explore current and emerging design approaches for achieving safety.

Feedback from Teacher reflection

Feedback

As with all third-year units, this unit requires a level of autonomous learning and critical thinking that some students were not prepared for.

Recommendation

Clearly set third-year level learning expectations around autonomous learning and critical thinking from the start of term.

Unit Learning Outcomes

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

1. Appraise design as an effective strategy to minimise injuries, illnesses and fatalities.
2. Evaluate designs from a life cycle approach.
3. Identify past and present opportunities and challenges to achieving 'prevention through design' including the design process, human factors engineering, adoption of new technology and impact of disruptive technologies.
4. Evaluate potential risks associated with design issues in socio-technical systems around culture, processes, structures, equipment, tools and people by employing appropriate analytical methods.
5. Assess the value of the elimination of hazards through the redesign of buildings and structures, work environments, materials, plant (machinery and equipment) job tasks and work environments.
6. Create a systematic response to a design problem that incorporates the prevention through design principles and methods.
7. Appraise design sub-optimisation and plant operational parameters as a member of a safety case design team

Alignment of Learning Outcomes, Assessment and Graduate Attributes



Alignment of Assessment Tasks to Learning Outcomes

Assessment Tasks	Learning Outcomes						
	1	2	3	4	5	6	7
1 - Portfolio - 50%		•	•	•		•	•
2 - Group Work - 20%	•	•	•	•			
3 - Presentation and Written Assessment - 30%		•	•	•	•		

Alignment of Graduate Attributes to Learning Outcomes

Graduate Attributes	Learning Outcomes						
	1	2	3	4	5	6	7
1 - Communication	•	•	•	•	•	•	
2 - Problem Solving		•		•	•	•	•
3 - Critical Thinking	•	•	•	•	•	•	•
4 - Information Literacy	•		•	•	•	•	•
5 - Team Work	•	•	•	•	•	•	
6 - Information Technology Competence				•	•	•	•
7 - Cross Cultural Competence	•	•		•	•	•	
8 - Ethical practice	•			•	•	•	•
9 - Social Innovation							
10 - 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	9	10
1 - Portfolio - 50%	•	•	•	•	•	•	•	•		
2 - Group Work - 20%	•	•	•	•	•	•	•	•		
3 - Presentation and Written Assessment - 30%	•	•	•	•		•		•		

Textbooks and Resources

Textbooks

There are no required textbooks.

Additional Textbook Information

All reading material will be provided on Moodle and freely available from the CQUni Library (online). Specific works will be accessible from the eReading List in the Moodle site.

IT Resources

You will need access to the following IT resources:

- CQUniversity Student Email
- Internet
- Unit Website (Moodle)

Referencing Style

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

Teaching Contacts

Elise Crawford Unit Coordinator
e.crawford@cqu.edu.au

Schedule

Week 1 - 11 Jul 2022

Module/Topic	Chapter	Events and Submissions/Topic
Introduction to Prevention Through Design	Prevention Through Design (NIOSH 2013)	Introduce yourself in the Arrivals Lounge so that everyone knows you are present. Zoom Tutorial: Assessment & Unit Overview

Week 2 - 18 Jul 2022

Module/Topic	Chapter	Events and Submissions/Topic
Asset Lifecycle	Techstreet - Accessing Australian Standards Asset Life Cycle: Definition and Key Stages (Go Codes 2022)	Review the Major Hazard Facilities for the second assessment. Zoom Tutorial: Assessment Item 1

Week 3 - 25 Jul 2022

Module/Topic	Chapter	Events and Submissions/Topic
Challenges to Safe Design	Socio-technical systems (Baxter & Sommerville 2011) Systems Thinking: what, why, when, where, and how? (Goodman 2018)	Self select into the team case study you prefer. Otherwise, you will be placed in one. Zoom Tutorial: System Disruptors

Week 4 - 01 Aug 2022

Module/Topic	Chapter	Events and Submissions/Topic
Engineering Design Process	Engineering of Defense Systems Guidebook (Office of the Deputy Director for Engineering 2022) DoD Human Factors Analysis and Classification System (HFACS v. 7.0) Human Factors in Queensland Mining (Queensland Mines and Energy 2008)	If you have not yet self selected into a team by close of business Friday this week, you will be added to a team by the Unit Coordinator. Zoom Tutorial: Engineering Design Models

Week 5 - 08 Aug 2022

Module/Topic	Chapter	Events and Submissions/Topic
Achieving Safe Design	Safe Design (Safe Work Australia n.d.)	Zoom Tutorial: Assessment Item 2

