OCHS13019 *Prevention Through Design*
Term 2 - 2020

Profile information current as at 05/05/2024 11:37 am

General Information

Overview

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

Details

Career Level: *Undergraduate*
Unit Level: *Level 3*
Credit Points: *6*
Student Contribution Band: *8*
Fraction of Full-Time Student Load: *0.125*

Pre-requisites or Co-requisites

Pre-Requisite:- 72 credit points including successful completion of AINV11002 and either OCHS13008 or OCHS12019
Important note: Students enrolled in a subsequent unit who failed their pre-requisite unit, should drop the subsequent unit before the census date or within 10 working days of Fail grade notification. Students who do not drop the unit in this timeframe cannot later drop the unit without academic and financial liability. See details in the Assessment Policy and Procedure (Higher Education Coursework).

Offerings For Term 2 - 2020

- 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. **Portfolio**
Weighting: 50%
2. **Group Work**
Weighting: 20%
3. **Presentation and Written Assessment**
Weighting: 30%

Assessment Grading

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

CQUniversity Policies

All University policies are available on the CQUniversity Policy site.
You may wish to view these policies:

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

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

Previous Student Feedback

Feedback, Recommendations and Responses

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

Feedback from Student feedback

Feedback

Students indicated that they did not like the group assessment.

Recommendation

Removal of the requirements for group work in Assessment 2 will be considered.

Unit Learning Outcomes

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

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

Alignment of Learning Outcomes, Assessment and Graduate Attributes

— 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	6	7
1 - Portfolio - 50%		•	•	•		•	•
2 - Group Work - 20%	•	•	•	•			
3 - Presentation and Written Assessment - 30%		•	•	•	•		

Alignment of Graduate Attributes to Learning Outcomes

Graduate Attributes	Learning Outcomes						
	1	2	3	4	5	6	7
1 - Communication	•	•	•	•	•	•	

Graduate Attributes	Learning Outcomes						
	1	2	3	4	5	6	7
2 - Problem Solving		•		•	•	•	•
3 - Critical Thinking	•	•	•	•	•	•	•
4 - Information Literacy	•		•	•	•	•	•
5 - Team Work	•	•	•	•	•	•	
6 - Information Technology Competence				•	•	•	•
7 - Cross Cultural Competence	•	•		•	•	•	
8 - Ethical practice	•			•	•	•	•
9 - Social Innovation							
10 - Aboriginal and Torres Strait Islander Cultures							

Alignment of Assessment Tasks to Graduate Attributes

Assessment Tasks	Graduate Attributes									
	1	2	3	4	5	6	7	8	9	10
1 - Portfolio - 50%	•	•	•	•	•	•	•	•		
2 - Group Work - 20%	•	•	•	•	•	•	•	•		
3 - Presentation and Written Assessment - 30%	•	•	•	•		•		•		

Textbooks and Resources

Textbooks

There are no required textbooks.

IT Resources

You will need access to the following IT resources:

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

Referencing Style

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

Teaching Contacts

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

Schedule

Week 1 - 13 Jul 2020

Module/Topic	Chapter	Events and Submissions/Topic
Introduction to Prevention through Design	All reading for this unit are provided on Moodle.	Online Classroom Session: Introduction to Assessments and Unit Overview (Tuesday 4:00pm to 5:00pm AEST)

Week 2 - 20 Jul 2020

Module/Topic	Chapter	Events and Submissions/Topic
Asset Life Cycles		Online Classroom Session: About design standards?

Week 3 - 27 Jul 2020

Module/Topic	Chapter	Events and Submissions/Topic
Design Assessment		Online Classroom Session: Assessing complex designs **Case Study 1** Due: Week 3 Friday (31 Jul. 2020) 11:59 pm AEST.

Week 4 - 03 Aug 2020

Module/Topic	Chapter	Events and Submissions/Topic
Case studies		Online Classroom Session: Assessment Item 2

Week 5 - 10 Aug 2020

Module/Topic	Chapter	Events and Submissions/Topic
Safety cases		Online Classroom Session: Bring your questions

Vacation Week - 17 Aug 2020

Module/Topic	Chapter	Events and Submissions/Topic

Week 6 - 24 Aug 2020

Module/Topic	Chapter	Events and Submissions/Topic
Risk assessment in design		Online Classroom Session: Risk tools for complex systems **Case Study 2** Due: Week 6 Friday (28 Aug. 2020), 11:59 pm AEST. Design Standards Portfolio Due: Week 9 Friday (18 Sep. 2020) 11:59 pm AEST

