SAFE20017 *Human Factors in Complex Systems*
Term 2 - 2017

Profile information current as at 14/05/2024 04:33 pm

General Information

Overview
This advanced level unit introduces students to the practices and principles of Human Factors and examines the ways that humans function in complex social and organisational safety systems. This unit discusses the core principles of physical, cognitive and organisational ergonomics and provides a base knowledge that students build upon throughout their course. Students will learn and apply knowledge in the area of anthropometric variation of the human body to end user design enhancements as well as discussing concepts of job design in relation to psychological considerations including mental workloads, fatigue management, team work and job-fit concepts.

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

Pre-requisites or Co-requisites
There are no requisites for this unit.
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

- Distance

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 Postgraduate unit at CQUniversity requires an overall time commitment of an average of 12.5 hours of study per week, making a total of 150 hours for the unit.

Class Timetable

Regional Campuses
Bundaberg, Cairns, Emerald, Gladstone, Mackay, Rockhampton, Townsville

Metropolitan Campuses
Adelaide, Brisbane, Melbourne, Perth, Sydney

Assessment Overview

1. **Group Discussion**
Weighting: 20%
2. **Written Assessment**
Weighting: 40%
3. **Written Assessment**
Weighting: 40%

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 and teaching staff self evaluation

Feedback
Assignment questions need to be clearer

Recommendation
Assignments to be reassessed and changes made

Feedback from Student feedback and teaching staff self evaluation

Feedback
Leaning resources need to be updated

Recommendation
Learning resources to be reviewed and updated

Unit Learning Outcomes

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

1. Demonstrate an advanced level knowledge of Human Factors principles and practices across the domains of physical, cognitive, environmental and organisational ergonomics in complex systems.
2. Apply knowledge of Human Factors to analyse the appropriateness of fit between end user design in relation to equipment and tasks.
3. Evaluate the contribution of cognitive ergonomics in the assessment of equipment design and the introduction of new technology in complex systems.
4. Discuss how the concepts of organisational job design relate to psychological considerations including mental workloads, fatigue management, team work and job-fit concepts in systems theory and its relationship to safey.
5. Critique comtemporary theories of human performance in complex systems.

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
1 - Group Discussion - 20%	•	•	•	•	•
2 - Written Assessment - 40%	•	•			
3 - Written Assessment - 40%	•		•	•	

Alignment of Graduate Attributes to Learning Outcomes

Graduate Attributes	Learning Outcomes				
	1	2	3	4	5
1 - Knowledge	○	○	○	○	○
2 - Communication	○	○	○	○	○
3 - Cognitive, technical and creative skills	○	○	○	○	○
4 - Research	○	○	○	○	○
5 - Self-management	○	○	○	○	○
6 - Ethical and Professional Responsibility				○	○
7 - Leadership				○	○
8 - 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
1 - Group Discussion - 20%	○	○	○	○	○	○	○	
2 - Written Assessment - 40%	○	○	○	○	○			
3 - Written Assessment - 40%	○	○	○	○	○			

Textbooks and Resources

Textbooks

SAFE20017

Prescribed

Human Factors in Simple and Complex Systems
Edition: 2nd (2008)
Authors: Proctor, R & Van Zandt, T
CRC Press Taylor & Francis
Boca Raton , FL , USA
ISBN: 9878-0-8058-4119-0
Binding: Hardcover

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

Karen Klockner Unit Coordinator
k.klockner@cqu.edu.au

Schedule

Week 1 - 10 Jul 2017

Module/Topic	Chapter	Events and Submissions/Topic
Introduction: The discipline of Human Factors / Ergonomics	Chapter 1, pp. 3-23	

Week 2 - 17 Jul 2017

Module/Topic	Chapter	Events and Submissions/Topic
The discipline of Human Factors / Ergonomics • Task Analysis	Chapter 1, pp. 69-70	

Week 3 - 24 Jul 2017

Module/Topic	Chapter	Events and Submissions/Topic
Physical Ergonomics • Anthropometrics • Workspace design	Chapter 16, pp. 433-445 Chapter 16, pp. 455-465	

