



PSY 236

Biopsychology and Learning

S2 Day 2018

Department of Psychology

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Disclaimer

Macquarie University has taken all reasonable measures to ensure the information in this publication is accurate and up-to-date. However, the information may change or become out-dated as a result of change in University policies, procedures or rules. The University reserves the right to make changes to any information in this publication without notice. Users of this publication are advised to check the website version of this publication [or the relevant faculty or department] before acting on any information in this publication.

General Information

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Credit points

3

Prerequisites

[PSYC104 and PSYC105] or [(STAT122 or STAT170(P) or STAT171 or PSY122(P)) and (PSY104(P) or PSYC104) and (PSY105(P) or PSYC105)] or [((PSY104(P) and PSY122(P)) or PSYC104) and admission to BA-PsychLLB]

Corequisites

Co-badged status

Unit description

This unit is designed to give students a basic knowledge of central neuronal mechanisms underlying fundamental behaviours and how these behaviours are modified through experience (learning). Half of the program describes the cytoarchitecture of central and peripheral neurons; the physiological and ionic bases of axonal and synaptic transmission; the overall anatomical organisation of the mammalian brain, and; sensory processing. These topics are followed by discussion on the central mechanisms underlying mammalian behaviours, such as motivation and psychopathology. The other half of the program provides a basic understanding of diverse phenomena in learning and behaviour, including classical conditioning and operant conditioning.

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:

Gain a general understanding of the principles and processes of learning, mechanisms of behavioural neuroscience, neurophysiology, and neuropharmacology.

Communication and information technology skills: using electronic databases to search for papers in relevant topics.

Written and oral communication skills: participating in class discussions.

Self-awareness skills: identifying and setting targets, time management.

Information skills: formulating arguments, judging the relevance and accuracy of information, comparing different points of view.

Problem solving: comparing alternative interpretations of neuroscience data, formulating new explanations.

Assessment Tasks

Name	Weighting	Hurdle	Due
<u>Research Report</u>	40%	No	14/09/2018
<u>Final Exam</u>	60%	No	Examination Period
<u>Topic On-Line Quiz</u>	0%	No	As needed

Research Report

Due: **14/09/2018**

Weighting: **40%**

A **1,200 word** research report (plus 120 word abstract) based on a behavioural experiment will be **due 5pm on Friday 14th September**. This Assessment Task relates to the following Learning Outcomes:

- Gain a general understanding of mechanisms of learning and behavioural neuroscience.
- Communication and information technology skills: using electronic databases to search for papers in relevant topics.
- Written and oral communication skills: participating in class discussions.
- Self-awareness skills: identifying and setting targets, time management.
- Information skills: formulating arguments, judging the relevance and accuracy of information, comparing different points of view.
- Problem solving: comparing alternative interpretations of neuroscience data, formulating new explanations.

On successful completion you will be able to:

- Gain a general understanding of the principles and processes of learning, mechanisms of behavioural neuroscience, neurophysiology, and neuropharmacology.
- Communication and information technology skills: using electronic databases to search for papers in relevant topics.
- Written and oral communication skills: participating in class discussions.
- Self-awareness skills: identifying and setting targets, time management.
- Information skills: formulating arguments, judging the relevance and accuracy of information, comparing different points of view.
- Problem solving: comparing alternative interpretations of neuroscience data, formulating new explanations.

Final Exam

Due: **Examination Period**

Weighting: **60%**

A two-hour exam (90 multiple choice questions each with five response options) to be held during the **final examination period**. This will examine material covered in the weeks 1-12 lecture topics, in addition to material in the practicals.

This Assessment Task relates to the following Learning Outcomes:

- Gain a general understanding of mechanisms of behavioural neuroscience, neurophysiology, neuropharmacology and learning.
- Self-awareness skills: identifying and setting targets, time management.
- Information skills: formulating arguments, judging the relevance and accuracy of information, comparing different points of view.
- Problem solving: comparing alternative interpretations of neuroscience data, formulating new explanations.

On successful completion you will be able to:

- Gain a general understanding of the principles and processes of learning, mechanisms of behavioural neuroscience, neurophysiology, and neuropharmacology.
- Communication and information technology skills: using electronic databases to search for papers in relevant topics.
- Written and oral communication skills: participating in class discussions.
- Self-awareness skills: identifying and setting targets, time management.
- Problem solving: comparing alternative interpretations of neuroscience data, formulating new explanations.

Topic On-Line Quiz

Due: **As needed**

Weighting: **0%**

This Assessment Task relates to the following Learning Outcomes:

- Gain a general understanding of mechanisms and processes of learning, behavioural neuroscience, neurophysiology, and neuropharmacology
- Self-awareness skills: identifying and setting targets, time management.
- Information skills: formulating arguments, judging the relevance and accuracy of information, comparing different points of view.
- Problem solving: comparing alternative interpretations of neuroscience data, formulating

new explanations.

On successful completion you will be able to:

- Gain a general understanding of the principles and processes of learning, mechanisms of behavioural neuroscience, neurophysiology, and neuropharmacology.
- Communication and information technology skills: using electronic databases to search for papers in relevant topics.
- Written and oral communication skills: participating in class discussions.
- Self-awareness skills: identifying and setting targets, time management.
- Information skills: formulating arguments, judging the relevance and accuracy of information, comparing different points of view.

