



# AINV20006 Safety and Accident Phenomenology

## Term 1 - 2017

Profile information current as at 20/04/2024 06:28 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

Safety and Accident Phenomenology enables students to understand the phenomena of accidents from an epidemiological perspective and apply their learning to actively improve safety. Students will use an analytical approach to risk and understanding of both failures and failure prevention methods. During the unit, students 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, students 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. Practical and theoretical application of the skills and concepts are developed during a compulsory Residential School.

### 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 - 2017

- Distance

### 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).

### Residential Schools

This unit has a Compulsory Residential School for distance mode students and the details are:

Click here to see your [Residential School Timetable](#).

### 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. **Practical Assessment**

Weighting: 30%

#### 3. **Written Assessment**

Weighting: 20%

#### 4. **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 Have your say

##### Feedback

Scheduling of on-line lectures in the evenings did not meet all students' time availability.

##### Recommendation

Alternate methods of content delivery will be introduced for T1 2017 offering which provides more flexibility for students with conflict work and study demands and differing learning styles.

##### Action

Student study needs were canvassed at the start of T1 and additional one on one tutorial sessions were carried out to ensure no-one was disenfranchised. Work has also commenced to create additional unit content artefacts to aid students with study and work conflicts. This work will be finalised in T3 2017 and introduced for the T1 2018 offering.

## 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



### Alignment of Assessment Tasks to Learning Outcomes

Assessment Tasks	Learning Outcomes				
	1	2	3	4	5
1 - Group Discussion - 20%	•	•	•		
2 - Practical Assessment - 30%				•	•
3 - Written Assessment - 20%			•		
4 - Written Assessment - 30%				•	•

### Alignment of Graduate Attributes to Learning Outcomes

Graduate Attributes	Learning Outcomes				
	1	2	3	4	5
1 - Knowledge	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2 - Communication	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3 - Cognitive, technical and creative skills	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4 - Research	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5 - Self-management	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6 - Ethical and Professional Responsibility	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
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%	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>		
2 - Practical Assessment - 30%	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>		
3 - Written Assessment - 20%	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>		
4 - Written Assessment - 30%	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>		

## 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

**Geoffrey Dell** Unit Coordinator  
[g.dell@cqu.edu.au](mailto:g.dell@cqu.edu.au)

## Schedule

### Week 1 - 06 Mar 2017

**Module/Topic****Chapter****Events and Submissions/Topic**

On-line tutorial Session 1:

- Introduction & Unit overview
- Topic 1 Safety and the Accident Phenomenon

### Week 2 - 13 Mar 2017

**Module/Topic****Chapter****Events and Submissions/Topic**

On-line tutorial Session 2:

- Topic 1 (Cont): The Accident Phenomenon

### Week 3 - 20 Mar 2017

**Module/Topic****Chapter****Events and Submissions/Topic**

On-line tutorial Session 3:

- Topic 2: The Context of Risk & Risk Analysis Tools

### Week 4 - 27 Mar 2017

**Module/Topic****Chapter****Events and Submissions/Topic**

On-line tutorial Session 4

- Preparing for the Residential School

### Week 5 - 03 Apr 2017

**Module/Topic****Chapter****Events and Submissions/Topic**

Residential School - Bundaberg 3/4 to 7/4 inclusive. Topics Covered:

- Orientation to Transport & Safety Science Post Graduate Study
  - Topic 3: The context of People, including tutorials
  - Topic 4: Logic, reasoning and evidence, including tutorials, pracs & field exercises
  - Topic 5: Applied risk analysis, including field exercises
  - Topic 6: The Evolution of Accident Investigation and Prevention, including tutorials
  - Topic 7: The Science of Accidents and Theoretical Accident Causation Models, including tutorials
- Students are also required to prepare and deliver a presentation to staff and the student peer group at the residential school.

**Moodle Discussions & Mind Maps**  
Due: Week 5 Friday (7 Apr 2017)  
11:45 pm AEST

### Vacation Week - 10 Apr 2017

**Module/Topic****Chapter****Events and Submissions/Topic**

### Week 6 - 17 Apr 2017

**Module/Topic****Chapter****Events and Submissions/Topic**

On-line tutorial Session 5:  
 • Topic 7 (Cont): Theoretical Accident Causation Models Case Study: Heinrich's Domino Theory and Titanic

**Practical Assessment (carried out at the Res School)** Due: Week 6 Friday (21 Apr 2017) 11:45 pm AEST

**Week 7 - 24 Apr 2017**

Module/Topic	Chapter	Events and Submissions/Topic
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On-line tutorial Session 6:  
 • Topic 7 (Cont): Theoretical Accident Causation Models Case Study: Haddon Matrix and Texas City Explosion

