OCHS12018 *Safety Science*
Term 1 - 2023

Profile information current as at 07/05/2024 06:13 pm

All details in this unit profile for OCHS12018 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
This unit will help you make the connection between science and safety so that you will think scientifically to promote evidence-based safety practice. You will be introduced to the science that explains how hazards behave, the concept of energy conversion and how hazards cause harm. Management of health and safety risk is discussed from an evidence-informed perspective. Case studies will be used to assist you in developing an appreciation of the linkages between the causation of harm and fundamental theories of physics, chemistry, physiology and social sciences.

Details
Career Level: *Undergraduate*
Unit Level: *Level 2*
Credit Points: *6*
Student Contribution Band: *8*
Fraction of Full-Time Student Load: *0.125*

Pre-requisites or Co-requisites
Pre-requisite study of 24 credit points
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 - 2023

- Online

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. **Case Study**
Weighting: 30%
2. **Written Assessment**
Weighting: 30%
3. **Online Quiz(zes)**
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 Teacher reflection

Feedback

Students enjoy analysing the case studies during tutorials

Recommendation

Continue to include case studies during tutorials.

Unit Learning Outcomes

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

1. Describe the scientific nature of hazards
2. Explain the principles of energy conversion as it applies to health and safety risk
3. Apply scientific principles to explain fatality, injury, illness and harm
4. Utilise scientific research to improve health and safety outcomes
5. Analyse the utility and practicality of risk controls in a structured and scientific manner.

Alignment of Learning Outcomes, Assessment and Graduate Attributes

— N/A Level | ∘ Introductory Level | • Intermediate Level | • Graduate Level | ∘ Professional Level | ∘ Advanced Level

Alignment of Assessment Tasks to Learning Outcomes

Assessment Tasks	Learning Outcomes				
	1	2	3	4	5
1 - Case Study - 30%	•	•	•	•	
2 - Written Assessment - 30%			•	•	•
3 - Online Quiz(zes) - 40%	•	•			•

Alignment of Graduate Attributes to Learning Outcomes

Graduate Attributes	Learning Outcomes				
	1	2	3	4	5
1 - Communication	•	•	•		•
2 - Problem Solving			•	•	•
3 - Critical Thinking	•	•	•	•	•
4 - Information Literacy	•	•	•	•	•

Graduate Attributes	Learning Outcomes				
	1	2	3	4	5
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 - Case Study - 30%	•	•	•	•		•				
2 - Written Assessment - 30%	•	•	•	•	•	•	•		•	
3 - Online Quiz(zes) - 40%		•	•			•				

Textbooks and Resources

Textbooks

OCHS12018

Supplementary

Occupational Risk Control: Predicting and Preventing the Unwanted
(2016)
Authors: Viner, Derek
Taylor & Francis
London , UK
Binding: eBook

View textbooks at the CQUniversity Bookshop

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
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Schedule

Week 1 - 06 Mar 2023

Module/Topic	Chapter	Events and Submissions/Topic
Introduction to Safety Science	Chapter 5 Safety OHS BoK Chapter 6 Health OHS BoK Chapter 7.1 The Human OHS BoK Chapter 12.1 Systems OHS BoK Chapter 15 Hazard OHS BoK Chapter 34.1 Control (OHS BoK)	Introduce yourself in the **Arrivals Lounge** so we know you can access the unit Moodle site. Start forming **Teams** in the **self-select** function (Teams of 4) for Assessment Item 2**.** **Direct Access to the Text**: OHS Body of Knowledge (BoK)

Week 2 - 13 Mar 2023

Module/Topic	Chapter	Events and Submissions/Topic
Underpinning Scientific Concepts of Safety	Chapter 14 Foundational Science OHS BoK	**Assessment Item 3 (Quizzes) - Quiz 1** opens Monday, March 13th. **Team Tip:** you may think it is too early to start focusing on Assessment Item 2, though early engagement with your team members produces greater success and allows you time to get to know each other. Self-select into a team (4 members) now.

