# OCHS12019 *Human Factors*
## Term 1 - 2019

Profile information current as at 30/04/2024 01:52 am

All details in this unit profile for OCHS12019 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 introduces you to the discipline of human factors and how a knowledge of human strengths and limitations, both cognitive and physical, can lead to better safety outcomes. This unit addresses end-user design issues and human variability in occupational contexts. You will explore human factors principles and learn to assess human interaction concerns using a variety of human factors methods. You will also develop skills to make human factors design recommendations to enhance human performance.

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

### Pre-requisites or Co-requisites
Pre-requisite study of 24 credit points.
Important note: Students enrolled in a subsequent unit who failed their pre-requisite unit, should drop the subsequent unit before the census date or within 10 working days of Fail grade notification. Students who do not drop the unit in this timeframe cannot later drop the unit without academic and financial liability. See details in the Assessment Policy and Procedure (Higher Education Coursework).

### Offerings For Term 1 - 2019
- Adelaide
- Brisbane
- Bundaberg
- Gladstone
- Mackay
- Melbourne
- Online
- 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. **Portfolio**
Weighting: 25%
2. **Written Assessment**
Weighting: 25%
3. **Group Work**
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 Have Your Say

**Feedback**

The individual assistance by the lecturer assisted my overall performance in the unit.

**Recommendation**

Remain available to students to clarify queries.

### Feedback from Have Your Say

**Feedback**

Information regarding the poster could be improved.

**Recommendation**

Information on developing the poster will be reviewed and updated for future offerings.

### Feedback from Personal reflection

**Feedback**

Teamwork continues to challenge students

**Recommendation**

Reform assessments to enhance the development of teamworking skills.

## Unit Learning Outcomes

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

1. Apply knowledge of the discipline of human factors including physical, cognitive and organisational ergonomics in a variety of contexts
2. Analyse work systems and equipment design in accordance with user needs, capabilities and limitations
3. Demonstrate the use of human factors assessment tools for addressing human interaction problems within various occupational contexts
4. Develop teamwork and project management skills through the application of human factors assessment and problem solving.

## 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 |
| **1 - Portfolio - 25%** | | | | ● |
| **2 - Written Assessment - 25%** | ● | ● | ● | |
| **3 - Group Work - 50%** | ● | ● | ● | ● |

# Alignment of Graduate Attributes to Learning Outcomes

| Graduate Attributes | Learning Outcomes | | | |
|---|---|---|---|---|
| | 1 | 2 | 3 | 4 |
| 1 - Communication | • | | • | • |
| 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 - 25% | • | • | • | • | | • | | • | • | |
| 2 - Written Assessment - 25% | • | • | • | • | | | | | • | |
| 3 - Group Work - 50% | • | • | • | • | • | • | • | • | • | |

## Textbooks and Resources

## Textbooks
OCHS12019

**Prescribed**

**Introduction to Human Factors: Applying Psychology to Design**
Edition: 1st (2018)
Authors: Nancy J. Stone; Alex Chaparro, Joseph R. Keebler; Barbara S. Chaparro; Daniel S McConnell
CRC Press
Boca Raton , Florida , USA
ISBN: ISBN: 9781138748293
Binding: eBook

**Additional Textbook Information**
This textbook is available in paperback and eBook versions.
Paper copies are available from the CQUni Bookshop here: http://bookshop.cqu.edu.au (search on the Unit code)

**View textbooks at the CQUniversity Bookshop**

## IT Resources

**You will need access to the following IT resources:**

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

## Referencing Style

No referencing style set.

## Teaching Contacts

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

## Schedule

**Week 1 - 11 Mar 2019**

| Module/Topic | Chapter | Events and Submissions/Topic |
| --- | --- | --- |
| Introduction to Human Factors | Chapter 1: Introduction to Human Factors | Complete the *Belbin Team Role Test* located in Moodle |

**Week 2 - 18 Mar 2019**

| Module/Topic | Chapter | Events and Submissions/Topic |
| --- | --- | --- |
| Human Factors Research | Chapter 2: Research methods | Begin searching for research articles for Assessment Item 1. Zoom tutorial: Hierarchical Task Analysis |

**Week 3 - 25 Mar 2019**

| Module/Topic | Chapter | Events and Submissions/Topic |
| --- | --- | --- |
| Physical ergonomics I | Work Physiology (Wickens et al. 2014) | Zoom Tutorial: Rapid Entire Body Assessment |