Vacation Week - 15 Aug 2022

Module/Topic	Chapter	Events and Submissions/Topic
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Week 6 - 22 Aug 2022

Module/Topic	Chapter	Events and Submissions/Topic
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Risk Management in Design	Risk Assessment for New Technologies (ABSG Consulting 2015) The Use of Safety Cases in Certificate and Regulation Review (Wilkinson 2014) Work Health and Safety Regulation 2011 (Qld)	Zoom Tutorial: Safety Cases Design Practice and Standards Due: Week 6 Monday (22 Aug 2022) 9:00 am AEST
Week 7 - 29 Aug 2022		
Module/Topic	Chapter	Events and Submissions/Topic
Failure Prediction 1	Fault Tree Analysis (Weibull 2022) Fault Tree Handbook (U.S. Nuclear Regulatory Commission 1981)	Zoom Tutorial: Fault Tree Analysis
Week 8 - 05 Sep 2022		
Module/Topic	Chapter	Events and Submissions/Topic
Failure Prediction 2	Failure Mode & Effect Analysis Tool (ASQ 2022) Hazard & Operability Study Guide (PQRI n.d.) Guide Words & Procedure (HAZOP) (Broadleaf 2018)	Zoom Tutorial: Failure Mode & Effect Analysis
Week 9 - 12 Sep 2022		
Module/Topic	Chapter	Events and Submissions/Topic
Assessing Safety & Controlling Risk	Reducing risks, protecting people (HSE 2001) How is risk controlled? (DMP n.d.)	Zoom Tutorial: Assessment Item 3 Safety Case Report Due: Week 9 Monday (12 Sep 2022) 9:00 am AEST
Week 10 - 19 Sep 2022		
Module/Topic	Chapter	Events and Submissions/Topic
Operational Safety and Maintenance	Maintenance Works (HSA 2022)	Zoom Tutorial: Safe Design in Action
Week 11 - 26 Sep 2022		
Module/Topic	Chapter	Events and Submissions/Topic
Design End of Life	Waste and chemical disposal (Qld Gov 2015) From product end-of-life sustainable considerations to design management (Ciceri et al. 2009)	Zoom Tutorial: Operational Safety
Week 12 - 03 Oct 2022		
Module/Topic	Chapter	Events and Submissions/Topic
Beyond Safe Design	Principles of Good Work Design (SWA n.d.) Good Work Design (HFESA n.d.)	Zoom Tutorial: Good Work Design Concept Map and Presentation Due: Week 12 Monday (3 Oct 2022) 11:59 pm AEST
Review/Exam Week - 10 Oct 2022		
Module/Topic	Chapter	Events and Submissions/Topic
Exam Week - 17 Oct 2022		
Module/Topic	Chapter	Events and Submissions/Topic

Term Specific Information

Supplementary readings are available in the eReading list in Moodle.

Assessment Tasks

1 Design Practice and Standards

Assessment Type

Portfolio

Task Description

Purpose

The purpose of this assessment item is to give you an opportunity to reflect on the theoretical foundations of Prevention Through Design (PTD) practice and to apply this knowledge to design standards.

Task Description

This portfolio contains two parts and has a word limit of 2000 words. The first is a set of reflective journal entries, while the second examines PTD practice through the lens of design standards.

Part 1. Maintain a personal journal of your learnings gained throughout weeks one to five. The use of examples and case studies can help to illustrate points made. Consider the opportunities and challenges associated with the following:

- Applying the principles of PTD
- Design approaches and their ability to capture the full lifecycle of design (whether engineering, human factors or sociotechnical).
- Disruptive technology, technology adoption, and system complexity
- Emerging trends in technology/systems, regulation, and cultural/societal expectations

Part 2. From the list on Moodle, select one case study to analyse. You will need to research and consider how PTD is achieved for this case study. Your investigation is to determine:

- whether design standards exist,
- what they are (document name and number),
- what organisation develops them,
- whether development is informed by reactive and/or proactive methods (if you can discover the answer), and
- the means used in society to promulgate and encourage or enforce their use.

Assessment Due Date

Week 6 Monday (22 Aug 2022) 9:00 am AEST

Return Date to Students

Week 8 Monday (5 Sept 2022)

Weighting

50%

Assessment Criteria

This assessment is worth 50 marks, which represents 50% of your total grade.