Week 4 - 31 Jul 2017

Module/Topic	Chapter	Events and Submissions/Topic
Physical Ergonomics: • Hand tools • Manual handling	Chapter 16, pp. 445-451 Chapter 16, pp. 451-455	

Week 5 - 07 Aug 2017

Module/Topic	Chapter	Events and Submissions/Topic
Cognitive Ergonomics • Human information processing • Perception • Memory and retention	Chapter 4, pp. 81-87 Chapter 9, pp. 229-248 Chapter 10, pp. 261-287	

Vacation Week - 14 Aug 2017

Module/Topic	Chapter	Events and Submissions/Topic

Week 6 - 21 Aug 2017

Module/Topic	Chapter	Events and Submissions/Topic
Cognitive Ergonomics • Displays • Mental workload	Chapter 8, pp. 193-226 Chapter 9, pp. 249-259	

Week 7 - 28 Aug 2017

Module/Topic	Chapter	Events and Submissions/Topic
Cognitive Ergonomics • Decision making • Skill acquisition • Cognitive task analysis	Chapter 11 Chapter 12	**Physical Ergonomics Manual Task Analysis** Due: Week 7 Friday (1 Sept 2017) 11:45 pm AEST

Week 8 - 04 Sep 2017

Module/Topic	Chapter	Events and Submissions/Topic
Organisational Ergonomics • Human error and reliability • Fatigue • Drugs	Chapter 3 Chapter 18, pp. 508-513	**Group Discussions - Moodle** Due: Week 8 Friday (8 Sept 2017) 11:45 pm AEST

Week 9 - 11 Sep 2017

Module/Topic	Chapter	Events and Submissions/Topic
Organisational ergonomics • Human-machine interaction • Designing for end users	Chapter 13, pp. 341-365	

Week 10 - 18 Sep 2017

Module/Topic	Chapter	Events and Submissions/Topic
Environmental ergonomics	Chapter 17, pp. 467-497	

Week 11 - 25 Sep 2017

Module/Topic	Chapter	Events and Submissions/Topic
Tools, principles and practice		

Week 12 - 02 Oct 2017

Module/Topic	Chapter	Events and Submissions/Topic
Unit Review		**Cognitive Ergonomics Equipment Analysis** Due: Week 12 Friday (6 Oct 2017) 11:45 pm AEST

Review/Exam Week - 09 Oct 2017

Module/Topic	Chapter	Events and Submissions/Topic

Exam Week - 16 Oct 2017

Module/Topic	Chapter	Events and Submissions/Topic

Term Specific Information

Students must complete all three assessment tasks to pass this unit.

Assessment Tasks

1 Group Discussions - Moodle

Assessment Type
Group Discussion

Task Description
In Moodle you will be required to post one (1) contribution about a journal article you have found which relates to each one of the four discussion groups which are headed:-
The Discipline of Human Factors and Ergonomics;
Physical Ergonomics;
Cognitive Ergonomics; and
Organisational Ergonomics.
Your post should briefly inform the other students about the journal article, what the research was about and what the findings were.
You should keep your post to less than 150 words and you should not cite a journal article which someone else has already done.
This exercise is intended to give all students a brief overview of some of the research being conducted in the Human Factors/Ergonomics area and serve as a good starting point for the other assessments you will do. You are also required to post three general discussion replies to other students in the other discussion groups from which you have not done

your journal article post.
The end result is that you will have made a contribution to each of the four discussion group areas as listed above. The contributions MUST pertain to the subject matter and ADD to the discussion of the ergonomics content in this unit.

Assessment Due Date
Week 8 Friday (8 Sept 2017) 11:45 pm AEST

Return Date to Students
Week 10 Friday (22 Sept 2017)

Weighting
20%

Assessment Criteria
The key assessment criteria used will be your 'genuine participation' and your 'contribution to the knowledge of the research in the area of Human Factors and Ergonomics' within the Moodle learning environment.

Referencing Style

- Harvard (author-date)

Submission
Online

Submission Instructions
Assessment will be done via the Moodle site activity history information, no submission necessary.