**Week 4 - 01 Apr 2019**

| Module/Topic | Chapter | Events and Submissions/Topic |
| --- | --- | --- |
| Physical ergonomics II | Chapter 9: Anthropometry and Biomechanics | Start forming teams for Assessment Item 3.<br>Zoom tutorial: Revised NIOSH Lifting Equation<br><br>**Research Portfolio (25%)** Due: Week 4 Friday (5 Apr 2019) 11:59 pm AEST |

**Week 5 - 08 Apr 2019**

| Module/Topic | Chapter | Events and Submissions/Topic |
| --- | --- | --- |
| Cognitive ergonomics I | Chapter 3: Visual, Tactile and Olfactory Displays | Zoom tutorial: Effective poster visualisation |

**Vacation Week - 15 Apr 2019**

| Module/Topic | Chapter | Events and Submissions/Topic |
| --- | --- | --- |
| | | |

**Week 6 - 22 Apr 2019**

| Module/Topic | Chapter | Events and Submissions/Topic |
| --- | --- | --- |
| Human factors in design | Chapter 5: Methods of evaluation | Zoom tutorial: Effective team contracts<br><br>**MSD Risk Poster (25%)** Due: Week 6 Friday (26 Apr 2019) 11:59 pm AEST |

**Week 7 - 29 Apr 2019**

| Module/Topic | Chapter | Events and Submissions/Topic |
| --- | --- | --- |
| Cognitive ergonomics II | Chapter 6: Attention, Memory and Multitasking | Teams must be formed by close of business Friday for Assessment Item 3. Anyone not in a team will be assigned a team by the Unit Coordinator.<br>Tutorial: Cognitive task Analysis |

**Week 8 - 06 May 2019**

| Module/Topic | Chapter | Events and Submissions/Topic |
| --- | --- | --- |
| Environmental ergonomics | Chapter 10: Environmental Design | Tutorial: Tips on Assessment Item 3, part 1 |

**Week 9 - 13 May 2019**

| Module/Topic | Chapter | Events and Submissions/Topic |
| --- | --- | --- |
| Organisational ergonomics I | Chapter 7: Decision making | Tutorial: Tips on Assessment Item 3, part 2 |

**Week 10 - 20 May 2019**

| Module/Topic | Chapter | Events and Submissions/Topic |
| --- | --- | --- |
| Organisational ergonomics II | Chapter 11: Human error | Begin to finalise Assessment Item 3 |

**Week 11 - 27 May 2019**

| Module/Topic | Chapter | Events and Submissions/Topic |
| --- | --- | --- |
| Human Factors Analytical Tools | | Finalise Assessment Item 3 |

**Week 12 - 03 Jun 2019**

| Module/Topic | Chapter | Events and Submissions/Topic |
| --- | --- | --- |
| | | |

| Future Trends | Chapter 12: Future Trends in Human Factors | Don't forget to submit your personal reflections for assessment and the Self & Peer Assessment sent to you via email.<br><br>**Team Design Project (50%)** Due: Week 12 Friday (7 June 2019) 11:59 pm AEST |

**Review/Exam Week - 10 Jun 2019**

| Module/Topic | Chapter | Events and Submissions/Topic |
| --- | --- | --- |

**Exam Week - 17 Jun 2019**

| Module/Topic | Chapter | Events and Submissions/Topic |
| --- | --- | --- |

# Assessment Tasks

## 1 Research Portfolio (25%)

**Assessment Type**
Portfolio

**Task Description**
As with all professionals, evidence-based practice is extremely important to the integrity of the profession. Therefore, knowing where to find evidence to support practice is valuable for improving human factors concerns that impact health and safety. The portfolio involves two aspects.

**1. Research article discussions (19 marks)**
The first part is intended to help you practice your research skills and to give all students a brief overview of some of the research being conducted in the field of Human Factors (aka Ergonomics). Your task is to do the following:

- Post a review of one (1) research article from a peer reviewed journal that no other student has reviewed
- Reply to at least three (3) of your colleagues to extend the discussion by relating information from another resource
- Ensure you have make one contribution in each of the four domain forums
- In total, you will have made four (4) contributions, one in each domain forum
- References (not included in the word count)

The four domain forums for this assessment item are:

- Physical ergonomics
- Cognitive ergonomics
- Organisational ergonomics
- Environmental ergonomics

Review details: to post your research article review, start a new topic in the appropriate forum and provide the citation of the article in the topic header: e.g. (Smith 2018). This will make it easier to know which articles have been reviewed. Your post should include:

- The research article review (aim, methods, results, conclusions)
- A complete reference and publication DOI number
- The attached article (pdf)

Reply post details:

- The reply posts should meaningfully extend the topic by relating information from another source
- Include a complete reference of the source shared

NOTE: all reviewed articles must be published in a journal. Therefore, do not review chapters, books, white papers, conference papers, workbooks, handbooks, and the like for the review post. However, these items are acceptable in a reply post where appropriate.

