AINV20006 *Safety and Accident Phenomenology*
Term 1 - 2023

Profile information current as at 28/04/2024 10:20 am

All details in this unit profile for AINV20006 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 enable you to understand the phenomena of accidents from an epidemiological perspective and apply your learning to actively improve safety. You will use an analytical approach to evaluate risk and demonstrate an understanding of both failures and failure prevention methods. As part of your study in the unit you will apply a range of theoretical accident causation models to systems failures, while understanding their effective characteristics, including the strengths and weaknesses of these models. On completion, you will be able to articulate the evolution of principles, methods and models relating to the phenomenology and epidemiology of accidents, accident prevention systems and forensic analysis of accident data.

Details

Career Level: *Postgraduate*
Unit Level: *Level 8*
Credit Points: *12*
Student Contribution Band: *8*
Fraction of Full-Time Student Load: *0.25*

Pre-requisites or Co-requisites

There are no requisites for this unit.
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 12-credit Postgraduate unit at CQUniversity requires an overall time commitment of an average of 25 hours of study per week, making a total of 300 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. **Group Discussion**
Weighting: 20%
2. **Written Assessment**
Weighting: 20%
3. **Written Assessment**
Weighting: 60%

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 Have Your Say

Feedback

Students appreciated the real world case studies with respect to accident investigation.

Recommendation

Contine to use real world examples with an emphasis on current accidents.

Feedback from Have Your Say

Feedback

Students would like more Zoom sessions to practice the skills learnt.

Recommendation

Provide extra Zoom sessions to practice accident modeling and analysis.

Unit Learning Outcomes

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

1. Examine the existence of multiple interpretations of reality and their impact on the recognition of accident pathogens and causation factors
2. Appraise contemporary concepts and methods, defining logic, reasoning and evidence based practice
3. Analyse the nature of risk, systems, systems failure and failure prevention methods
4. Explain the evolution of accident epidemiology and the precepts of accident causation
5. Apply accident causation models to explain the accident phenomenon.

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 - Group Discussion - 20%	•	•	•	•	•
2 - Written Assessment - 20%	•	•	•		
3 - Written Assessment - 60%			•	•	•

Alignment of Graduate Attributes to Learning Outcomes

Graduate Attributes	Learning Outcomes				
	1	2	3	4	5

Graduate Attributes	Learning Outcomes				
	1	**2**	**3**	**4**	**5**
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 - Group Discussion - 20%	○	○	○	○	○	○		
2 - Written Assessment - 20%	○	○	○	○	○	○		
3 - Written Assessment - 60%	○	○	○	○	○	○		

Textbooks and Resources

Textbooks

There are no required textbooks.

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

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Schedule

Week 1 - 06 Mar 2023

Module/Topic	Chapter	Events and Submissions/Topic
Lecture: Introduction & Unit Overview		No tutorial

Week 2 - 13 Mar 2023

Module/Topic	Chapter	Events and Submissions/Topic
Lecture: The Accident Phenomenon	Allison, R.W., Hon, C.K. and Xia, B., 2019. Construction accidents in Australia: Evaluating the true costs. Safety Science, 120, pp.886-896. Ferry, (1988) Modern Accident Investigation and Analysis 2nd Ed, John Wiley & Sons, New York	Tutorial: On demand

Week 3 - 20 Mar 2023

Module/Topic	Chapter	Events and Submissions/Topic
Lecture: The Accident Phenomenon (cont'd)	Applicable readings will be provided in Moodle	Tutorial: On demand

Week 4 - 27 Mar 2023

Module/Topic	Chapter	Events and Submissions/Topic
Lecture: The Evolution of Accident Investigation and Prevention	Applicable readings will be provided in Moodle	Tutorial: On demand Discussion 1 due Monday 27 March 2023 9.00am

Week 5 - 03 Apr 2023

Module/Topic	Chapter	Events and Submissions/Topic
Lecture: Heinrich's Domino Theory	Rad, K.G., 2013. Application of domino theory to justify and prevent accident occurance in construction sites. *IOSR J. Mech. Civ. Eng. IOSR-JMCE*, *6*, pp.72-76. SIA, (2012) OHS Body of Knowledge Models of Causation: Safety, Tullamarine Hosseinian, S.S. and Torghabeh, Z.J., 2012. Major theories of construction accident causation models: A literature review. International Journal of Advances in Engineering & Technology, 4(2), p.53.	Tutorial: On demand