Learning Outcomes Assessed

- Demonstrate an advanced level knowledge of Human Factors principles and practices across the domains of physical, cognitive, environmental and organisational ergonomics in complex systems.
- Apply knowledge of Human Factors to analyse the appropriateness of fit between end user design in relation to equipment and tasks.
- Evaluate the contribution of cognitive ergonomics in the assessment of equipment design and the introduction of new technology in complex systems.
- Discuss how the concepts of organisational job design relate to psychological considerations including mental workloads, fatigue management, team work and job-fit concepts in systems theory and its relationship to safey.
- Critique comtemporary theories of human performance in complex systems.

Graduate Attributes

- Knowledge
- Communication
- Cognitive, technical and creative skills
- Research
- Self-management
- Ethical and Professional Responsibility
- Leadership

2 Physical Ergonomics Manual Task Analysis

Assessment Type
Written Assessment

Task Description
An important step in the overall human factors/ergonomics process is identifying work tasks which might result in Musculoskeletal Disorders (MSD) risks. This assessment is about developing you understanding of the principles of assessment of these types of activities using human factors assessment tools.
Choose a manual task activity or task that might result in a Musculoskeletal Disorder (MSD) being performed in your workplace which is suitable for analysis by NIOSH and RULA or REBA.
Prepare a written report which covers:- The risk factors or problems, the analysis of the task using the appropriate tools, discusses the findings based on human factors and ergonomics and make recommendations for improvement to this task within the workplace.

Assessment Due Date
Week 7 Friday (1 Sept 2017) 11:45 pm AEST

Return Date to Students
Week 9 Friday (15 Sept 2017)

Weighting
40%

Assessment Criteria
Your assessment task will be assessed against the following criteria:
• Identifies context of workplace and/or other setting and people involved
• Describes the actual task being assessed • Describes MSD hazard or issues and potential effects
• Assesses the MSD risk score using a human factors or ergonomics tool (NIOSH and a REBA or RULA)
• Recommends changes based on assessment findings for MSD improvements to the workplace or other setting
• Presentation, Referencing and grammar

Referencing Style

- Harvard (author-date)

Submission
Online

Learning Outcomes Assessed

- Demonstrate an advanced level knowledge of Human Factors principles and practices across the domains of physical, cognitive, environmental and organisational ergonomics in complex systems.
- Apply knowledge of Human Factors to analyse the appropriateness of fit between end user design in relation to equipment and tasks.

Graduate Attributes

- Knowledge
- Communication
- Cognitive, technical and creative skills
- Research
- Self-management

3 Cognitive Ergonomics Equipment Analysis

Assessment Type
Written Assessment

Task Description
Your task is to perform an evaluation of an item of equipment with regard to COGNITIVE ERGONOMICS. You are required to conduct an ergonomic evaluation of an item of equipment using a Cognitive Task Analysis and prepare a formal report. The focus on the report will be on problem identification including:-

- How the equipment does or does not match the cognitive (i.e. information processing) characteristics of the users;
- How the equipment does or does not match the physical characteristics of the users (briefly—not major focus of report);
- Other problems; reference to relevant literature to support your analysis;
- Design recommendations (solutions to problems) for improving the match between the cognitive characteristics of the users and the design of the equipment;
- Any other recommendations from a Human Factors perspective.

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

Return Date to Students
Exam Week Friday (20 Oct 2017)

Weighting
40%

Assessment Criteria
Assessment is based on how well the report matches and addresses the assessment requirements / criteria and further information will be provided in Moodle.

Referencing Style

- Harvard (author-date)

Submission
Online

Learning Outcomes Assessed

- Demonstrate an advanced level knowledge of Human Factors principles and practices across the domains of physical, cognitive, environmental and organisational ergonomics in complex systems.
- Evaluate the contribution of cognitive ergonomics in the assessment of equipment design and the introduction of new technology in complex systems.
- Discuss how the concepts of organisational job design relate to psychological considerations including mental workloads, fatigue management, team work and job-fit concepts in systems theory and its relationship to safey.

Graduate Attributes

- Knowledge
- Communication
- Cognitive, technical and creative skills
- Research
- Self-management

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