Part 1. Grades out of a possible 30 marks

- You will be assessed on the depth of discussion and research related to past and present challenges and opportunities for:
 - Applying the principles of PTD (5 marks)
 - Design approaches and their ability to capture the full lifecycle of design (whether engineering, human factors or sociotechnical) (10 marks)
 - Disruptive technology, technology adoption, and system complexity (5 marks)
 - Emerging trends in technology/systems, regulation, and cultural/societal expectations (5 marks)
- Written expression, depth of research and referencing style (5 marks)

Part 2. Grades out of a possible 20 marks

- Whether design standards exist, what they are (document name and number), and what organisation develops them (5 marks)
- Whether development is informed by reactive and/or proactive methods (if you can discover the answer) (5 marks)
- The means used in society to promulgate and encourage or enforce their use (5 marks)
- Written expression, depth of research and referencing style (5 marks)

Referencing Style

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

Submission

Online

Learning Outcomes Assessed

- Evaluate designs from a life cycle approach.
- Identify past and present opportunities and challenges to achieving 'prevention through design' including the design process, human factors engineering, adoption of new technology and impact of disruptive technologies.
- Evaluate potential risks associated with design issues in socio-technical systems around culture, processes, structures, equipment, tools and people by employing appropriate analytical methods.
- Create a systematic response to a design problem that incorporates the prevention through design principles and methods.
- Appraise design sub-optimisation and plant operational parameters as a member of a safety case design team

Graduate Attributes

- Communication
- Problem Solving
- Critical Thinking
- Information Literacy
- Team Work
- Information Technology Competence
- Cross Cultural Competence
- Ethical practice

2 Safety Case Report

Assessment Type

Group Work

Task Description

Purpose

The purpose of this assignment is to provide insight into the purpose of Safety Cases and experience in their development. This assignment relates to the requirement for all Major Hazard Facilities to develop a Safety Case, as outlined in Chapter 9.3 of the *Work Health and Safety Regulation 2011* (Model).

Grades

- Team Grade (75 marks, representing 15% of your total grade)
- Individual Grade (25 marks, representing 5% of your total grade)

Task Description

This assignment involves group work. The development of Safety Cases requires a collaborative effort to capture multiple perspectives. Though while authentic to real-world situations, group work also supports the development of many interpersonal and project management skills, highly valued in business, and by future employers. That said, in recognition of the individual contribution, the single submission will contain both the Group and Individual components of this assessment item. Please use the model regulations for this exercise. As a Safety Case Team, you are to submit a Safety Case Report which contains:

1. Title Page
2. Table of Contents
3. Safety Case Outline (as per WHS Reg. 552)
4. Management of Risk Plan (as per WHS Reg. 554 (1a))
5. Reference list (as per CQUni Harvard Referencing style)

Total word count for the report is 1800 to 2100 words depending on the number of students in the team.

The following activities will help you complete this assessment item.

- Team - Review Chapter 9.3 of the *Work Health and Safety Regulation 2011* (Model) to identify the requirements for developing a Safety Case Outline (r.552)
- Team - Complete the following items within the Safety Case Outline
 - WHS Reg. 552 (a)
 - WHS Reg. 552 (b)
 - WHS Reg. 552 (d)
- Team - Decide who will complete the individual sections (as listed below).

- Individual - Complete the section you have nominated/been assigned from this list
 - WHS Reg. 554 (1a)
 - WHS Reg. 552 (c)
 - WHS Reg. 552 (e)
 - WHS Reg. 552 (f)
- Team - Curate the report
- Team - One team member is to submit the final report
- Please ensure individual work is clearly marked with the student's name.

Teamwork

A list of Major Hazard Facilities (MHF) will be included in a self-select Choice tool on Moodle. From here, you can self-select into a team based on your choice of case study (MHF). Teams of 3 or 4 members are required. If you are not in a team by close of business Friday of Week 4, you will be allocated into a team by the Unit Coordinator. Once formed, a private Microsoft Teams (MT) space will be established for your team. To support a smooth teamwork process, it is advised that you develop a team charter (or contract) that contains the rules of process, such as: 1) communication details and arrangements, 2) schedule of meetings, milestones and who will do what and when, and 3) an issues resolution plan for anticipated situations that might slow or undermine a conducive team process. It can also be useful to discuss your team profile. That is, your collective strengths (and weaknesses) you bring to the team. The Team Role Quiz is available on Moodle for this purpose. Please refer to the free [Belbin Handouts](#) for team role descriptions and their associated strengths and weaknesses.

