



# PSYO922

## Human Factors and New Technology

S1 Evening 2019

*Department of Psychology*

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#### **Disclaimer**

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## General Information

Unit convenor and teaching staff

Mark Wiggins

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Credit points

4

Prerequisites

Admission to MOrgPsych

Corequisites

Co-badged status

Unit description

This unit examines the relationship between human performance and advanced technology, and the role of organisational psychologists in optimising this relationship. This unit will provide students with knowledge of theories and practical perspectives relating to the application of human factors principles in a range of operational settings. Practical components of the unit focus on the conduct of hazard analyses, task analyses, risk assessments, usability analyses, and human factors tests.

## Important Academic Dates

Information about important academic dates including deadlines for withdrawing from units are available at <https://www.mq.edu.au/study/calendar-of-dates>

## Learning Outcomes

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

- Knowledge outcomes:
- Describe the development of human factors as a discipline;
  - Outline models and theories that purport to explain human performance;
  - List the strategies associated with human performance assessment;
  - Give examples of the tools and processes associated with proactive approaches to assessments of human performance;
  - Give examples of the tools and processes associated with reactive approaches to assessments of human performance;
  - Outline the integration between human factors and engineering; and
  - Discuss the practical issues and challenges in organisations that relate to productivity.
- Specific skill outcomes:
- Prepare and carry out a usability analysis;
  - Undertake and summarise the outcomes of a cognitive interview;
  -

Develop and defend a human factors test plan; and • Propose solutions to improve the relationship between human performance and technology. Generic skill outcomes: • Literacy (particularly through the written assignments); • Creative thinking and problem-solving skills (particularly through the class activities); • Interpersonal and team and skills (particularly through the class activities); • Communication skills (through the oral presentation and class activities); and • Critical analysis skills (particularly through the class activities).

## Assessment Tasks

Name	Weighting	Hurdle	Due
<u>User Experience Report</u>	35%	No	08/04/2019
<u>Human Factors Test Plan</u>	35%	No	27/05/2019
<u>Examination</u>	30%	No	03/06/2019
<u>Quiz Questions</u>	0%	Yes	07/06/2019

### User Experience Report

Due: **08/04/2019**

Weighting: **35%**

This assessment task involves a report in which you examine a website of your choice and provide recommendations to address any user experience or usability issues identified.

Your submission should be formulated as an industry report, and must include:

1. A description of the website (including wire frames), an outline of the intended goals, and a summary of the significance of the website for the organisation;
2. A description of the investigative approach and a justification of the tools selected to identify both positive and negative features of the website (tools used must include at least an interview and an observation of user interaction);
3. A summary of the outcomes of the investigation (e.g. frequency of errors, path summary)

Specific recommendations to improve user experience and the usability of the website.

On successful completion you will be able to:

- Knowledge outcomes: • Describe the development of human factors as a discipline; • Outline models and theories that purport to explain human performance; • List the strategies associated with human performance assessment; • Give examples of the tools

and processes associated with proactive approaches to assessments of human performance; • Give examples of the tools and processes associated with reactive approaches to assessments of human performance; • Outline the integration between human factors and engineering; and • Discuss the practical issues and challenges in organisations that relate to productivity. Specific skill outcomes: • Prepare and carry out a usability analysis; • Undertake and summarise the outcomes of a cognitive interview; • Develop and defend a human factors test plan; and • Propose solutions to improve the relationship between human performance and technology. Generic skill outcomes: • Literacy (particularly through the written assignments); • Creative thinking and problem-solving skills (particularly through the class activities); • Interpersonal and team and skills (particularly through the class activities); • Communication skills (through the oral presentation and class activities); and • Critical analysis skills (particularly through the class activities).

## Human Factors Test Plan

Due: **27/05/2019**

Weighting: **35%**

This task involves the development of a human factors test plan for (ideally) one or more of the recommendations that you identified in Assessment 1. Your goal is to develop a succinct, cost-effective plan that might be submitted to management to obtain support for a human factors test.

On successful completion you will be able to:

- Knowledge outcomes: • Describe the development of human factors as a discipline; • Outline models and theories that purport to explain human performance; • List the strategies associated with human performance assessment; • Give examples of the tools and processes associated with proactive approaches to assessments of human performance; • Give examples of the tools and processes associated with reactive approaches to assessments of human performance; • Outline the integration between human factors and engineering; and • Discuss the practical issues and challenges in organisations that relate to productivity. Specific skill outcomes: • Prepare and carry out a usability analysis; • Undertake and summarise the outcomes of a cognitive interview; • Develop and defend a human factors test plan; and • Propose solutions to improve the relationship between human performance and technology. Generic skill outcomes: • Literacy (particularly through the written assignments); • Creative thinking and problem-solving skills (particularly through the class activities); • Interpersonal and team and skills (particularly through the class activities); • Communication skills (through the oral

presentation and class activities); and • Critical analysis skills (particularly though the class activities).

