



COGS701

Research Frontiers in Cognitive Science

S1 Day 2017

Department of Cognitive Science

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General Information

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Credit points

4

Prerequisites

Admission to MRes

Corequisites

Co-badged status

Unit description

This unit will engage students in critical research issues in cognitive science. We examine the assumptions and methodological issues of the main techniques used across the different fields of cognitive science (e.g., neuroimaging, behavioural, and neuropsychological techniques). The unit will include seminars by experts in the various techniques and student-led analyses of recently published papers. The aim is to provide students with the tools to critically appraise published studies and the inferences made on the basis of experimental data. Activities are based on seminar attendance, directed reading of research articles, and critical discussion of research in both written and oral form.

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:

Identify critical issues in methods used in cognitive science

Demonstrate advanced understanding of the methods available for research into cognitive science

Demonstrate advanced understanding of the common measures of cognition and some of the underlying assumptions

Clearly articulate an argument in written and oral form to a variety of audiences

Critically analyse information from a variety of sources

Provide critical analysis when reading academic research papers, and critically evaluate scientific methods, results and interpretations

General Assessment Information

Late Penalties

Late submission of an assignment will attract a penalty of 10% of the maximum mark for every day that the assignment is late (including weekend days). For example, if the assignment is worth 40 marks and your assignment is submitted 2 days late, a penalty of $2 \times 10\% \times 40 = 8$ marks will be applied and subtracted from the awarded mark for the assignment. Work submitted more than 7 days after the submission deadline will not be marked and will receive a mark of 0. Please note that it is the student's responsibility to notify the University of a disruption to their studies and that requests for extensions for assignments must be made via the University's Ask MQ System (as outlined in the [Disruption to Studies Policy](#)).

Questions about the assessment tasks?

Please email the unit convenors for clarification or questions about any of the assessments - we are happy to discuss essay directions in advance of submission if necessary.

Assessment Tasks

Name	Weighting	Hurdle	Due
<u>Participation</u>	10%	No	Throughout course
<u>Leading journal club</u>	10%	No	Dependent on signed up topic
<u>Critical Analysis Of A Paper</u>	30%	No	2 weeks after leading paper
<u>Critical Issues Essay</u>	50%	No	19th June 2017

Participation

Due: **Throughout course**

Weighting: **10%**

This assessment involves participating, discussing and contributing ideas throughout the course.

The course alternates between lectures given by experts and student-led journal club discussions. Students are given ample opportunity to ask questions, contribute ideas and thoughts and participate. For the student-led journal club sessions, it is required that all students carefully read the selected paper and critically think about the issues the paper raises. All students are then expected to contribute to the group discussion about the selected paper.

On successful completion you will be able to:

- Identify critical issues in methods used in cognitive science
- Demonstrate advanced understanding of the methods available for research into cognitive science
- Clearly articulate an argument in written and oral form to a variety of audiences

Leading journal club

Due: **Dependent on signed up topic**

Weighting: **10%**

This assessment involves selecting an academic research paper and leading a student-led discussion.

The purpose of this assessment is to provide students with practical experience in critical thinking and reasoning when reading academic articles. It will also provide students with an opportunity to enhance oral communication skills and increase their understanding of methodological techniques commonly used in academic articles.

Each student will nominate themselves to lead a paper discussion on a particular topic. Topics will be based on particular methods used in Cognitive Science and will follow specific lectures about the topic. Nominated students will select an academic paper that uses the particular technique and upload it to iLearn. All remaining students will then sign up to read and critically discuss one of the selected papers.

On the day of the student-led discussions, students will split into small groups according to which papers they signed up to critically evaluate. The nominated student will lead the discussion by critically reading and preparing for the discussion on the day. There will be department experts in the topic to help facilitate discussion within the groups. All students will contribute to discussing the critical issues within the paper. Groups will complete a short paper summary form throughout the discussion and give a short summary presentation to the the entire class about the critical issues in the paper.

On successful completion you will be able to:

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- Clearly articulate an argument in written and oral form to a variety of audiences
- Provide critical analysis when reading academic research papers, and critically evaluate scientific methods, results and interpretations

Critical Analysis Of A Paper

Due: **2 weeks after leading paper**

Weighting: **30%**

This assessment involves writing a 1000 word essay critically analysing a particular academic paper.

Students who nominated for a specific topic will be required to submit an essay two weeks after the student-led discussion. This essay will be a critical review summary of an academic paper. This article can be the paper analysed during the discussion, or a different article if the student so chooses. The article will use the relevant methodological topic discussed in the lecture and discussion group.

The essay will be assessed for evidence of:

- [1] understanding of the goal, methods, analyses & results of the study,
- [2] critical and reflective thinking regarding potential issues with the study,
- [3] writing, clarity, and argument of the essay.

Word Limit: 1,000 words. Please write the word count on the cover page.

Due Date: Essays are due two weeks after students have led the student discussion. An electronic version of the essay will be submitted to iLearn by 4pm on the due date.

On successful completion you will be able to:

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- Demonstrate advanced understanding of the common measures of cognition and some of the underlying assumptions
- Clearly articulate an argument in written and oral form to a variety of audiences
- Critically analyse information from a variety of sources
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Critical Issues Essay

Due: **19th June 2017**

Weighting: **50%**

This assessment requires writing a 3000 word essay about the critical issues in cognitive science.

The essay should contain an introductory overview and present a number of issues (perhaps 3-4) that arose during the course, and across the different techniques. It should demonstrate an understanding and detailed knowledge about the important issues in conducting research in cognitive science. The essay should include explanations about the significance of these issues and provide supporting evidence by referring to evidence-based scientific papers. The essay should also highlight critical issues and flaws within cited papers, and relate the impact these can have on the interpretation.

