



# OCHS12019 *Human Factors*

## Term 2 - 2017

Profile information current as at 26/04/2024 02:17 pm

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 provides an understanding of human factors and how a knowledge of human strengths and limitations, both mental and physical, can lead to better safety outcomes in the real world. It will be concerned with end user design issues and human variability in work environments. Students will be exposed to foundational human factors principles and knowledge and learn human factors methods for the identification and assessment of human factors issues, as well as develop skills to make human factors design recommendations to enhance human performance in the real world.

#### 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 - 2017

- Adelaide
- Brisbane
- Bundaberg
- Distance
- Gladstone
- Melbourne
- Rockhampton

#### 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 Student feedback

##### Feedback

Teamwork at distance continues to be a concern for students.

##### Recommendation

Include the Teamwork Role Test as a non-graded requirement. Then form teams based on student preferred roles to achieve a balance of strengths within each team.

#### Feedback from Student feedback

##### Feedback

Some students did not like developing a poster abstract.

##### Recommendation

The ability to present information visually is an authentic human factors design skill and thus will remain an assessable item. A tutorial on developing a poster will continue to be provided.

#### Feedback from Student feedback

##### Feedback

The balance of learning material (readings, lectures and tutorials) was appreciated.

##### Recommendation

Continue this practice.

## Unit Learning Outcomes

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

1. Use knowledge of the discipline of human factors including physical, cognitive and organisational ergonomics in a variety of contexts.
2. Apply human factors knowledge to the evaluation of work systems and equipment design including work capacity and limitation.
3. Discuss and demonstrate the use of human factors assessment tools to enable the development of problem identification skills on human factors issues within the workplace.
4. Develop team work and project management skills through the application of human factors assessment and solutions to design issues with the workplace.

## Alignment of Learning Outcomes, Assessment and Graduate Attributes



### Alignment of Assessment Tasks to Learning Outcomes

Assessment Tasks	Learning Outcomes			
	1	2	3	4
<b>1 - Portfolio - 25%</b>	•		•	
<b>2 - Written Assessment - 25%</b>	•	•	•	



## Textbooks and Resources

### Textbooks

OCHS12019

#### Prescribed

#### **An introduction to human factors engineering**

Edition: 2nd (International) (2014)

Authors: Christopher D. Wickens; John D. Lee; Yili Liu; Sallie E. Gordon Becker

Pearson Education, Inc

Harlow , United Kingdom

ISBN: 1292022310

Binding: Paperback

[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

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](mailto:e.crawford@cqu.edu.au)

## Schedule

### Week 1 - 10 Jul 2017

Module/Topic	Chapter	Events and Submissions/Topic
The Discipline of Human Factors	1	

### Week 2 - 17 Jul 2017

Module/Topic	Chapter	Events and Submissions/Topic
Physical Ergonomics	9, 10, 11	

### Week 3 - 24 Jul 2017

Module/Topic	Chapter	Events and Submissions/Topic
Cognitive Ergonomics	3, 4, 5, 6	Personal Team Role Test: Due Tuesday (25 July 2017) 10:00 AM AEST.

### Week 4 - 31 Jul 2017

Module/Topic	Chapter	Events and Submissions/Topic
Task Analysis	2 (pp. 18-30)	

### Week 5 - 07 Aug 2017

Module/Topic	Chapter	Events and Submissions/Topic
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Environmental Ergonomics 3, 4, 12 Team Design Plan Due: Friday (11 Aug 2017) 11:45 PM AEST.

#### Vacation Week - 14 Aug 2017

Module/Topic	Chapter	Events and Submissions/Topic
Vacation Break		

#### Week 6 - 21 Aug 2017

Module/Topic	Chapter	Events and Submissions/Topic
Organisational Ergonomics	12, 13, 17	<b>MSD Poster</b> Due: Week 6 Tuesday (22 Aug 2017) 10:00 am AEST

#### Week 7 - 28 Aug 2017

Module/Topic	Chapter	Events and Submissions/Topic
ORG HF - Teamwork	18 (pp. 474-479)	

#### Week 8 - 04 Sep 2017

Module/Topic	Chapter	Events and Submissions/Topic
Safe Design	2	<b>Journal Articles</b> Due: Week 8 Tuesday (5 Sept 2017) 10:00 am AEST

#### Week 9 - 11 Sep 2017

Module/Topic	Chapter	Events and Submissions/Topic
Defining the problem	2	

#### Week 10 - 18 Sep 2017

Module/Topic	Chapter	Events and Submissions/Topic
Engineering Anthropometry	9	

#### Week 11 - 25 Sep 2017

Module/Topic	Chapter	Events and Submissions/Topic
Human Factors Analytical Tools		Reflective Journal Due: Friday (29 Sept 2017) 11:45 PM AEST.

