



OCHS12019 *Human Factors*

Term 2 - 2020

Profile information current as at 02/05/2024 07:35 am

All details in this unit profile for OCHS12019 have been officially approved by CQU University 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 2 - 2020

- 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 Teacher reflection and Student Unit Evaluation comments (Have Your Say)

Feedback

Students really enjoyed the practical nature of the assessment items that are authentic to the discipline and on occasion improve the user experience and conditions in the community or workplace.

Recommendation

Continue to offer authentic learning experiences for students. Consider moving this 'blended' model of enrolment to 'distance only' to increase student interaction opportunities during the weekly class sessions that focus on practical work.

Feedback from Student Unit Evaluation comments (Have Your Say)

Feedback

Students requested earlier framing of assessment requirements for the Team Proposal Document.

Recommendation

Provide more detailed information about the proposal document in week 8, when teams begin to populate their proposals.

Feedback from Teacher reflection

Feedback

Teamwork has become a positive experience for most students due to the attention on teamwork in this Unit.

Recommendation

Continue to focus on teamwork skills in this unit. This is an appropriate unit to address teamwork, as human-to-human interactions is a human factors area of interest.

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



Alignment of Assessment Tasks to Learning Outcomes

Assessment Tasks	Learning Outcomes			
	1	2	3	4
1 - Portfolio - 25%				•

Textbooks and Resources

Textbooks

OCHS12019

Prescribed

Introduction to Human Factors and Ergonomics

Edition: Fourth (2017)

Authors: Bridger, Robert

CRC Press

ISBN: 9781498796118

Binding: eBook

OCHS12019

Supplementary

Introduction to Human Factors

Edition: First (2017)

Authors: Stone, Nancy J., Chaparro, Alex, Keebler, Joseph R., Chaparro, Barbara S., and Mcconnell, Daniel S

CRC Press

ISBN: 9781315153704

Binding: eBook

Additional Textbook Information

If you prefer to study with a paper copy, they are available at the CQUni Bookshop here: <http://bookshop.cqu.edu.au> (search on the Unit code). eBooks are available at the publisher's website.

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 Human Factors	Chapter 1: Introduction to Human Factors (Bridger 2018)	<ul style="list-style-type: none">• Do the Belbin Team Role Quiz• Introduce yourself in the Introduction & Teamwork Forum as per Assessment 1 Instructions Assessment 1 Tip: Before introducing yourself, read the task instructions carefully.

Week 2 - 20 Jul 2020

Module/Topic	Chapter	Events and Submissions/Topic
Human Factors Research	Chapter 2: Research methods (Stone et al. 2017)	<ul style="list-style-type: none"> • Explore effective teamwork on the internet • Start forming teams of four Assessment 1 Tip: Google Scholar is a useful alternative to the Library Databases for findings scholarly articles.

Week 3 - 27 Jul 2020

Module/Topic	Chapter	Events and Submissions/Topic
Physical Ergonomics: Work physiology	Chapter 7: Work capacity, stress, fatigue, and recovery (Bridger 2018)	Assessment 1 Tip: Use the current Harvard Reference Style Guide located in the Unit Profile. Human Factors Portfolio Due: Week 3 Friday (31 July 2020) 11:59 pm AEST

Week 4 - 03 Aug 2020

Module/Topic	Chapter	Events and Submissions/Topic
Physical Ergonomics: The body as a mechanical system	Chapter 2: The body as a mechanical system (Bridger 2018) Chapter 3: Anthropometry (Bridger 2018)	Assessment 3 Tip: If you are not yet in a team by Friday night you will be placed in a team.

Week 5 - 10 Aug 2020

Module/Topic	Chapter	Events and Submissions/Topic
Cognitive Ergonomics: Senses, perception, attention, and memory	Chapter 10: Visual environment (Bridger 2018) Chapter 6: Attention, memory and multitasking (Stone et al. 2017)	Assessment 2 Tip: Watch the tutorial on Human Factors principles for poster design. MSD Risk Poster Due: Week 5 Friday (14 Aug 2020) 11:59 pm AEST

Vacation Week - 17 Aug 2020

Module/Topic	Chapter	Events and Submissions/Topic
		Assessment 3 Tip: Keep an eye out for usability problems for the final assignment. Assessment Tip: Use the <i>Peer Review</i> forum to get feedback. You can learn a lot by reviewing each other's work.