Vacation Week - 10 Apr 2023

Module/Topic	Chapter	Events and Submissions/Topic

Week 6 - 17 Apr 2023

Module/Topic	Chapter	Events and Submissions/Topic

	Runyan C., (2003), Revisiting Haddon's Conceptualization of Injury Epidemiology and Prevention, Epidemiologic Review, Vol.25	
Lecture: The Haddon Matrix	Barnett, D., et al, (2005), The Application of the Haddon Matrix to Public Health Readiness, Environmental Health perspectives, Vol 113, No 5.	Tutorial: On demand Discussion 2 due Monday 17 April 2023 9.00am
	Runyan, C.W., 1998. Using the Haddon matrix: introducing the third dimension. Injury prevention, 4(4), pp.302-307.	
	Haddon Jr, W., 1980. Advances in the epidemiology of injuries as a basis for public policy. Public health reports, 95(5), p.411.	
	Williams, A.F., 1999. The Haddon matrix: its contribution to injury prevention and control. In Third National Conference on Injury Prevention and Control (pp. 15-16).	

Week 7 - 24 Apr 2023

Module/Topic	Chapter	Events and Submissions/Topic
Lecture: Reason's System Safety Management Model	Reason, J., Hollnagel, E. and Paries, J., 2006. Revisiting the Swiss cheese model of accidents. Journal of Clinical Engineering27(4), pp.110-115.	Tutorial: On demand

Week 8 - 01 May 2023

Module/Topic	Chapter	Events and Submissions/Topic
		Tutorial: On demand
Lecture: Viner's Energy Damage Model & Time Sequence Model	Viner, D., 1991. Chapter 4 Accident analysis and risk control. VRJ Delphi.	**Written Assessment - Accident Prevention Paper** Due: Week 8 Monday (1 May 2023) 9:00 am AEST

Week 9 - 08 May 2023

Module/Topic	Chapter	Events and Submissions/Topic
Lecture: The Tapestry of Failure	Dekker, S.W., 2004. Why we need new accident models. Human Factors and Aerospace Safety, 4(1), pp.1-18	Tutorial: On demand Discussion 3 due Monday 8 May 2023 9.00am

Week 10 - 15 May 2023

Module/Topic	Chapter	Events and Submissions/Topic
Lecture: Safety II and the Accident Phenomenon	Hollnagel, E., Wears, R.L. and Braithwaite, J., 2015. From Safety-I to Safety-II: a white paper. The resilient health care net: published simultaneously by the University of Southern Denmark, University of Florida, USA, and Macquarie University, Australia.	Tutorial: On demand

Week 11 - 22 May 2023

Module/Topic	Chapter	Events and Submissions/Topic
Lecture: Preparing for your final report.	Applicable readings will be provided in Moodle	Tutorial: On demand

Week 12 - 29 May 2023

Module/Topic	Chapter	Events and Submissions/Topic
Independent study		No tutorial Mind Map due Monday 29 May 2023 9.00am

Review/Exam Week - 05 Jun 2023

Module/Topic	Chapter	Events and Submissions/Topic
		Practical Assessment - Theoretical Accident Causation Models Due: Review/Exam Week Monday (5 June 2023) 9:00 am AEST

Exam Week - 12 Jun 2023

Module/Topic	Chapter	Events and Submissions/Topic

Assessment Tasks

1 Group Discussion and Mind Maps

Assessment Type
Group Discussion

Task Description
Three discussion subjects related to the current changing world of socio-technical complexities, the history of accidents and approaches to investigation will be put up on the Moodle site in Week one.
You must post your own considered opinion on each of the three topics and also respond to and comment upon one of your fellow students' posts in each topic.
You must then prepare and submit a Mind Map from one of the three subjects that summarises the concepts and issues from the on-line discussions and your own research and experience.
Further information will be provided in Moodle.

Assessment Due Date

Discussion 1 - 27 March 2023: Discussion 2 - 17 April 2023: Discussion 3 - 8 May 2023: Mind Map - 29 May 2023

Return Date to Students

Two weeks after due date

Weighting
20%

Assessment Criteria
The Mind Map will be worth 5 marks. There will be 5 marks allocated to each discussion topic. This will be for your initial post and your response to a peer.
As a guide your submission for the online submissions, the initial post should be 400-500 words. The responses to your peers should be approximately 300 words

Referencing Style

- Harvard (author-date)

Submission
Online

Learning Outcomes Assessed

- Examine the existence of multiple interpretations of reality and their impact on the recognition of accident pathogens and causation factors
- Appraise contemporary concepts and methods, defining logic, reasoning and evidence based practice
- Analyse the nature of risk, systems, systems failure and failure prevention methods
- Explain the evolution of accident epidemiology and the precepts of accident causation
- Apply accident causation models to explain the accident phenomenon.