Week 7 - 31 Aug 2020

Module/Topic	Chapter	Events and Submissions/Topic
Achieving Prevention Through Design (PtD) I		Online Classroom Session: Delivering on PtD **Team Safety Case Report** Due: Week 7 Friday (4 Sept 2020) 11:59 pm AEST

Week 8 - 07 Sep 2020

Module/Topic	Chapter	Events and Submissions/Topic
Achieving Prevention Through Design (PtD) II		Online Classroom Session: Delivering on PtD for complex sociotechnical systems

Week 9 - 14 Sep 2020

Module/Topic	Chapter	Events and Submissions/Topic
Risk Management in Design I		Online Classroom Session: Risk tools for complex sociotechnical systems **Case Study 3** Due and completes the portfolio. **Design Standards Portfolio** Due: Week 9 Friday (18 Sept 2020) 11:59 pm AEST

Week 10 - 21 Sep 2020

Module/Topic	Chapter	Events and Submissions/Topic
Risk Management in Design II		Online Classroom Session: Considering risk assessment approach

Week 11 - 28 Sep 2020

Module/Topic	Chapter	Events and Submissions/Topic
Risk Management in Design III		Online Classroom Session: Production activities that are not considered 'normal'

Week 12 - 05 Oct 2020

Module/Topic	Chapter	Events and Submissions/Topic
Reflection and Review		**Learning Journal** Due: Week 12 Friday (9 Oct 2020) 11:59 pm AEST

Review/Exam Week - 12 Oct 2020

Module/Topic	Chapter	Events and Submissions/Topic

Exam Week - 19 Oct 2020

Module/Topic	Chapter	Events and Submissions/Topic

Assessment Tasks

1 Design Standards Portfolio

Assessment Type
Portfolio

Task Description
Purpose
The purpose of this assignment is to gain experience and to demonstrate your ability to evaluate the application of design controls (based upon controls described in the lectures and of the nature and apparent adequacy of the organisational, social or legislative arrangements that give rise to the design controls). This assessment requires you to be inquisitive and investigative. You will also need to demonstrate some lateral thinking. The case studies are progressively weighted as follows:

1. Case study 1: 10% (1,000 words)
2. Case study 2: 15% (1,500 words)
3. Case study 3: 25% (2,500 words)

Due Dates

- Case study 1. Friday of week 3: 11:59pm AEST
- Case study 2. Friday of week 6: 11:59pm AEST

- Case study 3. Friday of week 9: 11:59pm AEST

Task Description
You are required to cover three case studies. Two cases must be selected from the list provided in Moodle. The third case can be drawn from this list, or free choice. If you bring your own case study to this exercise, please pass it by the lecturer to ensure suitability. For the first two case studies only, you will be placed in groups where you are free to discuss the cases, share research and ideas. However, all three case studies are individual submissions and should reflect individual work.
For each case study you will be researching and reflecting at great depth. You are required to:

1. Document the status of the design standards implementation:

- what design standards exist
- what they are (document name/s)
- what organisation develops them

2. Reflect upon the findings and, with further research, document:

- whether development is informed by both reactive and proactive methods (if you can discover the answer)
- the means used in society to promulgate and encourage or enforce their use
- effectiveness of the controls:
    - adequacy of the scope
    - controls included
    - strengths and weaknesses
    - review following technology change
    - any other observations

Assessment Due Date
Week 9 Friday (18 Sept 2020) 11:59 pm AEST

Return Date to Students
Week 11 Friday (2 Oct 2020)

Weighting
50%

Assessment Criteria
Out of a possible 100 marks, the case studies are progressively weighted as follows:

1. Case study 1: 10% (20 marks)
2. Case study 2: 15% (30 marks)
3. Case study 3: 25% (50 marks)

Grades will be assessed on:

- Depth of research undertaken: what did you do? (10%)
- Explanation of the process of development of standards, promulgation and enforcement: what did you find out? (20%)
- Observations, analysis and commentary: what does this mean? (70%)

Referencing Style

- Harvard (author-date)

Submission
Online

Submission Instructions
Submit your case studies progressively via the Moodle Assessment Block. Case 1 (Week 3), Case 2 (Week 5), and Case 3 (Week 9).