Week 6 - 24 Aug 2020

Module/Topic	Chapter	Events and Submissions/Topic
Human Factors in Design	Chapter 5: Methods of Evaluation (Stone et al. 2017)	Assessment 3 Tip: Decide on the Human-Machine Interaction problem (usability issues) for Assessment 3. Team Contract Due: Week 6 Friday (28 Aug. 2020) 11:59 pm AEST

Week 7 - 31 Aug 2020

Module/Topic	Chapter	Events and Submissions/Topic
Cognitive Ergonomics: Displays, Workload, Usability	Chapter 12: The mind at work (Bridger 2018) Chapter 13: Displays and controls (Bridger 2018)	Assessment 3 Tip: Conduct preliminary analysis to understand the needs, limitations and capabilities of your user population. Assessment 3 Tip: For best results, add to your workbook regularly

Week 8 - 07 Sep 2020

Module/Topic	Chapter	Events and Submissions/Topic

Organisational Ergonomics: Environment (physical & psychosocial)	Chapter 10: Environmental Design (Stone et al. 2017)	Assessment 3 Tip: Conduct secondary analysis to define the problem.
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Week 9 - 14 Sep 2020

Module/Topic	Chapter	Events and Submissions/Topic
Organisational Ergonomics: Human Error & Fatigue	Chapter 11: Human Error (Stone et al. 2017)	Assessment 3 Tip: Systematically evaluate redesign options

Week 10 - 21 Sep 2020

Module/Topic	Chapter	Events and Submissions/Topic
Organisational Ergonomics: Selection & training		Assessment 3 Tip: Upload the proposal and 'save' (not submit) to check the Turnitin score.

Week 11 - 28 Sep 2020

Module/Topic	Chapter	Events and Submissions/Topic
Human Factors Analytical Tools (Safety & Investigations)	Chapter 15: HFE in Accident Investigation and Safety Management (Bridger 2018)	Assessment 3 Tip: Each team member should read through the proposal to ensure it flows well and is compelling. Imagine an entrepreneur is looking to fund your project. Team Concept Proposal Due: Week 11 Friday (2 Oct. 2020) 11:50 pm AEST

Week 12 - 05 Oct 2020

Module/Topic	Chapter	Events and Submissions/Topic
Future Trends in Human Factors	Chapter 12: Future Trends (Stone et al. 2017)	Assessment 3 Tip: Look for the email with the link to the Self & Peer Assessment survey Self & Peer Assessment Due: Week 12 Friday (9 Oct. 2020) 11:59 pm AEST. Design Project Due: Week 12 Friday (9 Oct 2020) 11:59 pm AEST

Review/Exam Week - 12 Oct 2020

Module/Topic	Chapter	Events and Submissions/Topic
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Exam Week - 19 Oct 2020

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

Both textbooks set for this unit are freely available via our eReading list on Moodle.

Assessment Tasks

1 Human Factors Portfolio

Assessment Type

Portfolio

Task Description

Purpose

The purpose of this portfolio is to give you an opportunity to build some of the underpinning skills that support technical skills within Human Factors (aka Ergonomics) that you will need to employ in your subsequent assessment items. Underpinning skills include getting to know each other, communication (verbal and visual), information literacy (academic writing, research and referencing), collaboration, critical thinking, teamwork, and IT competence.

Instructions

There are three tasks that must be completed in Moodle and then submitted for assessment as a single document in the form of a portfolio. The three tasks are as follows:

Task One: Personal introduction

Create a project in your ePortfolio that provides the following about you: 1) where you live, 2) what line of work you do, (3) a visual representation of your team role preferences (based on the results from the Belbin Team Role Quiz provided to you in Moodle), and 4) based on what you have learned about yourself and teamwork, describe one way you will contribute to an effective teamwork effort. To share this with your classmates, tag your project as specified in Moodle.