Graduate Attributes

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

2 Written Assessment - Accident Prevention Paper

Assessment Type
Written Assessment

Task Description
Task Description
Write a paper to describe why you think accidents are still occurring after more than 100 years of "modern" approaches to accident prevention.
Your paper needs to draw conclusions from a comprehensive review of the relevant literature and any from this unit to date. Where you draw conclusions from specific industries or individual cases or circumstances, you must demonstrate how these industry examples, cases or circumstances are representative of the overall accident phenomenon affecting modern society.
Use evidence based practice to discuss how these accident prevention concepts align to managing the nature of risk, systems, systems failure and failure prevention methods.
Your paper should be a maximum of 2000 words and your arguments should be supported by appropriate citations from the literature and applicable case studies.
Your work should be correctly referenced using the current CQUni Harvard author/date referencing style. A list of all references used should be included at the end of your paper. (Minimum of 8 references)

Assessment Due Date
Week 8 Monday (1 May 2023) 9:00 am AEST

Return Date to Students

2 weeks after due date

Weighting
20%

Assessment Criteria
A rubric will be made available in Moodle.
5. Viewpoint as to why accidents are still occurring and draws from the learnings in the literature and the unit
6. Logical argument
7. Consistently accurate spelling and grammar
8. Referencing

Referencing Style

- Harvard (author-date)

Submission
Online

Learning Outcomes Assessed

- Examine the existence of multiple interpretations of reality and their impact on the recognition of accident pathogens and causation factors
- Appraise contemporary concepts and methods, defining logic, reasoning and evidence based practice
- Analyse the nature of risk, systems, systems failure and failure prevention methods

Graduate Attributes

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

3 Practical Assessment - Theoretical Accident Causation Models

Assessment Type
Written Assessment

Task Description
This assessment has 2 parts. Part A. Position paper. (30%)
Select one accident model from the following list:

- Heinrich's Domino Theory
- Haddon Matrix
- Reason System Safety Management Model
- Time Sequence Model
- Extended Energy Damage Model

Then choose 2 elements from:

- Technology
- Systems
- Human Factors
- Social and organisational networks, including management and supervision
- Education & Training
- Culture

Explore literature and discuss the theoretical underpinnings of the chosen model in relation to its effectiveness in:

- Addressing failure
- Establishing and validating corrective, remedial and preventative actions and
- Learning from Failure in general.

Your position paper should be limited to 2000 words maximum and be supported by relevant citations from the literature. Your paper MUST be written in the third person.
Part B. Position paper. (30%)
In this assessment task you will choose one accident case study from the following list:

- Union Carbide Fatal Methyl Isocyanate Gas Leak, Bhopal India, December 2, 1984
- Pan American B747 and KLM B747 Collision at Tenerife, Canary Islands on March 27, 1977
- Waterfall rail accident, Waterfall Sydney Australia, January 31, 2003
- Level crossing collision between a school bus and train 7GP1 near Moorine Rock, Western Australia, 23 March 2009
- Costa Concordia sank after striking submerged rocks, Isola del Giglio, Italy,13 January 2012
- Shuttle Challenger exploded after take-off 28 January 1986

Select two theoretical accident models (different to that chosen for Part A) from the following list:

- Heinrich's Domino Theory
- Haddon Matrix
- Reason System of Safety Management Model
- Time Sequence Model
- Extended Energy Damage Model

Populate the models with the critical factors from your chosen case study to explain, in the language of the models, the failures which occurred in the accident. An Excel Template will be made available in Moodle.
Next prepare a written report to contrast and explain how well the two theoretical models enabled explanation of the accident phenomena in the case study.
Your report should not exceed 2000 words. It should be supported by relevant citations (minimum of 10) from the literature.

Assessment Due Date
Review/Exam Week Monday (5 June 2023) 9:00 am AEST

Return Date to Students

Two weeks after due date

Weighting
60%

Minimum mark or grade
A minimum of 50% for this assessment is required to pass the unit

Assessment Criteria
The following assessment criteria will apply:

1. Explores the literature and discusses the theoretical underpinnings of the chosen model
2. Discusses the effectiveness in addressing failures in two of the chosen elements and the models guidance in learning from failure
3. A logical argument is presented
4. Prepare well developed and populated selected models and provide clear description of the failures as shown in the models.
5. Grammar and spelling are consistently accurate
6. Referencing
7. Presentation

Referencing Style

- Harvard (author-date)

Submission
Online

Learning Outcomes Assessed

- Analyse the nature of risk, systems, systems failure and failure prevention methods
- Explain the evolution of accident epidemiology and the precepts of accident causation
- Apply accident causation models to explain the accident phenomenon.

Graduate Attributes

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

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