Learning Outcomes Assessed

- Evaluate designs from a life cycle approach.
- Identify past and present opportunities and challenges to achieving 'prevention through design' including the design process, human factors engineering, adoption of new technology and impact of disruptive technologies.
- Evaluate potential risks associated with design issues in socio-technical systems around culture, processes,

structures, equipment, tools and people by employing appropriate analytical methods.
- Create a systematic response to a design problem that incorporates the prevention through design principles and methods.
- Appraise design sub-optimisation and plant operational parameters as a member of a safety case design team

Graduate Attributes

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

2 Team Safety Case Report

Assessment Type
Group Work

Task Description
Purpose
The purpose of this assignment is to give you experience in appraising design issues at a larger scale. From this experience you will be able to demonstrate how to appraise a new and emerging design issue that presents a threat to society.
Task Description
As a team you will conduct an investigation into a societal problem. You will appraise an existing design of this emerging complex sociotechnical system using a safety case methodology. The design assessment must include the following evidence:

- consideration of the whole life cycle of the object whose design is being evaluated,
- a suitable structured analytical approach to the consideration of safety design requirements,
- commentary on the effectiveness of the design strategies adopted, and
- appropriate observations about social, organisational or cultural assumptions for which you believe the design effectiveness depends.

Teams. You will be allocated to a team of four students in Week 4.
Assignment requirements

1. Select a topic from the list provided on Moodle. Topic selection is on a first in, first choice basis.
2. Hold team meetings to develop a shared understanding across the team of the topic and issues posed.
3. Develop a **Safety Case Formal Report** for the proposed new technology, prepared in accordance with Chapter 9 of the *Work Health and Safety Regulation 2011* (Qld).
4. Support the argument for the safety case with evidence-based practice (CQUniversity Harvard Referencing Style)
5. Address the following PtD criteria within your Safety Case:

- PtD design principles
- Consideration of any potential trade-offs to minimise sub-optimisation of subsystems
- Risk assessments for key sub-systems

Assessment Due Date
Week 7 Friday (4 Sept 2020) 11:59 pm AEST

Return Date to Students
Week 9 Friday (18 Sept 2020)

Weighting
20%

Assessment Criteria
Out of a possible 100 marks, the team safety case report is assessed on the depth to which you have addressed the following:

1. Team contract, and safety case developed in accordance with Chapter 9 of the *Work Health and Safety Regulation*

2011 (Qld) (WHS Reg) (10 marks)
2. Makes appropriate observations about the social, organisational, or cultural assumptions on which you believe the safety case depends (10 marks)

3. The Safety Case contains (50 marks)

- the identification conducted under Section 554 (WHS Reg), including a list of all major incidents identified (or postulated)
- the safety assessment conducted under section 555
- the major hazard facility's emergency plan
- the major hazard facility's safety management system
- description of any arrangements made in relation to the security of the major hazard facility
- consideration of the whole life cycle of the Sociotechnical system

The Safety Case Demonstrates (20 marks):

- that the major hazard facility's safety management system will, once implemented, control risks arising from major incidents and major incident hazards; and
- the adequacy of the measures to be implemented by the operator to control risks associated with the occurrence and potential occurrence of major incidents.
- logic, accurate use of technical terms, the quality of analytical thought and comment.
- shows evidence of the use of a suitable structured analytical approach to the consideration of safety design requirements and comments on the design strategy

Marks will also be allocated to the following (10 marks):

- formatted in a formal report style with a cover sheet, executive summary, contents list, numbered paragraph headings, page numbering etc as described in Moodle
- results from the Self and Peer Assessment which will be emailed to you in Week 7.

Referencing Style

- Harvard (author-date)

Submission
Online

Learning Outcomes Assessed

- Appraise design as an effective strategy to minimise injuries, illnesses and fatalities.
- Evaluate designs from a life cycle approach.
- Identify past and present opportunities and challenges to achieving 'prevention through design' including the design process, human factors engineering, adoption of new technology and impact of disruptive technologies.
- Evaluate potential risks associated with design issues in socio-technical systems around culture, processes, structures, equipment, tools and people by employing appropriate analytical methods.

Graduate Attributes

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

3 Learning Journal

Assessment Type
Presentation and Written Assessment

Task Description
Purpose
We are living in an exciting time of social and technological change. As future safety managers, you will help to usher in an as yet unknown and exciting new future. We have the opportunity and responsibility to contribute to the designs of this new future and prevent the inadvertent introduction of problems and sociotechnical design failures.
The purpose of this journal is to provide you with an opportunity to assimilate and reflect on the subject matter of this

unit, your experiences in contributing to the team and other learnings about how PtD can be applied. It is an opportunity for you to personally consider the meaning and practice of each of the learning outcomes that you will find in the Unit Outline.

Task Description

You will maintain a personal journal during the term. This is not an essay, it is a personal learning journal of your own reflections and learnings. Make journal notes in support of your work and reflections (thoughts and feelings) as they arise. The journal may be written in the first person. Further guidance on the format will be provided through Moodle. As a guide you should aim to submit one or two pages per learning week.