**2. Your team role preferences (6 marks)**
The second part of the portfolio is to find out your team role preferences by taking the *Belbin Team Role Test* provided on Moodle. Once you know your naturally preferred team roles (3 is usual) you are to do the following:

- Identify and describe each of your preferred team roles
- Outline your strengths and explain how you might utilise these in a teamwork situation
- Outline your weaknesses and explain how you might compensate for them in a teamwork situation

It is anticipated that items in this portfolio will support the work necessary for the next two assessment items.

**Assessment Due Date**
Week 4 Friday (5 Apr 2019) 11:59 pm AEST
Complete the Research Portfolio Form

**Return Date to Students**
Vacation Week Thursday (18 Apr 2019)

**Weighting**
25%

**Assessment Criteria**
**The review post (10 marks)**

- Journal article is published and attached (1 mark)
- The aim of the study is clearly expressed (1 mark)
- The research method employed is outlined (2 marks)
- The research findings are presented (2 marks)
- Conclusions are drawn (1 mark)
- Reference and DOI number (proof of publication), within word limit (3 marks)

**Three reply posts (9 marks)**

- Article adds meaningfully to the discussion (2 marks)
- Reference included (1 mark)

**Your team role preferences (6 marks)**

- Preferred team roles and descriptions (2 marks)
- Strengths and how you might utilise them (2 marks)
- Weaknesses and how you might compensate for them (2 marks)

**Submission**
Online

**Submission Instructions**
Complete the Research Portfolio Form and submit online.

**Learning Outcomes Assessed**

- Develop teamwork and project management skills through the application of human factors assessment and problem solving.

**Graduate Attributes**

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

## 2 MSD Risk Poster (25%)

**Assessment Type**
Written Assessment

**Task Description**
An important skill of safety science professionals is to identify work tasks that present Musculoskeletal Disorder (MSD) risks. This assignment is about developing your understanding of the principles of assessment for physical human-task interactions while at work. You are required to identify a manual handling task that involves a two-handed lift. You are required to conduct a *hierarchical task analysis* and then to assess the task being carried out using two different human factors analytical tools. You must use the *Revised NIOSH Lifting Equation* and another suitable tool (e.g. *RULA, REBA*). From the findings of your study you are to offer redesign recommendations. Your work is to be presented in a scientific

poster abstract format. The poster presentation should incorporate design principles to ensure the poster is easy to read. The poster is to be suitable for display at a conference to inform delegates of the physical task you have assessed. Your poster should contain the following:

- Describes the context of the workplace or other setting
- Provides information about the person who is at risk
- Describes the task being performed
- Identifies the MSD risk and explains when it arises during the task
- Discusses the significance of the risk
- Redesigns the task to reduce the MSD risks found
- Reference list contains scholarly articles that are appropriately referenced

**Assessment Due Date**
Week 6 Friday (26 Apr 2019) 11:59 pm AEST

**Return Date to Students**
Week 8 Friday (10 May 2019)

**Weighting**
25%

**Assessment Criteria**
**Poster content:**

1. Identifies context of workplace and/or other setting and people involved (2 marks)
2. Describes the task being assessed (2 marks)
3. Conducts a hierarchical task analysis (2 marks)
4. Assesses the MSD risk using two appropriate human factors analytical tools (6 marks)
5. Discusses the significance of the risk (2 marks)
6. Redesigns the task to reduce the MSD risks found (4 marks)
7. Reference list contains scholarly articles that are appropriately referenced (2 marks)

**Poster design:**
Utilises human factors design principles to enhance swift comprehension of the message portrayed (e.g. low cognitive load, colour, placement, imagery, etc.) (5 marks)

**Submission**
Online

**Submission Instructions**
Submit in ppt, pptx, or pdf format.

**Learning Outcomes Assessed**

- Apply knowledge of the discipline of human factors including physical, cognitive and organisational ergonomics in a variety of contexts
- Analyse work systems and equipment design in accordance with user needs, capabilities and limitations
- Demonstrate the use of human factors assessment tools for addressing human interaction problems within various occupational contexts

**Graduate Attributes**

- Communication
- Problem Solving
- Critical Thinking
- Information Literacy
- Social Innovation

# 3 Team Design Project (50%)

**Assessment Type**
Group Work

**Task Description**
This project has three main objectives:

- to develop leadership and project management skills relevant to design projects
- to develop design thinking and the user-centred design process
- to develop reflective practice

You are required to complete the following tasks:

- Team contract (10 marks)
- Team concept proposal (30 marks)
- Individual reflections on management of the team (5 marks)
- Self and peer assessment (5 marks)

Unless there are exceptional circumstances, all team members will receive the same grade for team submissions. It is up to the individual team members to negotiate how the final proposal will be written. Teams may choose to allocate different sections to each team member, or the team may allocate one member to write the report and each team member provides the relevant content to that member. It is strongly recommended that one team member be the coordinator of the final document.