Week 3 - 20 Mar 2023

Module/Topic	Chapter	Events and Submissions/Topic
Underpinning Scientific Concepts of Safety, Cont.	Chapter 3 The Origins of Damage and Loss: Understanding the Processes (Derek Viner) Chapter 4 Consolidating the Concepts, *Accident Analysis and Risk Control* by Derek Viner Chapter 34.1 Control OHS BoK	**Quiz Tip:** You can save the quizzes as many times as you like until it is due. If you do not submit the quiz when it is due, Moodle will automatically submit for you. **Team Tip (Assessment Item 2):** Are you in a team yet? Remember teams that form early are more successful. Get to know your team members. They can form part of your professional network.

Week 4 - 27 Mar 2023

Module/Topic	Chapter	Events and Submissions/Topic
Physical and Mechanical Hazards	16 Work Related MSDs OHS BoK 27 Gravitational Hazards OHS BoK 28 Mechanical Plant OHS BoK	**Quiz 2** opens Monday, March 27th. **Census Date:** Tuesday is the last day you can drop a unit without financial and academic penalty. Now is a good time to review your current study load. **Team Tip (Assessment Item 2):** If not in a team by Wednesday, you will be placed in a team by your lecturer. **Assessment Alert:** Quiz 1 closes next week.

Week 5 - 03 Apr 2023

Module/Topic	Chapter	Events and Submissions/Topic

Noise and Vibration	22.1 Occupational Noise OHS BoK 22.2 Vibration OHS BoK	**Quiz Tip:** Complete Quiz 2 questions weekly for best results. **Team Tip (Assessment Item 2)**: Teams that get to know each other perform better together. **Quiz 1** Due: Week 5 Thursday (6 April 2022) 11:59 pm AEST

Vacation Week - 10 Apr 2023

Module/Topic	Chapter	Events and Submissions/Topic
		Assessment Item 1 Tip: Start selecting the three (3) case studies for Assessment Item 1 (list on Moodle). **Team Tip (Assessment Item 2):** Take the initiative and don't wait for someone else in the team to get started.

Week 6 - 17 Apr 2023

Module/Topic	Chapter	Events and Submissions/Topic
Light and Radiation	Chapter 24 Ionising Radiation OHS BoK Chapter 25 (Non-ionising Radiation OHS BoK	**Quiz Tip:** Complete quiz questions on light and radiation (and save). **Assessment Item 1 Tip:** Try to complete a case study each week. **Team Tip (Assessment Item 2)**: Teams that develop a team charter (or contract) have greater completion-on-time success.

Week 7 - 24 Apr 2023

Module/Topic	Chapter	Events and Submissions/Topic
Electrical Hazards	Chapter 23.1 Electricity OHS BoK Chapter 23.2 Electricity Appendix OHS BoK	**Quiz Tip:** Complete quiz questions on electrical hazards (and save). **Team Tip (Assessment Item 2):** If issues arise that disrupt your involvement in the team, let someone in your team know to avoid uncertainty and angst.

Week 8 - 01 May 2023

Module/Topic	Chapter	Events and Submissions/Topic
Chemical Hazards I - Reactivity	Chapter 17 Chemical Hazards OHS BoK	**Quiz Tip:** Start quiz questions on chemical hazards (and save). **Team Tip (Assessment Item 2):** Meet regularly to ensure everyone knows what needs to be done for the Team Report. **Assessment Item 1 Alert:** Due next week.

