



# AINV13001 Accident Analysis

## Term 1 - 2018

Profile information current as at 28/04/2024 03:16 am

All details in this unit profile for AINV13001 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

On completion of this unit students should be able to explain the characteristics, strengths and weaknesses of key theoretical accident analysis, simulation and reconstruction models. These students should also be able to apply the models to complex accident scenarios.

#### 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

AINV12002 Accident Phenomenology and 48 units of credit

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 - 2018

- Brisbane
- Bundaberg
- Distance
- Gladstone
- Melbourne
- Perth
- Rockhampton
- Sydney

#### Attendance Requirements

All on-campus students are expected to attend scheduled classes – in some units, these classes are identified as a mandatory (pass/fail) component and attendance is compulsory. International students, on a student visa, must maintain a full time study load and meet both attendance and academic progress requirements in each study period (satisfactory attendance for International students is defined as maintaining at least an 80% attendance record).

#### Website

[This unit has a website, within the Moodle system, which is available two weeks before the start of term. It is important that you visit your Moodle site throughout the term. Please visit Moodle for more information.](#)

## Class and Assessment Overview

### Recommended Student Time Commitment

Each 6-credit 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. **Group Discussion**

Weighting: 10%

#### 2. **Written Assessment**

Weighting: 40%

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

Weighting: 50%

### Assessment Grading

This is a graded unit: your overall grade will be calculated from the marks or grades for each assessment task, based on the relative weightings shown in the table above. You must obtain an overall mark for the unit of at least 50%, or an overall grade of 'pass' in order to pass the unit. If any 'pass/fail' tasks are shown in the table above they must also be completed successfully ('pass' grade). You must also meet any minimum mark requirements specified for a particular assessment task, as detailed in the 'assessment task' section (note that in some instances, the minimum mark for a task may be greater than 50%). Consult the [University's Grades and Results Policy](#) for more details of interim results and final grades.

## CQUniversity Policies

**All University policies are available on the [CQUniversity Policy site](#).**

You may wish to view these policies:

- Grades and Results Policy
- Assessment Policy and Procedure (Higher Education Coursework)
- Review of Grade Procedure
- Student Academic Integrity Policy and Procedure
- Monitoring Academic Progress (MAP) Policy and Procedure – Domestic Students
- Monitoring Academic Progress (MAP) Policy and Procedure – International Students
- Student Refund and Credit Balance Policy and Procedure
- Student Feedback – Compliments and Complaints Policy and Procedure
- Information and Communications Technology Acceptable Use Policy and Procedure

This list is not an exhaustive list of all University policies. The full list of University policies are available on the [CQUniversity Policy site](#).

## Previous Student Feedback

### Feedback, Recommendations and Responses

Every unit is reviewed for enhancement each year. At the most recent review, the following staff and student feedback items were identified and recommendations were made.

#### Feedback from Student feedback

##### Feedback

Students found the unit a good contribution to their developing professional practice.

##### Recommendation

Developing the skills of professional reporting will remain a focus for the unit.

#### Feedback from Moodle site forums and student feedback

##### Feedback

Some students were challenged by the physics components of the accident reconstruction assessment.

##### Recommendation

Continue to provide additional support to students as requested.

## Unit Learning Outcomes

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

1. Evaluate the benefits, features and application of accident analysis models.
2. Reconstruct accident causation sequences using contemporary methods of reconstruction and simulation.
3. Employ effective communication strategies appropriate to accident analysis.
4. Demonstrate reflective skills appropriate to the development at an advanced level.

## Alignment of Learning Outcomes, Assessment and Graduate Attributes



### Alignment of Assessment Tasks to Learning Outcomes

Assessment Tasks	Learning Outcomes			
	1	2	3	4
1 - Group Discussion - 10%			•	•
2 - Written Assessment - 50%	•		•	•
3 - Written Assessment - 40%		•	•	•

### Alignment of Graduate Attributes to Learning Outcomes

Graduate Attributes	Learning Outcomes			
	1	2	3	4
1 - Communication			•	

Graduate Attributes	Learning Outcomes			
	1	2	3	4
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 - Group Discussion - 10%	•		•	•		•	•	•		
2 - Written Assessment - 50%	•	•	•	•		•	•	•		
3 - Written Assessment - 40%	•	•	•	•		•	•	•		

## Textbooks and Resources

### Textbooks

**There are no required textbooks.**

#### Additional Textbook Information

Recommended reading and reference: Ferry, Ted S.(1988) Modern Accident Investigation and Analysis 2nd Ed. John Wiley & Sons, United States of America. Available as an eBook at CQU library, AND Viner, D.B (2016) Occupational Risk Control: Predicting and Preventing the Unwanted. Farnham, UK ISBN 9871315598703. Available as an eBook at CQU library

### 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

**David Skegg** Unit Coordinator  
[d.skegg@cqu.edu.au](mailto:d.skegg@cqu.edu.au)

## Schedule

### Week 1 - Introduction - 05 Mar 2018

Module/Topic	Chapter	Events and Submissions/Topic
Conceptual issues and development in accident analysis; Role of event tree and supporting systems	Ferry, T.S (2007) Modern Accident Investigation and Analysis: Hoboken, NJ, USA: John Wiley & Sons, Inc. NY - Chapters 1, 2 and 3.	