#### Week 12 - 02 Oct 2017

Module/Topic	Chapter	Events and Submissions/Topic
Project Work		<b>Design Project</b> Due: Week 12 Friday (6 Oct 2017) 11:45 pm AEST

#### Review/Exam Week - 09 Oct 2017

Module/Topic	Chapter	Events and Submissions/Topic
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#### Exam Week - 16 Oct 2017

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

### 1 Journal Articles

#### Assessment Type

Portfolio

#### Task Description

As with all professionals, evidence-based practice is extremely important to the integrity of the profession. Thus, knowing where to find evidence to support practice is valuable for improving health and safety which includes human factors concerns. This exercise is intended to help students practice their research skills and to give all students a brief overview of some of the research being conducted in the field of Human Factors. This exercise may also serve as a good starting point for the other assessments you will do.

You are required to review one journal article that no other student has reviewed. You must also critique the article

review of three of your colleagues, making one contribution to each of the topics listed below. In total, you will have made four contributions, one for each forum for assessment. Each post is to be about 150 words excluding the reference/s (+/- 20% penalty will apply 5%). While not assessed, you are free to respond to feedback provided to you. **In the end**, you will have conducted 1 Article Review and 3 Critiques of 3 articles reviewed by 3 different students, one contribution in each of the following forums:

- The Discipline of Human Factors/Ergonomics
- Physical Ergonomics
- Cognitive Ergonomics
- Organisational Ergonomics

When submitting your journal article review (only one), start a new topic and ensure you include the citation of the article in the topic header, e.g. (Smith 2017). Your post should include:

- The journal article review
- Complete reference (use the style guide located in the Unit Profile for this unit)
- The publication DOI number OR ISSN number (to ensure the article has been published)
- Attach the article

### **The Journal Article Review:**

Your post should briefly inform the other students about the journal article and include:

- The aim of the study/article
- What the research was about
- The research method used, including population sample if applicable (note: the article may be a theoretical paper, or a literature review)
- What the findings were
- The conclusions drawn
- The reference to the article in Harvard Referencing style (located in the Unit Profile)
- Include the DOI or ISSN number (to ensure the article has been published)
- The attached journal article

### **3 Critiques:**

Critique and meaningfully discuss the reviews of three (3) other students. To critique, you must first read the article. When responding to the other student:

- Identify at least something done well and
- Something that might help the student to improve their reviewing ability in the future.

To discuss in a meaningful way, consider the following:

- The significance of the study by relating a personal experience or other means.
- Another article that has a similar or different in some way and discuss the implications

*Note: all articles need to have been published in a journal. Therefore, do not review chapters, books, white papers, conference papers, workbooks, handbooks, and the like.*

### **Assessment Due Date**

Week 8 Tuesday (5 Sept 2017) 10:00 am AEST

### **Return Date to Students**

Monday (18 Sept 2017)

### **Weighting**

25%

### **Assessment Criteria**

The Research Articles will be assessed according to the following criteria:

- 150 words (+/- 20%) (If not, a 2% penalty will apply)
- A published journal article that has a DOI or ISSN number. (If not, a 10% penalty will apply)
- The aim of the study/article (5%)
- The research approach (including participant sample where appropriate) (5%)
- What the research (or topic if a theoretical paper) is about (5%)
- What the findings and conclusions were (5%)
- The article is cited and referenced appropriately and the DOI or ISSN number is present (5%)
- The journal article is attached (If not, a 3% penalty will apply)

The three Critiques will be assessed according to the following criteria:

- 150 words (+/- 20%) (If not, a 2% penalty will apply)
- Critique identifies something that was done well (5%)
- Critique identifies something that could be improved (5%)
- To add to the discussion meaningfully, a personal experience (or other) is related to the topic (5%)
- To add to the discussion meaningfully, something from another journal article is related (5%)
- All articles utilised are appropriately cited and referenced (5%)
- The journal article is attached (If not, a 3% penalty will apply)

### Referencing Style

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

### Submission

Online

### Learning Outcomes Assessed

- Use knowledge of the discipline of human factors including physical, cognitive and organisational ergonomics in a variety of contexts.
- Discuss and demonstrate the use of human factors assessment tools to enable the development of problem identification skills on human factors issues within the workplace.

### Graduate Attributes

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

## 2 MSD Poster

### Assessment Type

Written Assessment

### Task Description

An important skill of human factors engineers is to identify work tasks which might result in Musculoskeletal Disorder (MSD) risks. This assignment is about developing your understanding of the principles of assessment for human interactions while at work using human factors analytical tools. You need to identify a manual handling task that involves lifting that is work-related. You are required to conduct a task analysis and then to assess the task being carried out using two different analytical tools. You must use the Revised NIOSH Lifting Equation and another suitable tool. You are then to present your findings, provide recommendations for redesign, in a scientific poster abstract format. The poster is to be suitable for display at a conference to inform delegates of the physical task you have assessed.