Week 9 - 08 May 2023

Module/Topic	Chapter	Events and Submissions/Topic
Chemical Hazards II - Toxicity & More	Chapter 17.4 Process Hazards OHS BoK Chapter 26 Thermal Environment OHS BoK	**Quiz Tip:** Complete quiz questions on chemical hazards (and save). **Team Tip (Assessment Item 2):** Share the work you have done at the team meeting to ensure you are on the right track, and consider suggestions offered by your teammates. **Case Study Analyses** Due: Week 9 Friday (12 May 2023) 11:59 pm AEST

Week 10 - 15 May 2023		
Module/Topic	**Chapter**	**Events and Submissions/Topic**
Biological Hazards	Chapter 18 Biological Hazards OHS BoK	**Quiz Tip:** Complete quiz questions on biological hazards (and save). **Team Tip:** Happy teams have members who are active participants, take responsibility for their own references, raise issues in a timely manner, and offer to help others in need. **Assessment Item 2 Tip:** Final checks. Ensure the report reads as a cohesive whole. Remove any repetition and re-phrase where necessary. **Assessment Item 2 Alert:** Due next week.

Week 11 - 22 May 2023		
Module/Topic	**Chapter**	**Events and Submissions/Topic**
Psychosocial Hazards	Chapter 8.1 The Human - Basic Psychological Principles OHS BoK Chapter 19 Psychosocial Hazards and Occupational Stress OHS BoK Chapter 21 Bullying and violence OHS BoK Chapter 34.4 Design of work OHS BoK Good Work Design, Parker & Jorritsma, 2020	**Quiz Tip:** Complete quiz questions on psychosocial hazards (and save). **Team Tip:** Avoid team plagiarism - check the Turnitin score (Upload and 'save'). Results take about 20 minutes. Submit when everyone has fixed their similarity issues. **Team (& Individual) Report** Due: Week 11 Friday (26 May 2023) 11:59 pm AEST

Week 12 - 29 May 2023		
Module/Topic	**Chapter**	**Events and Submissions/Topic**
The Big Picture		**Quiz 2** closes Friday. **Quiz Tip:** Before submitting Quiz 2, check that you have completed all questions (then submit). **Online Quizzes** Due: Week 12 Friday (2 June 2023) 11:59 pm AEST

Review/Exam Week - 05 Jun 2023		
Module/Topic	**Chapter**	**Events and Submissions/Topic**

Exam Week - 12 Jun 2023		
Module/Topic	**Chapter**	**Events and Submissions/Topic**

Assessment Tasks

1 Case Study Analyses

Assessment Type
Case Study

Task Description
The purpose of this assignment is to demonstrate that you can apply scientific principles and a systems thinking lens to explain the process that resulted in damage or harm. You will be presented a list of case studies on Moodle.
You are required to select and analyse three (3) case studies from the list provided within Moodle. Your three selected case studies must each feature a different type of damaging energy.
Using the energy-damage model, each analysis must address the following:

- Case Study: Identify the selected case study
- Preconditions: Applying a systems thinking lens, identify preconditions that make the event mechanisms possible
- HCFM: Identify and describe the Hazard Control Failure Mechanism (HCFM) that led to the event
- Damaging Energy: Identify the form of energy immediately before control of its damaging properties was lost
- Event: Describe the point in time in which control was lost
- STM: Identify the space transfer mechanism (STM)
- Energy Transfer: Describe the energy transference that led to damage
- Consequences: Identify the assets damaged (recipients)
- Damage threshold: Identify the damage threshold of the recipients
- References: CQUni Harvard Referencing Style Guide (located in the Unit Profile)

Students are more likely to be successful with submissions of 300-400 words per case study AND use the nine headings above. Table format is recommended (see provided template on Moodle).

Assessment Due Date
Week 9 Friday (12 May 2023) 11:59 pm AEST
Three case studies are to be submitted in one document. Please provide a cover page.

Return Date to Students
Week 11 Friday (26 May 2023)
Grades will be returned within 2 weeks of the due date.