### Week 2 - Models of accident analysis - 12 Mar 2018

Module/Topic	Chapter	Events and Submissions/Topic
Review causation models to suit event tree support; Introduction to Management Oversight and Risk Tree analysis (MORT), Fault Tree Analysis (FTA) and Dow Index methods	Ferry, T.S. (1988) Modern Accident Investigation and Analysis, 2nd Ed. John Wiley & Sons, Inc. NY. Chapters 7 and 8 Viner D.B. (2015) Occupational Risk Control. Predicting and Preventing the Unwanted. Gower. London UK Chapter 9	

### Week 3 - case study - 19 Mar 2018

Module/Topic	Chapter	Events and Submissions/Topic
Report to company XYZ - deconstruction and logic analysis. Applying MORT FTA or Dow Index to case study XYZ	Ferry, T.S (2007) Modern Accident Investigation and Analysis: Hoboken, NJ, USA: John Wiley & Sons, Inc. NY - Chapter 9	Choose case study for assessment 1.

### Week 4 - Case study information search - 26 Mar 2018

Module/Topic	Chapter	Events and Submissions/Topic
Discover hard to find information for case study analysis. Discover simulation software; Review of models used in Week 3	Modelling accident simulations	Search for simulation software

### Week 5 - Case study compilation - 02 Apr 2018

Module/Topic	Chapter	Events and Submissions/Topic
Case study report structure	Viner, Derek (2015) <a href="#">Occupational Risk Control : Predicting and Preventing the Unwanted</a> . Taylor & Francis London; Chapter 10	Assessment 1 due  <b>Apply knowledge from Accident Phenomenology (AINV12002) to a case study</b> Due: Week 5 Monday (2 Apr 2018) 9:00 am AEST

### Vacation Week - 09 Apr 2018

Module/Topic	Chapter	Events and Submissions/Topic
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### Week 6 - Newton's laws and reconstruction modelling techniques - 16 Apr 2018

Module/Topic	Chapter	Events and Submissions/Topic
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Modelling techniques for accident simulation: - Newton's laws and the algebra, Part I

Special lecture on algebraic manipulation

#### Week 7 - Accident reconstruction and simulation - 23 Apr 2018

Module/Topic	Chapter	Events and Submissions/Topic
Accident reconstruction and simulation: - Calculating collision outcomes (Algebra Part II)		

#### Week 8 - Simulation software - 30 Apr 2018

Module/Topic	Chapter	Events and Submissions/Topic
Exploring simulation software		

#### Week 9 - The FARO (ARAS) software suite - 07 May 2018

Module/Topic	Chapter	Events and Submissions/Topic
Practice with software, and consider software characteristics		

#### Week 10 - Building an event tree and report - 14 May 2018

Module/Topic	Chapter	Events and Submissions/Topic
		Assessment 2 due
		<b>Written assessment</b> Due: Week 10 Monday (14 May 2018) 9:00 am AEST

#### Week 11 - applied algebraic manipulation - 21 May 2018

Module/Topic	Chapter	Events and Submissions/Topic
Manipulating the collision data using algebra		

#### Week 12 Event tree and report completion - 28 May 2018

Module/Topic	Chapter	Events and Submissions/Topic
		Assessment 3 due
		<b>Accident Analysis report</b> Due: Week 12 Monday (28 May 2018) 9:00 am AEST

#### Review/Exam Week - 04 Jun 2018

Module/Topic	Chapter	Events and Submissions/Topic
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#### Exam Week - 11 Jun 2018

Module/Topic	Chapter	Events and Submissions/Topic
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## Term Specific Information

This unit is about understanding the use of collision reconstruction techniques, and the building of an event tree to a standard suitable for a superior court of law, skills required of a professional investigator. A significant amount of reading and research is needed to cover the topics..

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NOTE: BOTH TEXT BOOKS - FERRY 1988 AND VINER 2015 - ARE AVAILABLE THROUGH THE CQU LIBRARY FOR FREE AS E-BOOKS

## Assessment Tasks

### 1 Apply knowledge from Accident Phenomenology (AINV12002) to a case study

#### Assessment Type

Group Discussion

#### Task Description

In this assessment task you must research the accident analysis literature and review the learnings from your studies in AINV12002 Accident Phenomenology. Then select and review an accident case study from a list provided by your lecturer in Moodle to determine what analysis methods, models or tools described in the literature may have been appropriate for analysing the accident and why.