(1) Your poster needs to contain the following:

- Describes the context of the workplace or other setting i.e. where does this task take place?
- Identifies who might be affected (stakeholders)
- Describes the actual task being performed (choose one task only)
- Identifies the level of MSD risk
- Discusses the potential consequences (physical injury) this task presents
- Redesign changes to reduce MSD risk.
- References: utilises and acknowledges scholarly articles appropriately (follow the style guide located in the Unit Profile).

(2) Your Poster needs to achieve the following:

- Be informative: The poster provides a summary of analysis undertaken, highlights the significance of the problem and offers redesign recommendations.
- Be easy to grasp: Utilises human factors design principles to enhance swift comprehension of the message portrayed (e.g. colour, placement, imagery, etc.)

Further details will be on Moodle.

### Assessment Due Date

Week 6 Tuesday (22 Aug 2017) 10:00 am AEST

### Return Date to Students

Week 8 Tuesday (5 Sept 2017)

## Weighting

25%

### Assessment Criteria

Poster content will be assessed on the following criteria:

- Identifies context of workplace and/or other setting and people involved (10%)
- Describes the task being assessed (5%)
- Describes the MSD risk or issues and potential effects (10%)
- Conducts a task analysis (10%)
- Assesses the MSD risk using two human factors analytical tools (20%)
- Recommends changes to the task, based on assessment findings, to reduce potential MSD risks (15%)
- Reference list: contains scholarly articles in Harvard Referencing Style (10%)

Poster techniques (20%) - Informative 10% & Easy to grasp 10%

- Informative: Provides a summary of analysis undertaken, highlights the significance of the problem and offers recommendations. (10%)
- Easy to grasp: Utilises human factors design principles to enhance swift comprehension of the message portrayed (e.g. colour, placement, imagery, etc.) (10%)

### Referencing Style

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

### Submission

Online

### Learning Outcomes Assessed

- Use knowledge of the discipline of human factors including physical, cognitive and organisational ergonomics in a variety of contexts.
- Apply human factors knowledge to the evaluation of work systems and equipment design including work capacity and limitation.
- Discuss and demonstrate the use of human factors assessment tools to enable the development of problem identification skills on human factors issues within the workplace.

### Graduate Attributes

- Communication
- Problem Solving
- Critical Thinking
- Information Literacy

## 3 Design Project

### Assessment Type

Group Work

### Task Description

**This project has four main objectives:**

- To develop teamwork skills that will build confidence and make you a more effective collaborator in projects in which you will be involved,
- To redesign a product that will meet the problem definition that is sound from a technical and human factors perspective,
- To provide an opportunity to develop practical skills in using human factors analytical tools, and
- To develop reflective learning.

Please refer to the PROJECT BRIEF in Moodle for further details about the project and guidance to help the team operate effectively. This project has four submissions, namely:

- Individual Team Role Test results (non-graded) Due Tuesday (Week 3) 10:00 AM AEST.
- A team Project Plan (10%) Due: Friday (Week 5) 11:45 PM AEST.
- An individual Reflective Journal (30%) Due: Friday (Week 11) 11:45 AM AEST.
- A team Concept Proposal (60%) Due: Friday (Week 12) 11:45 PM AEST.

You will be assigned to a team based on your Team Role profile.

### **(a) Team Role Test Results (non-graded)**

You are required to conduct the Team Role Test provided in Moodle.

### **(b) Project Plan (10%)**

The team is to develop a team Project Plan and as a team, to critique at least one other team's plan. Based on feedback provided, refine your own team plan.

Working in teams, collaborating with others, and creating collective knowledge are very powerful ways to design products that 'fit' the user (and to learn). For the team to work well, you will need to manage the team activities.

The purpose of the team Project Plan is to get agreement from the team about how the team will operate and communicate. This is sometimes called a team contract. Your team rules (process) should be largely decided before the team agrees on what needs to be done (product).

The purpose of the Critique is to help all teams to produce a useful plan. There will be a dedicated Team Plans for Critique forum where you can provide feedback to another team's Project Plan. You will be graded on your own Project Plan and on the feedback provided to the other team's plan.