Task Two: A visual representation of 'Effective Teamwork'

Create a project in your ePortfolio that visually represents effective teamwork. You can select a medium of your choice, such as: a sketch note, mind map, rich picture, diagram, process chart, or blueprint, or some other audio/visual means. To share your project with your classmates, tag your project as specified in Moodle.

Task Three: Review and discuss Human Factors research

You are required to review **one research article** that no-one else has reviewed for **one** of the main domain areas of Human Factors, i.e. physical, cognitive, and organisational. A forum for each of these domains is set up in the assessment block for your convenience. It is recommended that you develop your review off-line before posting it in the associated forum. When you are ready to post your review, go to the relevant domain forum: start a new topic, add your review, and provide the citation of the article in the topic header: e.g. (Smith 2020). This will make it easier for other students to know which articles have been reviewed. In **150 words or less**, your post should include:

- The **research article** review (study aim, study participants, methods, results and conclusions)
- A complete reference and publication number (at the end of the review)
- The attached article (pdf)

In the **other two** forums, **reply** to another student's review and discuss the topic at hand in a meaningful way in **under 100 words**. To be meaningful, the discussion needs to extend the topic. You can do this in several ways, such as:

- relating information from another source
- illustrating a point with an example

Ensure you have a contribution in each of the domain forums (1 Review + 2 Reply posts).

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

Assessment Due Date

Week 3 Friday (31 July 2020) 11:59 pm AEST

Return Date to Students

Week 5 Friday (14 Aug 2020)

Weighting

25%

Assessment Criteria

Out of a possible score of 100, the marks awarded for the Human Factors Portfolio are as follows:

- Your introduction (where you live, what you do for work, team role preferences, one way you will contribute to effective teamwork) 20 marks
- Your illustration that represents 'Effective Teamwork' (free choice: sketch, mind map, rich picture, diagram, concept map, blueprint...) 30 marks
- Human Factors research posts (Review - 30 marks, Reply One - 10 marks, Reply Two - 10 marks) 50 marks

Referencing Style

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

Submission

Online

Submission Instructions

The portfolio is to be presented as one document and include: 1) link to Introduction Project, 2) link to Effective Teamwork Project, and 3) Research Posts. Please use one of the following formats: doc, docx, pdf.

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

Assessment Type

Written Assessment

Task Description

Purpose

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 *human-task interactions* while at work.

Instructions

You are required to identify a manual handling task at work (or one at home that can be applied to a working environment) that involves a **static two-handed lift**. That is a task that does not involve stepping.

You are required to conduct three task assessments using the following human factors analytical tools, namely: 1) a **Hierarchical Task Analysis**, 2) **the Revised NIOSH Lifting Equation** and the **Rapid Entire Body Assessment**.

From the findings of your study you are to offer redesign recommendations to reduce the MSD risk identified. Your work is to be presented in poster abstract format. 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:

- The context of the workplace or other setting,
- details about the person who is at risk,
- a description of the task being performed,
- the risk factors found from the analysis,
- evidence of analysis competence,
- a discussion about the significance of the risk,
- task redesign recommendations, and
- a reference list containing scholarly articles.

Assessment Due Date

Week 5 Friday (14 Aug 2020) 11:59 pm AEST

Return Date to Students

Week 6 Friday (28 Aug 2020)

Weighting

25%

Assessment Criteria

Out of a possible 100 marks, the MSD Poster will be assessed on the following:

- Contextual detail of workplace or other setting and the worker involved - 20 marks
- Demonstrates competence when assessing physical tasks - 20 marks
- Risk factors are identified, and the significance of their risk discussed - 20 marks

- English expression, spelling, grammar, and references - 20 marks
- Applies Human Factors principles for poster design - 20 marks

Referencing Style

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

Submission

Online

Submission Instructions

Please use the poster template provided in Moodle to populate and submit your poster. Submit in ppt, pptx, or pdf formats 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

Graduate Attributes

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

3 Design Project

Assessment Type

Group Work

Task Description

Purpose

This project has three main objectives: 1) to develop leadership and project management skills relevant to design projects, 2) to develop design thinking and user-centred design skills, and 3) to develop reflexive practice.