Then you must:

1. Create a new discussion thread in the Moodle Discussion Forum, describe the enquiries you've undertaken and explain your findings, and
2. Respond to the discussion threads of three of your fellow students regarding their own accident analysis and case study reviews

The grade for this Assessment task accounts for 10% of the total assessment for this course.

Your discussion forum posts and responses to your fellow students' discussions will be graded online. There is no need to upload any additional responses or materials in the usual assessment item upload area of Moodle

#### Assessment Due Date

Week 5 Monday (2 Apr 2018) 9:00 am AEST

#### Return Date to Students

Week 7 Monday (23 Apr 2018)

#### Weighting

10%

#### 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.

#### Referencing Style

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

#### Submission

Online

#### Submission Instructions

Post to the General Discussion forum in Moodle

#### Learning Outcomes Assessed

- Employ effective communication strategies appropriate to accident analysis.
- Demonstrate reflective skills appropriate to the development at an advanced level.

#### Graduate Attributes

- Communication
- Critical Thinking
- Information Literacy
- Information Technology Competence
- Cross Cultural Competence
- Ethical practice

### 2 Written assessment

#### Assessment Type

Written Assessment

#### Task Description

In this assessment task you will:

- Review the literature relating to accident reconstruction and simulation
- Critically appraise an accident reconstruction/simulation provided by the lecturer in Moodle

You will then prepare a report which explains the:

- Published applications and functions of at least two commercially available accident reconstruction or simulation programs or tools
- Benefits and limitations of accident reconstruction and simulation in describing accident sequences and causation
- Outcomes from your critical appraisal of the accident reconstruction/simulation provided

NOTE: It is not necessary in this assessment task for you to carry out an original accident reconstruction or simulation, as this practical activity will be a part of the AINV13003 Crash Lab Project residential school.

#### **Assessment Due Date**

Week 10 Monday (14 May 2018) 9:00 am AEST

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

Week 12 Friday (1 June 2018)

#### **Weighting**

40%

#### **Assessment Criteria**

1. (90%) Content—includes the accuracy, relevance and application pictograms, 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**

Online

#### **Learning Outcomes Assessed**

- Reconstruct accident causation sequences using contemporary methods of reconstruction and simulation.
- Employ effective communication strategies appropriate to accident analysis.
- Demonstrate reflective skills appropriate to the development at an advanced level.

#### **Graduate Attributes**

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

## **3 Accident Analysis report**

#### **Assessment Type**

Written Assessment

#### **Task Description**

The aim of this assessment task is for students to develop a comprehensive set of logic diagrams describing the sequence of events, causation sequences and outcomes of an accident. The resultant set of logic diagrams are then to be incorporated in a report which describes the event, the analysis undertaken, the sequence of events, causation sequences and outcomes of the accident.

#### **Assessment Task**

In this assessment task you must analyse an accident either from a list provided by the lecturer, or that you, a family member or friend/colleague has experienced, or another accident with which you are familiar, and prepare:

- A Timeline to explain the sequence of events that led to the accident, and
- An Event Tree to explain all the causal factors sequences and outcomes of the accident
- A report, incorporating your completed diagrams, describing your event tree analysis and findings.

#### **Before commencing your analysis and before the end of week 4, you must:**

- Book a half hour meeting (phone, skype or face to face) with your lecturer to discuss your accident scenario and



explain your preliminary understanding of its causation and outcomes

· Gain eMail approval through the Moodle eMail system from your lecturer to proceed with your analysis

During this meeting students may argue the case for applying alternative logic diagrams to their chosen accident scenario to describe the sequences of events and to explain the causation sequences and outcomes.

**Your comprehensive analysis should involve at least six (6) lines of enquiry** (eg failures in equipment design, physical systems, organisation and culture, operating environment, documentation and the human errors, omissions and/or violations involved).

### **Assessment Due Date**

Week 12 Monday (28 May 2018) 9:00 am AEST

Report must be in MS Word format, submitted through Turnitin

### **Return Date to Students**

Exam Week Monday (11 June 2018)

### **Weighting**

50%

### **Assessment Criteria**

1. (60%) Technical Content—includes the accuracy, relevance and application of key concepts, analysis, and argument.
2. (20%) Paragraph and sentence construction, spelling, language and grammar used in the report.
3. (10%) Report format
4. (10%) Referencing—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**

Online

### **Learning Outcomes Assessed**

- Evaluate the benefits, features and application of accident analysis models.
- Employ effective communication strategies appropriate to accident analysis.
- Demonstrate reflective skills appropriate to the development at an advanced level.

### **Graduate Attributes**

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