## Examination

Due: **03/06/2019**

Weighting: **30%**

This task involves a closed-book examination of the work that you have covered throughout the semester. The examination is conducted 'in class' and is 50 minutes in duration. The questions will be drawn directly from the learning objectives that accompany each class.

On successful completion you will be able to:

- Knowledge outcomes: • Describe the development of human factors as a discipline; • Outline models and theories that purport to explain human performance; • List the strategies associated with human performance assessment; • Give examples of the tools and processes associated with proactive approaches to assessments of human performance; • Give examples of the tools and processes associated with reactive approaches to assessments of human performance; • Outline the integration between human factors and engineering; and • Discuss the practical issues and challenges in organisations that relate to productivity. Specific skill outcomes: • Prepare and carry out a usability analysis; • Undertake and summarise the outcomes of a cognitive interview; • Develop and defend a human factors test plan; and • Propose solutions to improve the relationship between human performance and technology. Generic skill outcomes: • Literacy (particularly through the written assignments); • Creative thinking and problem-solving skills (particularly though the class activities); • Interpersonal and team and skills (particularly through the class activities); • Communication skills (though the oral presentation and class activities); and • Critical analysis skills (particularly though the class activities).

## Quiz Questions

Due: **07/06/2019**

Weighting: **0%**

**This is a hurdle assessment task (see [assessment policy](#) for more information on hurdle assessment tasks)**

Completion of the multiple choice questions associated with each video recording is a unit requirement. While it does not carry any weight towards the final mark, the failure to complete the questions successfully may result in failure of the unit.

On successful completion you will be able to:

- Knowledge outcomes: • Describe the development of human factors as a discipline; • Outline models and theories that purport to explain human performance; • List the strategies associated with human performance assessment; • Give examples of the tools and processes associated with proactive approaches to assessments of human performance; • Give examples of the tools and processes associated with reactive approaches to assessments of human performance; • Outline the integration between human factors and engineering; and • Discuss the practical issues and challenges in organisations that relate to productivity. Specific skill outcomes: • Prepare and carry out a usability analysis; • Undertake and summarise the outcomes of a cognitive interview; • Develop and defend a human factors test plan; and • Propose solutions to improve the relationship between human performance and technology. Generic skill outcomes: • Literacy (particularly through the written assignments); • Creative thinking and problem-solving skills (particularly through the class activities); • Interpersonal and team and skills (particularly through the class activities); • Communication skills (through the oral presentation and class activities); and • Critical analysis skills (particularly through the class activities).

## Delivery and Resources

This unit consists of alternating face-to-face and on-line classes. Where a class is delivered on-line, students will be expected to: (a) Review a 20 minute (approx.) video clip, read the relevant chapter in the textbook together with one or two additional papers, answer questions to a short, on-line quiz, and undertake any activities as directed for that week. Students are expected to attend all scheduled classes. Learning objectives and assessment activities are based on the requirements of a minimum 80% class attendance. If there are exceptional circumstances where a session must be missed, this will need to be arranged with the unit convener in advance. Failure to do so implies a lack of professionalism.

Required readings include chapters from the textbook, and readings listed in the Topic Notes

Textbook: Stone, N.J., Chaparro, A., Keebler, J.R., Chaparro, B.S., & McConnell, D.S. (2018). Introduction to human factors: Applying psychology to design. Boca Raton, FL: CRC Press

## Policies and Procedures

Macquarie University policies and procedures are accessible from [Policy Central](https://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policy-central) (<https://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policy-central>). Students should be aware of the following policies in particular with regard to Learning and Teaching:

- [Academic Appeals Policy](#)
- [Academic Integrity Policy](#)
- [Academic Progression Policy](#)

- [Assessment Policy](#)
- [Fitness to Practice Procedure](#)
- [Grade Appeal Policy](#)
- [Complaint Management Procedure for Students and Members of the Public](#)
- [Special Consideration Policy](#) (**Note:** *The Special Consideration Policy is effective from 4 December 2017 and replaces the Disruption to Studies Policy.*)

Undergraduate students seeking more policy resources can visit the [Student Policy Gateway](https://students.mq.edu.au/support/study/student-policy-gateway) (<https://students.mq.edu.au/support/study/student-policy-gateway>). It is your one-stop-shop for the key policies you need to know about throughout your undergraduate student journey.

If you would like to see all the policies relevant to Learning and Teaching visit [Policy Central](http://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policy-central) (<http://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policy-central>).