Instructions

You are required to submit the following items:

1. Team Contract
2. Team Concept Proposal
3. Individual Workbook and Self & Peer Assessment

Team Contract (20 marks)

As a team, you are to develop a team contract to establish lines of communication and rules of process. A template will be provided on Moodle for you to use as well as instructions for forming teams. In **1000 to 1500 words**, the contract should contain:

- Team profile and contingencies
- Communication plan
- Schedule of milestones
- Rules of process and an issues resolution plan

All team members to agree and sign the contract

Team Concept Proposal (30 marks)

As a team, your task is to find a usability problem, more specifically a human-machine interaction problem. You are to take a user-centred approach to assess and resolve the problems found. To assess the problem, you will use various human factors analytical tools. Based on findings and knowledge of human needs, capabilities and limitations, your team is to propose redesign changes to improve use of the problematic product. In **3500 words**, the proposal should include:

- Title page
- Executive summary

- Table of contents
- Introduction
- User population
- Methods
- Results and discussion
- Problem definition
- An evaluation of redesign options
- Justification and details of chosen concept
- References
- Appendices

The proposal should be presented in CQUni Harvard Style:

- Single document
- 1.5 line spacing
- Numbered sections
- Total file size cannot exceed 10 MB.

It is up to the individual team members to negotiate how the final proposal will be written. It is highly recommended to have one-person curate (put it together) the final document. After which, all team members should review the entire document to ensure it flows well and is persuasive to a prospective entrepreneur. Unless there are exceptional circumstances, all team members will receive the same grade for team submissions.

Individual Workbook (50 marks)

As an individual team member, you are to keep a record of work done for the team effort. The workbook is to contain project work done by you and to show how you have contributed to the team effort. Each contribution should be accompanied with either a descriptor, explanation of how your work contributes to the project, and/or a personal reflection that includes action for future events based on lessons learned. Students must demonstrate the ability to: 1) be a self-starter, 2) empathise with the user, 3) identify design trade-offs, 4) co-design, and 5) to apply human-centred design and design thinking principles to a human-machine interaction problem. In addition to the workbook, you will be asked to complete a short *Self & Peer Assessment* to rate the teamwork performance of yourself and your team members. A link to the survey will be sent to you via your student email one week before the due date.

Assessment Due Date

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

Return Date to Students

Exam Week Friday (23 Oct 2020)

Weighting

50%

Assessment Criteria

Marks awarded include a team grade (50 marks) and an individual grade (50 marks)

Team Contract (20 marks)

- Team profile and contingencies - 5 marks
- Communication plan - 5 marks
- Schedule of milestones - 5 marks
- Rules of process and an issues resolution plan - 5 marks

Team Concept Proposal (30 marks)

- Integrates human needs, capabilities and limitations into the design - 5 marks
- Analyses the human-machine 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 design concept that meets the problem definition from a human perspective - 5 marks
- Format is consistent with a professional design proposal - 5 marks

The Project Workbook and Self & Peer Assessment (50 marks)

- Demonstrates an ability to be a self-starter (initiative, reliability, time management) - 10 marks
- Demonstrates the ability to empathise with the user and to identify design trade-offs - 10 marks
- Demonstrates an ability to co-design to solve a human interaction problem (participation, cooperation, ideation, and contribution) - 10 marks
- Demonstrates an ability to apply human-centred design and design thinking to a human-machine interaction problem - 10 marks

- **Self & Peer Assessment Survey (via email):** Demonstrates an ability to be a team player (respectful, positive, communicable, and supportive) – 10 marks

Referencing Style

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

Submission

Online

Submission Instructions

The Team Contract and Concept Proposal are submitted by one team member. The Individual Workbook and Self & Peer Assessment is submitted by each student. The Team Contract is due Friday of Week 6, The Team Concept Proposal is due Friday of Week 11, The Individual Workbook and Self & Peer Assessment is due Week 12.

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