Assessment Due Date

Week 9 Monday (12 Sept 2022) 9:00 am AEST

Return Date to Students

Week 11 Monday (26 Sept 2022)

Weighting

20%

Assessment Criteria

Out of a possible 100 marks this assessment item represents 20% of your overall grade for this unit.

Regarding your Major Hazard Facility, the assessment criteria is as follows:

Team grade (75 marks)

- Comprehensive written plan for preparing the Safety Case, as per WHS Reg. 552(a) (20 marks)
- Description of methods to be used in preparing the Safety Case, as per WHS Reg. 552(b) (20 marks)
- Description of the consultation arrangements in preparation of the Safety Case, as per WHS Reg. 552(d) (20 marks)
- Report formatting as per CQUniversity Harvard Style, structure, grammar (10 marks)
- Referencing style (5 marks)

Individual grade (25 marks)

- Quality of one of the following, as agreed by your Team (20 marks)
 - Details of resources applied to the preparation of the Safety Case, as per WHS Reg. 552(c)
 - Draft of the Emergency Plan prepared, as per WHS Reg. 552(e)
 - Summary of any arrangements that are to be made in relation to the security of the Major Hazard Facility, as per WHS Reg. 552(f)
 - Management of Risk, as per WHS Reg. 554 (1, a)
- Written expression and referencing style (5 marks)

Referencing Style

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

Submission

Online

Learning Outcomes Assessed

- Appraise design as an effective strategy to minimise injuries, illnesses and fatalities.
- Evaluate designs from a life cycle approach.
- Identify past and present opportunities and challenges to achieving 'prevention through design' including the

- design process, human factors engineering, adoption of new technology and impact of disruptive technologies.
- Evaluate potential risks associated with design issues in socio-technical systems around culture, processes, structures, equipment, tools and people by employing appropriate analytical methods.

Graduate Attributes

- Communication
- Problem Solving
- Critical Thinking
- Information Literacy
- Team Work
- Information Technology Competence
- Cross Cultural Competence
- Ethical practice

3 Concept Map and Presentation

Assessment Type

Presentation and Written Assessment

Task Description

Purpose

This assessment item helps to build big picture thinking. Major Hazard Facilities present societal threats and must therefore be managed as holistically as possible. For this we need to take a systems thinking approach.

Task Description

Your task is to develop a visual Concept Map and associated 10-minute recording.

The Concept Map is to capture the following:

- A visual representation of the lifecycle of the Major Hazard Facility you examined for Assessment Item 2, from concept through to end-of-life.
- The major hazards and risks at each phase of the design lifecycle
- Key actors and resources necessary to support the management of risk
- Presented on a single A3 sized page

The voice recording is to help the viewer comprehend the concept map

- Briefly describe the sociotechnical complexity of the Major Hazard Facility
- Mention the benefits the Major Hazard Facility brings to society
- Identify the threats to society the Major Hazard Facility presents throughout its lifecycle
- Discuss the methods useful for managing these threats.
- 10-minute audio or visual recording

Resources on audio/visual options is provided on Moodle.

Assessment Due Date

Week 12 Monday (3 Oct 2022) 11:59 pm AEST

Return Date to Students

Exam Week Monday (17 Oct 2022)

Weighting

30%

Assessment Criteria

You will be assessed on the following criteria (30 marks, representing 30%):

- A comprehensive concept map and recording falls within 9 and 11 minutes (10 marks)
- Introduces the Major Hazard Facility (MHF) including societal benefits the MHF brings (5 marks)
- Identifies the threats to society across the MHF lifecycle (5 marks)
- Considers sociotechnical complexity and other challenges or opportunities to operational safety (5 marks)
- Suitable methods discussed for managing noted threats (5 marks)

Referencing Style

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

Submission

Online

Submission Instructions

Submit a single document in .doc, docx, or pdf.

Learning Outcomes Assessed

- Evaluate designs from a life cycle approach.
- Identify past and present opportunities and challenges to achieving 'prevention through design' including the design process, human factors engineering, adoption of new technology and impact of disruptive technologies.
- Evaluate potential risks associated with design issues in socio-technical systems around culture, processes, structures, equipment, tools and people by employing appropriate analytical methods.
- Assess the value of the elimination of hazards through the redesign of buildings and structures, work environments, materials, plant (machinery and equipment) job tasks and work environments.

Graduate Attributes

- Communication
- Problem Solving
- Critical Thinking
- Information Literacy
- Information Technology Competence
- Ethical practice

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