## Student Code of Conduct

Macquarie University students have a responsibility to be familiar with the Student Code of Conduct: <https://students.mq.edu.au/study/getting-started/student-conduct>

## Results

Results published on platform other than [eStudent](#), (eg. iLearn, Coursera etc.) or released directly by your Unit Convenor, are not confirmed as they are subject to final approval by the University. Once approved, final results will be sent to your student email address and will be made available in [eStudent](#). For more information visit [ask.mq.edu.au](http://ask.mq.edu.au) or if you are a Global MBA student contact [globalmba.support@mq.edu.au](mailto:globalmba.support@mq.edu.au)

## Student Support

Macquarie University provides a range of support services for students. For details, visit <http://students.mq.edu.au/support/>

## Learning Skills

Learning Skills ([mq.edu.au/learningskills](http://mq.edu.au/learningskills)) provides academic writing resources and study strategies to improve your marks and take control of your study.

- [Workshops](#)
- [StudyWise](#)
- [Academic Integrity Module for Students](#)
- [Ask a Learning Adviser](#)

## Student Services and Support

Students with a disability are encouraged to contact the [Disability Service](#) who can provide appropriate help with any issues that arise during their studies.



## Student Enquiries

For all student enquiries, visit Student Connect at [ask.mq.edu.au](http://ask.mq.edu.au)

If you are a Global MBA student contact [globalmba.support@mq.edu.au](mailto:globalmba.support@mq.edu.au)

## IT Help

For help with University computer systems and technology, visit [http://www.mq.edu.au/about\\_us/offices\\_and\\_units/information\\_technology/help/](http://www.mq.edu.au/about_us/offices_and_units/information_technology/help/).

When using the University's IT, you must adhere to the [Acceptable Use of IT Resources Policy](#). The policy applies to all who connect to the MQ network including students.

## Graduate Capabilities

### PG - Capable of Professional and Personal Judgment and Initiative

Our postgraduates will demonstrate a high standard of discernment and common sense in their professional and personal judgment. They will have the ability to make informed choices and decisions that reflect both the nature of their professional work and their personal perspectives.

This graduate capability is supported by:

#### Learning outcome

- Knowledge outcomes: • Describe the development of human factors as a discipline; • Outline models and theories that purport to explain human performance; • List the strategies associated with human performance assessment; • Give examples of the tools and processes associated with proactive approaches to assessments of human performance; • Give examples of the tools and processes associated with reactive approaches to assessments of human performance; • Outline the integration between human factors and engineering; and • Discuss the practical issues and challenges in organisations that relate to productivity. Specific skill outcomes: • Prepare and carry out a usability analysis; • Undertake and summarise the outcomes of a cognitive interview; • Develop and defend a human factors test plan; and • Propose solutions to improve the relationship between human performance and technology. Generic skill outcomes: • Literacy (particularly through the written assignments); • Creative thinking and problem-solving skills (particularly through the class activities); • Interpersonal and team and skills (particularly through the class activities); • Communication skills (through the oral presentation and class activities); and • Critical analysis skills (particularly through the class activities).



## Assessment tasks

- User Experience Report
- Human Factors Test Plan

## PG - Discipline Knowledge and Skills

Our postgraduates will be able to demonstrate a significantly enhanced depth and breadth of knowledge, scholarly understanding, and specific subject content knowledge in their chosen fields.

This graduate capability is supported by:

## Learning outcome

- Knowledge outcomes: • Describe the development of human factors as a discipline; • Outline models and theories that purport to explain human performance; • List the strategies associated with human performance assessment; • Give examples of the tools and processes associated with proactive approaches to assessments of human performance; • Give examples of the tools and processes associated with reactive approaches to assessments of human performance; • Outline the integration between human factors and engineering; and • Discuss the practical issues and challenges in organisations that relate to productivity. Specific skill outcomes: • Prepare and carry out a usability analysis; • Undertake and summarise the outcomes of a cognitive interview; • Develop and defend a human factors test plan; and • Propose solutions to improve the relationship between human performance and technology. Generic skill outcomes: • Literacy (particularly through the written assignments); • Creative thinking and problem-solving skills (particularly through the class activities); • Interpersonal and team and skills (particularly through the class activities); • Communication skills (through the oral presentation and class activities); and • Critical analysis skills (particularly through the class activities).

## Assessment tasks

- User Experience Report
- Human Factors Test Plan
- Examination
- Quiz Questions

## PG - Critical, Analytical and Integrative Thinking

Our postgraduates will be capable of utilising and reflecting on prior knowledge and experience, of applying higher level critical thinking skills, and of integrating and synthesising learning and

knowledge from a range of sources and environments. A characteristic of this form of thinking is the generation of new, professionally oriented knowledge through personal or group-based critique of practice and theory.