1. Reflect on your understanding of the subject content and readings and make at least one substantive entry each week.
2. Reflect on the history of the emphasis on PtD, the support for it in legislation, Standards, Codes of Practice and consideration of the range of design areas seen as requiring attention.
3. Reflect on the weekly tasks that are posed in the lectures and on Moodle and how they impacted on your awareness of PtD issues.
4. Investigate and document your observations of how the subject material applies in a complex sociotechnical setting. This will require you to understand the subject matter content and then seek out and discuss a situation or workplace scenario, not necessarily where you are employed (e.g. volunteer organisation, the transport network in your town, the emergency department admissions system at your local hospital and so on), where that PtD issue can be seen.
5. Reflect upon and document your experiences of the term including:
    - your work on the case studies
    - your participation in team work on a safety case - the work you contributed to the effort of the team and any difficulties in documenting the safety case.
    - your PtD position in this new technological age (such as space, connected vehicles, unmanned vehicles, drones, apps...) as changemakers and facilitators.
    - your broader learnings in sociotechnical systems design and procedural design

You are encouraged to investigate and reference a range of external sources as you explore and reflect on the topics. Ensure that these are referenced in your journal using CQUni Harvard Referencing Style as located in your Unit Profile.

Assessment Due Date

Week 12 Friday (9 Oct 2020) 11:59 pm AEST

Return Date to Students

Exam Week Friday (23 Oct 2020)

Weighting

30%

Assessment Criteria

The depth and breadth of your response will be considered in the evaluation of your understanding of this unit and the broader topic of Prevention Through Design. You will be assessed on the depth of your reflection and its contribution to your learning as follows:

- the subject content and readings to understand the topic and make at least one substantive entry each week. (40 marks across 10 weeks)
- your observations of how the subject material applies in a complex sociotechnical setting. This will require you to understand the subject matter content each week and then seek out and discuss a situation or workplace scenario (not necessarily where you are employed e.g. volunteer organisation, the transport network in your town, the emergency department admissions system at your local hospital and so on) where that PtD issue can be seen. (40 marks across 10 weeks)
- your experiences of the term including (20 marks):
    - your participation in group work on a safety case - the work you contributed to the effort of the group and any difficulties in documenting the safety case.
    - your own work on the three case studies.
    - your PtD position in this new technological age (space, connected vehicles, unmanned vehicles, drones, apps) as changemakers and facilitators.
    - your broader learnings in sociotechnical systems design and procedural design

In assessing the work, value will be placed on the quality and clarity of the written word, on logic, on the accurate use of technical terms and on the quality of analytical thought and comment.

Referencing Style

- Harvard (author-date)

Submission
Online

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

Learning Outcomes Assessed

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

Graduate Attributes

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

Academic Integrity Statement

As a CQUniversity student you are expected to act honestly in all aspects of your academic work.

Any assessable work undertaken or submitted for review or assessment must be your own work. Assessable work is any type of work you do to meet the assessment requirements in the unit, including draft work submitted for review and feedback and final work to be assessed.

When you use the ideas, words or data of others in your assessment, you must thoroughly and clearly acknowledge the source of this information by using the correct referencing style for your unit. Using others' work without proper acknowledgement may be considered a form of intellectual dishonesty.

Participating honestly, respectfully, responsibly, and fairly in your university study ensures the CQUniversity qualification you earn will be valued as a true indication of your individual academic achievement and will continue to receive the respect and recognition it deserves.

As a student, you are responsible for reading and following CQUniversity's policies, including the **Student Academic Integrity Policy and Procedure**. This policy sets out CQUniversity's expectations of you to act with integrity, examples of academic integrity breaches to avoid, the processes used to address alleged breaches of academic integrity, and potential penalties.

What is a breach of academic integrity?
A breach of academic integrity includes but is not limited to plagiarism, self-plagiarism, collusion, cheating, contract cheating, and academic misconduct. The Student Academic Integrity Policy and Procedure defines what these terms mean and gives examples.

Why is academic integrity important?
A breach of academic integrity may result in one or more penalties, including suspension or even expulsion from the University. It can also have negative implications for student visas and future enrolment at CQUniversity or elsewhere. Students who engage in contract cheating also risk being blackmailed by contract cheating services.

Where can I get assistance?
For academic advice and guidance, the Academic Learning Centre (ALC) can support you in becoming confident in completing assessments with integrity and of high standard.

What can you do to act with integrity?

Be Honest
If your assessment task is done by someone else, it would be dishonest of you to claim it as your own

Seek Help
If you are not sure about how to cite or reference in essays, reports etc, then seek help from your lecturer, the library or the Academic Learning Centre (ALC)

Produce Original Work
Originality comes from your ability to read widely, think critically, and apply your gained knowledge to address a question or problem