The Project Plan should contain:

- The names of all team members, a nominated team leader and preferred contact details (and any applicable constraints),
- The team's profile and potential strengths and weakness in the team and a way to combat weaknesses
- The way the team will communicate, collaborate and handle documentation (via Moodle team space, email, Zoom, Skype, Facebook group, Google docs, etc.),
- A tentative schedule including a time frame that shows deadlines for various activities.
- A strategy for resolving issues should a team member fail to engage or complete work at the desired time or quality. (Account for unexpected matters, such as: work commitments, sickness, and computer failures.
- Be refined according to peer feedback
- For assessment purposes, append the Critique provided to another team

The critique should contain:

- 100 words
- Tactful comments that help the other team to know what they did well and how they might improve their plan

Note that this is not a group assignment whereby individuals complete tasks separately to form the final proposal. A design project does not work that way. Effective design work is iterative and this means that team members need to keep aligning their thinking about the project to ensure contributions become an integrated whole. Thus, it is wise to establish champions or leaders responsible for various aspects of the project, rather than assigning individual parts. Be mindful, that the assigning of individual parts or word counts can lead to misalignment, poor cohesion of the team and is often counterproductive. Thus, you will have to engage in this project. Do not wait for someone else to take the initiative to lead.

### **(c) Concept Proposal (60%)**

The team is to prepare and submit one Concept Proposal. Your job as a team is to find an item that presents a human-machine interaction problem. Based on Human Factors design principles you are to analyse the problem and redesign the item so that it is more suitable for the end user. To do this well you will need to consider human capabilities and limitations. The item can be a simple interaction problem, like no handles on an item that is difficult to carry, or a problem experienced when using a self-service payment kiosk. You are free to choose your own item for redesign.

The Concept Proposal should contain:

- Title page
- Executive Summary
- Introduction
- Description of the human-machine interaction problem
- Methods
- Results and discussion
- Problem definition
- Evaluation of plausible concept solutions
- Concept chosen
- Justification for concept chosen
- References
- Appendices

### **(d) Reflective journal (30%)**

Each student is to submit their own reflective journal.

- The journal should show your thoughts about what you are learning throughout the term and how human factors might relate to aspects of your life, work, community or the team design project. Unlike a diary, journals reflect your thoughts on how events, information, etc. may relate to you personally or to other situations and thus entries should be labelled according to topic, rather than date.

- The final entry (500 words) is to describe your thoughts about the strengths and challenges experienced while working as a team. Finally, you are to offer some ways in which teamwork functioning might be improved in the future.

The journal should contain:

- A title page
- Journal entries (multiple)
- Final journal entry on teamwork

### **Assessment Due Date**

Week 12 Friday (6 Oct 2017) 11:45 pm AEST

### **Return Date to Students**

Review/Exam Week Friday (13 Oct 2017)

### **Weighting**

50%

### **Assessment Criteria**

#### **(a) Individual team role test (non-graded)**

#### **(b) The Team Plan will be assessed according to the following criteria:**

The Critique (5%)

- Is expressed in a way that shows respect for the other team.
- Offers something that is done well.
- Offers something that needs improvement.

Project Plan (5%)

- Completeness: has all team member names, contact details, means for collaboration
- Analysis of team preferred roles (as per Dr Meredith Belbin)
- List of activities to complete
- A tentative schedule
- A strategy for resolving issues

#### **(c) The Concept Proposal (60% total - each criterion is allocated 10%)**

- Integrates principles of human capacity and limitations (may include: anthropometrics, physical, cognitive, organisational and environmental aspects)
- Analyses the potential task associated with the human-machine interaction (including the environment of use)
- Highlights the significance of the problem and develops a suitable problem definition
- Systematically evaluates potential concept solutions
- Develops a design concept that meets the problem definition (sound from a human factors perspective and appropriate from a technical perspective)
- Format is consistent with a professional concept proposal (i.e. contains all relevant parts, logical argument, structure, written expression, referencing)

#### **(d) The Reflective Journal (30%):**

- 20% - Reflections on human factors the discipline and how science, theory and analytical tools contribute to improved human-system (used broadly) interactions, and how this might be applicable to your community, personal life, work, or design project.
- 10% - Final entry: a reflective account of the team's strengths and challenges experienced during the term. The entry is to conclude with some ways to improve team functioning for the future.

A team grade will be assigned to the Team Plan and Concept Proposal. An individual grade will be assigned to the Reflective Journal. Additionally, where applicable, the Journal will be used to moderate the individual allocation of the marks for the proposal, up or down one letter grade depending on the individual's demonstrated understanding of the proposal submitted.

### **Referencing Style**

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

### **Submission**

Online

### **Learning Outcomes Assessed**

- Apply human factors knowledge to the evaluation of work systems and equipment design including work capacity and limitation.
- Develop team work and project management skills through the application of human factors assessment and solutions to design issues with the workplace.

#### **Graduate Attributes**

- Communication
- Problem Solving
- Critical Thinking
- Information Literacy
- Team Work
- 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