Weighting
30%

Assessment Criteria
Your submission will be assessed against the following criteria:
Each case study analysis (10 marks, for a total of 30 marks)
Depth of analysis, conciseness, and level of accuracy for the following:

- Case (1 mark)
- Preconditions (1 mark)
- Hazard Control Failure Mechanism (1 mark)
- Damaging Energy (1 mark)
- Damage Event (1 mark)
- Space Transfer Mechanism (1 mark)
- Energy transference process (1 mark)
- Consequences (damaged assets) (1 mark)
- Recipient damage threshold (1 mark)
- References - reputability and style accuracy (1 mark)

Referencing Style

- Harvard (author-date)

Submission
Online

Submission Instructions
Submissions must be in DOC, DOCX or PDF format only.

Learning Outcomes Assessed

- Describe the scientific nature of hazards
- Explain the principles of energy conversion as it applies to health and safety risk
- Apply scientific principles to explain fatality, injury, illness and harm
- Utilise scientific research to improve health and safety outcomes

Graduate Attributes

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

2 Team (& Individual) Report

Assessment Type
Written Assessment

Task Description
The purpose of this assignment is to demonstrate application of scientific principles and systems thinking to a safety science problem. This is a team assignment (4 members) with an individual component. You can self-select into your own teams by Wednesday of Week 4. After this time, if you are not in a team, you will be assigned to one by the following Friday.
There are two parts to this Team Report:
Part 1: Team Component
On Moodle, you will be provided a case for which you will analyse and present recommendations in the form of a concise report to the company. In your response, you should include:

1. Introduction (problem and background on prevalence of similar accidents)
2. Analysis of the major hazard (as per the case study), including details of:
    - The conditions under which the major hazard can occur
    - The chemical, physical, or biological properties of the major hazard/ damaging energy
    - The potential for secondary events (e.g. fires and explosions) following energy release
    - Available risk control measures
    - Evidence from research in the field
3. A discussion of the merits of various interventions. Your considered opinion concerning the most appropriate intervention(s), based on the evidence you have reviewed and what might be reasonably practicable **(Individual contributions)**
4. Recommendations for implementing your chosen intervention strategy/strategies
5. Appendix: Corrective Actions Plan (descriptions, dates, signoffs)

Report word range: 2500 - 3000 words
Submit in conventional reporting format

- Title Page
- Executive Summary
- Table of Contents
- Introduction
- Methods
- Findings
- Discussion **(individual contributions, please label)**
- Conclusion
- Recommendation
- References
- Appendix

Part 2: Individual component
In 150 - 200 words (and in keeping within the overall team report wordcount), each team member is to contribute to the discussion by offering one potential intervention (risk control measure) intended to improve health and safety outcomes related to the case under investigation. You are to voice your considered opinion as to the suitability (including purpose, level of control) and practicality (trade-offs, cost-benefit) of your chosen intervention. Your opinion is to be based on the evidence reviewed in the literature (i.e. peer reviewed journal articles, and reputable grey literature). Include citations and full references in the report reference list.
The Team Report Discussion section relates to Point 3 in the Task Description and aligns with Learning Outcomes (LO) 4 and 5

- LO 4: *Utilise scientific research to improve health and safety outcomes*
- LO 5: *Analyse the utility and practicality of risk controls in a structured and scientific manner*

NOTE: Present the individual components in the Discussion Section and under a subheading that contains the student's name (your name) as an identifier.

Assessment Due Date
Week 11 Friday (26 May 2023) 11:59 pm AEST
Submit the Team Report (as a team) in DOC, DOCX, or PDF formats.

Return Date to Students
Review/Exam Week Friday (9 June 2023)
Marks and feedback will be available to students two weeks after the due date.