The essay will be assessed based on evidence of:

[1] critical thinking and understanding of the selected issues

[2] writing, clarity and argument

[3] correct use of referencing and bibliography

Word Limit: 3,000 words excl bibliography. Please write the word count on the cover page.

Due Date: 19th June 2017 at 9am. An electronic version of the essay will be submitted to iLearn by 9am on the due date.

On successful completion you will be able to:

- Identify critical issues in methods used in cognitive science
- Demonstrate advanced understanding of the common measures of cognition and some of the underlying assumptions
- Clearly articulate an argument in written and oral form to a variety of audiences
- Critically analyse information from a variety of sources
- Provide critical analysis when reading academic research papers, and critically evaluate scientific methods, results and interpretations

Delivery and Resources

ABOUT THIS UNIT

This unit will engage students in critical research issues in cognitive science. We examine the assumptions and methodological issues of the main techniques used across the different fields of cognitive science (e.g. neuroimaging, behavioural, and neuropsychological techniques). The course will include lectures by experts in the various techniques and student-led analysis of recent published papers. The aim is to provide students with the tools to critically appraise published studies and the inferences made on the basis of experimental data. Activities are based on seminar attendance, directed reading of research articles, and critical discussion of research in both written and oral form.

Delivery

There will be 13 weekly seminars that run for 2 hours each.

Seminars will start in Week 1 of Session 1 on **Fridays from 12:00-1:45pm** in the Australian Hearing Hub, Level 3, room 3.610 (Marrie). For Week 7 of Session 1 the seminar will be on **Thursday 2:00 - 3:45pm** in the Australian Hearing Hub, Level 3, room 3.610.

We expect 100% attendance to the weekly seminars. If there are any issues with attendance, please email the unit convenors in advance of the class. We require students to participate in the discussion in the journal club seminars, which requires thorough reading of the assigned papers.

Resources

The required readings for this unit will be nominated by students.

Recommended readings will be given by lecturers after each lecture.

Slides and readings from each lecture will be available on this unit's iLearn page.

Unit Schedule

Week	Date	Topic	Lecturer
1	3rd March, 2017	Overview and Experimental Design/Analysis	A/Prof Anina Rich

Week	Date	Topic	Lecturer
2	10th March, 2017	Behavioural Papers	
3	17th March, 2017	Electroencephalography (EEG)	Dr Simmy Poonian
4	24th March, 2017	EEG Papers	
5	31st March 2017	Neural Stimulation	Dr Paul Sowman
6	7th April 2017	Neural Stimulation Papers	
7	13th April 2017	Functional Magnetic Resonance Imaging (fMRI) Note: This Lecture will be on Thursday at 2pm	Dr Regine Zopf
	21st April 2017	MID SESSION BREAK	
	28th April 2017	MID SESSION BREAK	
8	5th May 2017	fMRI Papers	
9	12th May 2017	Patient Studies: Single Case vs Group Approaches	Prof Lyndsey Nickels
10	19th May 2017	Patient Studies Papers	
11	26th May 2017	Magnetoencephalography (MEG)	Dr Yiwen Li
12	2nd June 2017	MEG Papers	
13	9th June 2017	Critical Themes in Cognitive Science (A Summary)	A/Prof Anina Rich Dr Simmy Poonian

Policies and Procedures

Macquarie University policies and procedures are accessible from [Policy Central](#). Students should be aware of the following policies in particular with regard to Learning and Teaching:

Academic Honesty Policy http://mq.edu.au/policy/docs/academic_honesty/policy.html

Assessment Policy http://mq.edu.au/policy/docs/assessment/policy_2016.html

Grade Appeal Policy <http://mq.edu.au/policy/docs/gradeappeal/policy.html>

Complaint Management Procedure for Students and Members of the Public http://www.mq.edu.au/policy/docs/complaint_management/procedure.html

Disruption to Studies Policy (in effect until Dec 4th, 2017): http://www.mq.edu.au/policy/docs/disruption_studies/policy.html

Special Consideration Policy (in effect from Dec 4th, 2017): <https://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policies/special-consideration>

In addition, a number of other policies can be found in the [Learning and Teaching Category](#) of

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/support/student_conduct/

Results

Results shown in *iLearn*, 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.

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) 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

IT Help

For help with University computer systems and technology, visit 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 - 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 outcomes

- Identify critical issues in methods used in cognitive science
- Demonstrate advanced understanding of the methods available for research into cognitive science
- Demonstrate advanced understanding of the common measures of cognition and some of the underlying assumptions

Assessment tasks

- Participation
- Leading journal club
- Critical Analysis Of A Paper
- Critical Issues Essay

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 outcomes

- Identify critical issues in methods used in cognitive science
- Demonstrate advanced understanding of the methods available for research into cognitive science
- Clearly articulate an argument in written and oral form to a variety of audiences
- Critically analyse information from a variety of sources
- Provide critical analysis when reading academic research papers, and critically evaluate scientific methods, results and interpretations

Assessment tasks

- Critical Analysis Of A Paper
- Critical Issues Essay

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 outcomes

- Identify critical issues in methods used in cognitive science
- Demonstrate advanced understanding of the common measures of cognition and some of the underlying assumptions
- Clearly articulate an argument in written and oral form to a variety of audiences
- Critically analyse information from a variety of sources
- Provide critical analysis when reading academic research papers, and critically evaluate scientific methods, results and interpretations

Assessment task

- Critical Issues Essay

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

- Clearly articulate an argument in written and oral form to a variety of audiences

Assessment tasks

- Participation
- Leading journal club
- Critical Analysis Of A Paper
- Critical Issues Essay