## 1. Team Contract

As a team, you are to develop a team project plan to establish lines of communication and rules of process. Details about forming teams will be provided on the Moodle site. In 1000 to 1200 words, the project plan should contain:

- Team profile (team leader, strengths and weaknesses within the team)
- Communication details and arrangements
- Schedule of milestones, dates and responsibilities
- Issues resolution plan that all members agree to

## 2. Team Concept Proposal

As a team, you are to prepare and submit online one Concept Proposal. Your task is to find a human-product interaction problem. To resolve this problem you are to assess the interaction using human factors analytical tools. Based on analyses, and knowledge of human capabilities and limitations, your team is to propose redesign changes to improve use of the product. In 3000 words, the proposal should include:

- Title page
- Executive summary
- Table of contents
- Introduction
- User population
- Methods used
- Results and discussion
- Problem definition statement (and associated success criteria)
- Redesign options
- Justification and details of chosen concept (including: technical drawings and materials costing)
- References
- Appendices (in appropriate)

The word limit excludes: title page, executive summary, table of contents, reference list, and appendices. The proposal should be presented in the following format:

- Single document
- Professional proposal format and headings
- 1.5 line spacing
- Total file size cannot exceed 10 MB

## 3. Team management review

- Individual reflections

As an individual, you are required to reflect on your teamwork experience by answering two questions. Your reflections are to be completed on the *Individual Reflections Form* available on Moodle. Please submit online by the due date to avoid a late penalty. The word range for reflections is 200 to 400 words. Your work will be marked on the quality of the writing and the depth of academic reflection about the learning experience during the development of the concept proposal project. The two questions to be answered are:

1. How well did I help create a productive team effort?
2. What will I do differently in the future to make teamwork more productive and enjoyable?


- Self & Peer Assessment

In Week 11 you will be provided a link to an online survey via email. You will grade yourself using the set criteria, and then grade each of your fellow team members using the same criteria. To be fairly graded by fellow team members, you will need to ensure that your team members know what you have done during the development of the team contract

and concept proposal. If the work performance of your peers is poor, or communication skills are poor, the peer review mark you assign should reflect this. This survey must be completed prior to the due date when it will close. The Unit Coordinator will allocate a grade based on a combination of the self-assessment and the peer review mark allocated by fellow team members. If you believe that the peer assessment is unfair, you can make a case to the Unit Coordinator who will moderate the grade on a case-by-case basis.

**Assessment Due Date**
Week 12 Friday (7 June 2019) 11:59 pm AEST

**Return Date to Students**
Exam Week Friday (21 June 2019)

**Weighting**
50%

**Assessment Criteria**
**Team Contract (10 marks)**

- Team profile (2 marks)
- Complete communication details and arrangements (2 marks)
- Useful schedule of project milestones, dates and responsibilities (3 marks)
- A practical issues resolutions plan (3 marks)

**Team Concept Proposal (30 marks)**

- Integrates principles of human capability and limitations (physical and cognitive) (5 marks)
- Analyses the interaction problem including the environment of use (5 marks)
- Develops a suitable problem definition statement and success criteria (5 marks)
- Systematically evaluates potential concept solutions (5 marks)
- Develops a redesign concept that meets the problem definition from a human and technical perspective (5 marks)
- Format is consistent with a professional concept proposal in that it contains all relevant parts, is persuasively argued, structured appropriately, clearly expressed, and void of grammatical and referencing errors (5 marks)

**Teamwork review (10 marks)**

- Individual reflections on teamwork - depth of thought (5 marks)
- Self and Peer Assessment - averaged score from peers (5 marks)

**Submission**
Online

**Submission Instructions**
Note: there are three items to submit: (1) the team concept proposal, (2) the individual reflections, and (3) the self & peer assessment. The team concept proposal is to be submitted by one team member only.

**Learning Outcomes Assessed**

- Apply knowledge of the discipline of human factors including physical, cognitive and organisational ergonomics in a variety of contexts
- Analyse work systems and equipment design in accordance with user needs, capabilities and limitations
- Demonstrate the use of human factors assessment tools for addressing human interaction problems within various occupational contexts
- Develop teamwork and project management skills through the application of human factors assessment and problem solving.

**Graduate Attributes**

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

# 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