**Week 8 - 01 May 2017**

Module/Topic	Chapter	Events and Submissions/Topic
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**Week 9 - 08 May 2017**

Module/Topic	Chapter	Events and Submissions/Topic
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On-line Tutorial Session 7:  
 • Topic 7 (Cont): Theoretical Accident Causation Models Case Study: Loss of the Challenger Space Shuttle and Viner's Energy Damage Model, Viner's Time Sequence Model & Reason's System of Safety Management Model

**Week 10 - 15 May 2017**

Module/Topic	Chapter	Events and Submissions/Topic
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**Accident Prevention Paper** Due: Week 10 Monday (15 May 2017) 9:00 am AEST

**Week 11 - 22 May 2017**

Module/Topic	Chapter	Events and Submissions/Topic
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On-line Tutorial Session 8:  
 • Review and discuss student progress and any issues with assessment tasks

**Week 12 - 29 May 2017**

Module/Topic	Chapter	Events and Submissions/Topic
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On-line tutorial Session 9:  
 • Review and discuss student progress and any issues with assessment tasks

**Review/Exam Week - 05 Jun 2017**

Module/Topic	Chapter	Events and Submissions/Topic
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**Theoretical Accident Causation Models: Evaluation Reports** Due: Review/Exam Week Monday (5 June 2017) 9:00 am AEST

**Exam Week - 12 Jun 2017**

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

### 1 Moodle Discussions & Mind Maps

**Assessment Type**  
 Group Discussion

### **Task Description**

Four key subjects related to the history of accidents and investigation will be introduced in the AINV20006 Moodle discussion forum in Week 1.

The discussion subjects will be:

- Discussion subject 1: Are people the cause of accidents, or are they a part of the hazard control system that can fail?
- Discussion subject 2: Systems failures can cause accidents: How can systems be made more fail safe?
- Discussion subject 3: What is 'Safety Culture' and how can you measure it?
- Discussion subject 4: What is the impact of 'Just Culture' and blame on the effectiveness of investigations?

All students are expected to participate on-line in every one of these group discussions. You must post your own considered opinion on each topic and also respond to and comment upon at least two of your fellow students posts in each topic.

Each student must then prepare and submit a "mind map" which summarises the concepts and issues related to each of two of the four subjects arising from the on-line discussions and your own research and experience. That is you have to create and submit two mindmaps; one for each of the two subjects chosen from the four online discussions.

Each Mind Map will be worth 6% of the total marks for the unit (total of 12% for Mind Maps). The balance of 8% of the marks for this assessment will be allocated for student's contribution to the on-line discussions.

### **Assessment Due Date**

Week 5 Friday (7 Apr 2017) 11:45 pm AEST

### **Return Date to Students**

Week 7 Friday (28 Apr 2017)

### **Weighting**

20%

### **Assessment Criteria**

As a general rule assessment criteria for all assessment items include:

1. (90%) Content—includes the accuracy, relevance and application of key concepts, analysis, argument, language and grammar used in answering a question or report (see marking criteria for individual requirements).
2. (10%) References—includes the provision of a reference list and the application of the Harvard style for referencing information, data, tables or images sourced for the assignment or report.

The specific rubric for grading the Moodle Discussions and Mindmaps can be found in the Moodle Unit.

### **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

## **2 Practical Assessment (carried out at the Res School)**

### **Assessment Type**

Practical Assessment

### **Task Description**

Students will carry out a range of practical and applied activities at the residential school. The activities will address student understanding and application of concepts and models including:

- Orientation to Transport & Safety Science Post Graduate Study
- The context of People, including tutorials
- Logic, reasoning and evidence, including tutorials, pracs & field exercises
- Applied risk analysis, including field exercises
- The Evolution of Accident Investigation and Prevention, including tutorials
- The Science of Accidents and Theoretical Accident Causation Models, including tutorials

Students are also required to prepare and deliver a presentation to staff and the student peer group at the residential school.

Most practical activities, including the formal presentation by each student, will be completed and assessed at the residential school. Student artefacts from some res school activities will need to be consolidated and submitted after the res school by the submission deadline specified in Moodle.

Further details of the assessments will be provided on day 1 of the residential school

#### **Assessment Due Date**

Week 6 Friday (21 Apr 2017) 11:45 pm AEST

All practical activities will be completed and assessed at the residential school.

#### **Return Date to Students**

Week 8 Friday (5 May 2017)

#### **Weighting**

30%

#### **Assessment Criteria**

As a general rule assessment criteria for all assessment items include

1. (90%) Content—includes the accuracy, relevance and application of key concepts, analysis, argument, language and grammar used in answering a question or report.
2. (10%) References—includes the provision of a reference list and the application of the Harvard style for referencing information, data, tables or images sourced for the assignment or report.