Weighting
30%

Assessment Criteria
Total weighting 30%

- Team report - total weighting 21% (70 marks),
- Individual contribution (discussion item) 9% (30 marks)

Your submission will be assessed against the following criteria:
Introduction & Conclusion (10 marks)

- Introduction - Problem & background
- Conclusion - Significance

Methods (10 marks)

- Outline the process of investigation (methods and process)

Findings (as per the analysis of the [major hazard] in the [relevant] industry (20 marks)

- The conditions under which the [major hazard] can occur
- The potential for secondary events (e.g., fires and explosions)
- The chemical, physical or biological properties of the [major hazard/damaging energy]
- Interpretation of what you learned

Discussion **[Individual contributions]** (What more can be done?) (20 marks)

- Merits of various interventions
- Consideration of hierarchies of control, practicality, and cost-benefit
- Depth of discussion and your opinion based on reputable and credible evidence

Recommendations for action (10 marks)

- Clearly delineated and direct
- Makes logical connections between evidence, opinion, and recommendations
- Use of Hierarchy of Control to frame interventions
- Suitable risk control plan (or corrective action plan) for the intervention(s) recommended

Technicalities [Team] (10 marks) and **[Individual]** (10 marks)

- Written expression is concise and easy to read
- Format, grammar, and spelling support readability
- References are consistent with CQUni Harvard Style (as per located in the unit profile)
- Contains at least 10 reputable references, 4 of which are peer-reviewed journal articles

Appendix: Corrective Actions Plan (10 marks)

- As per recommendations
- Short, medium, and longer-term actions
- Signoffs

Referencing Style

- Harvard (author-date)

Submission
Online Group

Submission Instructions
The Team Report must be submitted by one member of the team in DOC, DOCX or PDF.

Learning Outcomes Assessed

- Apply scientific principles to explain fatality, injury, illness and harm
- Utilise scientific research to improve health and safety outcomes
- Analyse the utility and practicality of risk controls in a structured and scientific manner.

Graduate Attributes

- Communication
- Problem Solving

- Critical Thinking
- Information Literacy
- Team Work
- Information Technology Competence
- Cross Cultural Competence
- Social Innovation

3 Online Quizzes

Assessment Type
Online Quiz(zes)

Task Description
You are required to complete 2 online quizzes, each assessing your understanding of the learning material and a little more research of your own. The quizzes do not have a time limit. This allows time to conduct the necessary research needed to complete the quiz. You can save the quiz and return to it, as many times as you like before the quiz closes. If you have not submitted your quiz, the quiz will submit automatically on the due date. Results are available after the quiz has closed. While there is a lot of flexibility for when you complete quiz questions, it is recommended that you complete the quizzes as the related topic is covered each week, or soon after.
The following details apply to each quiz.

- Quiz 1 (10%) covers the material from weeks 1 to 3. It opens Monday of Week 2 and closes Thursday of Week 5.
- Quiz 2 (30%) covers the material from weeks 4 to 11. It opens Monday of Week 4 and closes Friday of Week 12.

Both quizzes will automatically submit your work when it is due. So, ensure you save your work regularly and keep an eye on due dates. If you have technical difficulties, please contact the Unit Coordinator as soon as possible. In light of the flexibility afforded to you, extensions will not be granted.

Number of Quizzes
2

Frequency of Quizzes
Other

Assessment Due Date
Week 12 Friday (2 June 2023) 11:59 pm AEST
Quiz 1 will close Thursday of Week 5 at 11:59 PM. Quiz 2 will close Friday of Week 12 at 11:59 PM.

Return Date to Students
Exam Week Friday (16 June 2023)
Fill-in-the-blank questions will be graded after the quiz has been submitted.

Weighting
40%

Assessment Criteria
Quiz 1 is worth 10% of your overall grade for this unit. Quiz 2 is worth 30% of your overall grade for this unit. Marks will be awarded for correct answers.

Referencing Style

- Harvard (author-date)

Submission
Online

Submission Instructions
Both quizzes will automatically submit responses when the quiz closes.

Learning Outcomes Assessed

- Describe the scientific nature of hazards
- Explain the principles of energy conversion as it applies to health and safety risk
- Analyse the utility and practicality of risk controls in a structured and scientific manner.

Graduate Attributes

- Problem Solving
- Critical Thinking
- Information Technology Competence

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