This graduate capability is supported by:

## **Learning outcome**

- Knowledge outcomes: • Describe the development of human factors as a discipline; • Outline models and theories that purport to explain human performance; • List the strategies associated with human performance assessment; • Give examples of the tools and processes associated with proactive approaches to assessments of human performance; • Give examples of the tools and processes associated with reactive approaches to assessments of human performance; • Outline the integration between human factors and engineering; and • Discuss the practical issues and challenges in organisations that relate to productivity. Specific skill outcomes: • Prepare and carry out a usability analysis; • Undertake and summarise the outcomes of a cognitive interview; • Develop and defend a human factors test plan; and • Propose solutions to improve the relationship between human performance and technology. Generic skill outcomes: • Literacy (particularly through the written assignments); • Creative thinking and problem-solving skills (particularly through the class activities); • Interpersonal and team and skills (particularly through the class activities); • Communication skills (through the oral presentation and class activities); and • Critical analysis skills (particularly through the class activities).

## **Assessment tasks**

- User Experience Report
- Human Factors Test Plan
- Examination
- Quiz Questions

## **PG - Research and Problem Solving Capability**

Our postgraduates will be capable of systematic enquiry; able to use research skills to create new knowledge that can be applied to real world issues, or contribute to a field of study or practice to enhance society. They will be capable of creative questioning, problem finding and problem solving.

This graduate capability is supported by:

## **Learning outcome**

- Knowledge outcomes: • Describe the development of human factors as a discipline; •

Outline models and theories that purport to explain human performance; • List the strategies associated with human performance assessment; • Give examples of the tools and processes associated with proactive approaches to assessments of human performance; • Give examples of the tools and processes associated with reactive approaches to assessments of human performance; • Outline the integration between human factors and engineering; and • Discuss the practical issues and challenges in organisations that relate to productivity. Specific skill outcomes: • Prepare and carry out a usability analysis; • Undertake and summarise the outcomes of a cognitive interview; • Develop and defend a human factors test plan; and • Propose solutions to improve the relationship between human performance and technology. Generic skill outcomes: • Literacy (particularly through the written assignments); • Creative thinking and problem-solving skills (particularly through the class activities); • Interpersonal and team and skills (particularly through the class activities); • Communication skills (through the oral presentation and class activities); and • Critical analysis skills (particularly through the class activities).

## **Assessment tasks**

- User Experience Report
- Human Factors Test Plan

## **PG - Effective Communication**

Our postgraduates will be able to communicate effectively and convey their views to different social, cultural, and professional audiences. They will be able to use a variety of technologically supported media to communicate with empathy using a range of written, spoken or visual formats.

This graduate capability is supported by:

## **Learning outcome**

- Knowledge outcomes: • Describe the development of human factors as a discipline; • Outline models and theories that purport to explain human performance; • List the strategies associated with human performance assessment; • Give examples of the tools and processes associated with proactive approaches to assessments of human performance; • Give examples of the tools and processes associated with reactive approaches to assessments of human performance; • Outline the integration between human factors and engineering; and • Discuss the practical issues and challenges in organisations that relate to productivity. Specific skill outcomes: • Prepare and carry out a usability analysis; • Undertake and summarise the outcomes of a cognitive interview; •

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## **Assessment task**

- Human Factors Test Plan

## **PG - Engaged and Responsible, Active and Ethical Citizens**

Our postgraduates will be ethically aware and capable of confident transformative action in relation to their professional responsibilities and the wider community. They will have a sense of connectedness with others and country and have a sense of mutual obligation. They will be able to appreciate the impact of their professional roles for social justice and inclusion related to national and global issues

This graduate capability is supported by:

## **Learning outcome**

- Knowledge outcomes: • Describe the development of human factors as a discipline; • Outline models and theories that purport to explain human performance; • List the strategies associated with human performance assessment; • Give examples of the tools and processes associated with proactive approaches to assessments of human performance; • Give examples of the tools and processes associated with reactive approaches to assessments of human performance; • Outline the integration between human factors and engineering; and • Discuss the practical issues and challenges in organisations that relate to productivity. Specific skill outcomes: • Prepare and carry out a usability analysis; • Undertake and summarise the outcomes of a cognitive interview; • Develop and defend a human factors test plan; and • Propose solutions to improve the relationship between human performance and technology. Generic skill outcomes: • Literacy (particularly through the written assignments); • Creative thinking and problem-solving skills (particularly through the class activities); • Interpersonal and team and skills (particularly through the class activities); • Communication skills (through the oral presentation and class activities); and • Critical analysis skills (particularly through the class activities).

## **Assessment task**

- Human Factors Test Plan