#### **Referencing Style**

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

#### **Submission**

Offline Online

#### **Submission Instructions**

All practical activities will be completed, submitted (where required) and assessed at the residential school.

#### **Learning Outcomes Assessed**

- 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

## **3 Accident Prevention Paper**

#### **Assessment Type**

Written Assessment

#### **Task Description**

Students will write a paper to describe why they think accidents are still occurring after more than 100 years of "modern" approaches to accident prevention.

Your paper needs to draw from the learnings from all the topics covered in this unit, the readings and a comprehensive review of the relevant literature.

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 Harvard author/date. A list of all references used should be included at the end of your paper.

This assessment is worth 20% of the overall grade for the unit.



**Assessment Due Date**

Week 10 Monday (15 May 2017) 9:00 am AEST

**Return Date to Students**

Exam Week Friday (16 June 2017)

**Weighting**

20%

**Assessment Criteria**

As a general rule assessment criteria for all assessment items include

1. (90%) Content—includes the accuracy, relevance and application of key concepts, analysis, argument, language and grammar used in answering a question or report.
  2. (10%) References—includes the provision of a reference list and the application of the Harvard style for referencing information, data, tables or images sourced for the assignment or report.
- The specific rubric for grading this assessment task can be found in the Moodle Unit.

**Referencing Style**

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

**Submission**

Online

**Learning Outcomes Assessed**

- 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

## 4 Theoretical Accident Causation Models: Evaluation Reports

**Assessment Type**

Written Assessment

**Task Description**

PART A: Position Paper

In this assessment task students will investigate the literature relating to two of the theoretical accident models and prepare a position paper.

You will select two accident models from the following list:

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

Explore the literature and:

- Compare and contrast the features of the chosen models
- Discuss the theoretical underpinnings of the chosen models and their expected validity today given the issues you identified in the on-line Moodle Discussions and others, such as:

- a. Complexity of the models and their fit with the natural complexity of society, technology, work and human endeavour
- b. Their effectiveness in addressing failures in:
  - i. Technology
  - ii. Systems
  - iii. Human factors
  - iv. Social and organisational networks, including management, supervision
  - v. Education & Training
  - vi. Culture
- c. The models' guidance on:

- i. Establishing and validating corrective and remedial actions
- ii. Learning from failure
- iii. Risk minimisation

Your position paper should be limited to 2000 words maximum and be supported by relevant citations (minimum of 15) from the literature.

Part A of this assessment task attracts 15% of the overall marks for the unit

#### PART B: Theoretical Models Report

In this assessment task you will:

1. Populate the two models chosen in Part A with the critical factors from a case study selected from the following list, to explain, in the language of the model, the failures which occurred in the accident

The case studies to select from are:

- 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.

2. Evaluate and compare how well the two theoretical models enabled explanation of the accident phenomena in the case study.

3. Then prepare a written report to explain:

- The key characteristics of the chosen theoretical models which enabled illumination of the tapestry of failures that led to the case study accident.
- The perceived strengths and weaknesses of the chosen models in describing the accident phenomenon.

Your report should not exceed 1500 words. It should be supported by relevant citations (minimum of 10) from the literature.

Part B of this assessment task attracts 10% of the overall marks for the unit

#### PART C: Reflection

In this assessment task you will:

- Reflect on an accident that you have personal knowledge of and consider the issues of causation that you understood at the time
- Describe the accident “model”, perspective or “lens” that you were unconsciously applying to the situation
- Compare and contrast the model you applied against those you have studied in this unit.
- Discuss the changes you would apply if you were to analyse that same accident now.

You may find it useful to read Chapter 10 of Dekker (2006) to inform your reflections

You may choose the format for your response to this assessment task that suits you (eg short essay, brief report, mind map etc).

This assessment task (Part C) represents 5% of the overall assessment for this unit

Reference:

Dekker S. (2006), *The Field Guide to Understanding Human Error*, Chapter 10 What is your Accident Model, Ashgate Publishing Limited, Farnham

#### **Assessment Due Date**

Review/Exam Week Monday (5 June 2017) 9:00 am AEST

#### **Return Date to Students**

Exam Week Friday (16 June 2017)

#### **Weighting**

30%

#### **Assessment Criteria**

As a general rule assessment criteria for all assessment items include

1. (90%) Content—includes the accuracy, relevance and application of key concepts, analysis, argument, language and grammar used in answering a question or report (see marking criteria for individual requirements).

2. (10%) References—includes the provision of a reference list and the application of the Harvard style for referencing information, data, tables or images sourced for the assignment or report.

The specific rubric for grading this assessment task can be found in the Moodle Unit.

#### **Referencing Style**

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

## Submission

Online

## Learning Outcomes Assessed

- 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