Delivery and Resources

Classes

Lectures: All lectures will only be provided as topics by video recordings on-line (via iLearn).

Revision Sessions: 1 hr/week - see Timetable for time and location (the sessions will also be recorded and available on iLearn).

Practicals (tutorials): will run on weeks 2, 4, 6, 9 & 11 (Stream A) and weeks 3, 5, 7, 10 & 12 (Stream B) - i.e. each student attends **five** practicals). For **times** and **location** please see class timetable – pracs 1-12 are Stream A, pracs 13-24 are Stream B.

Managing Classes: Changes to all units can be done on-line via eStudent. After week 2, no further changes will be entertained unless supporting documentation about the reason for changing is provided and there is space in the tutorial you wish to change into.

Practical Attendance: Students must attend classes otherwise grades may be affected. Students enrolled in the composite attendance mode can access the iLecture recording of the lecture, but must attend the compulsory practical class.

Unit Schedule

Class Program					
Week	Date	Topic	LECTURER	TEXT	TUTORIAL
1	Learning 30 July	Introduction to Learning. Non-associative learning. Classical Conditioning 1 — Introduction, terms and forms of CC	Irwin	Mazur Ch. 1-3	NO PRACTICAL

2	6 Aug	<p>Classical Conditioning 2</p> <p>— Variations of CC and limitations in CC</p> <p>Classical Conditioning 3</p> <p>— Temporal parameters of CC</p> <p>— Inhibition and extinction of CR</p>	Irwin	Mazur Ch. 3-4	<p>Practical One</p> <p>Learning I Motor skill</p> <p>(Stream A)</p>
3	13 Aug	<p>Classical Conditioning 4</p> <p>— Contingency</p> <p>— Rescorla Wagner</p>	Irwin	Mazur Ch. 4	<p>Practical One Learning I Motor Skill</p> <p>(Stream B)</p>
4	20 Oct	Operant conditioning	Irwin	Mazur Ch. 5 & 6	<p>Practical Two</p> <p>Learning II (Sniffy 1)</p> <p>(Stream A)</p>
5	27 Aug	Extinction	Irwin	Pp 64-66, 126	<p>Practical Two Learning II (Sniffy 1)</p> <p>(Stream B)</p>
6	3 Sept	<p>Punishment</p> <p>Escape and Avoidance learning</p>	Irwin	Mazur 7	<p>Practical Three</p> <p>Learning III (Sniffy 2)</p> <p>(Stream A)</p>
Biopsychology					
7	10 Sept	Behavioural Neuroscience: Genetics	Baracz	Kalat Ch. 4 & 12	<p>Practical Three</p> <p>Learning III (Sniffy 2)</p> <p>(Stream B)</p>
SESSION BREAK					
8	2 Oct	The Nervous Systems. Brain Cells.	Baracz	Kalat Ch. 1 & 3	NO PRACTICAL
9	8 Oct	Neurophysiology, Neurochemistry, Communication by Receptors.	Baracz	Kalat Ch. 1 & 2	<p>Practical Four</p> <p>Neuroanatomy I</p> <p>Kalat Ch. 2 & 3</p> <p>(Stream A)</p>
10	15 Oct	Neurotransmitters. Neurotransmitter System Dysfunction.	Baracz	Kalat Ch. 2, 14 & App. A	<p>Practical Four</p> <p>Neuroanatomy I</p> <p>Kalat Ch. 2 & 3</p> <p>(Stream B)</p>

11	22 Oct	Substance Abuse, Addiction, Animal models of addiction	Baracz	Kalat Ch. 14	Practical Five Neuroanatomy II Kalat Ch. 3 & 4 (Stream A)
12	29 Oct	Neurobiology of Learning and Memory.	Baracz	Kalat Ch. 12	Practical Five Neuroanatomy II Kalat Ch. 3 & 4 (Stream B)
13	5 Nov	Revision: Learning and Biopsychology	Irwin / Baracz		NO PRACTICAL

Learning and Teaching Activities

Experiment

An experiment will be run in the first practical class, the results of which will form the basis of the research report

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 \(https://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policy-central\)](https://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policy-central).

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 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

Creative and Innovative

Our graduates will also be capable of creative thinking and of creating knowledge. They will be imaginative and open to experience and capable of innovation at work and in the community. We want them to be engaged in applying their critical, creative thinking.

This graduate capability is supported by:

Learning outcomes

- Gain a general understanding of the principles and processes of learning, mechanisms of behavioural neuroscience, neurophysiology, and neuropharmacology.
- Communication and information technology skills: using electronic databases to search for papers in relevant topics.
- Written and oral communication skills: participating in class discussions.
- Self-awareness skills: identifying and setting targets, time management.
- Information skills: formulating arguments, judging the relevance and accuracy of information, comparing different points of view.
- Problem solving: comparing alternative interpretations of neuroscience data, formulating new explanations.

Assessment task

- Research Report

Capable of Professional and Personal Judgement and Initiative

We want our graduates to have emotional intelligence and sound interpersonal skills and to demonstrate discernment and common sense in their professional and personal judgement. They will exercise initiative as needed. They will be capable of risk assessment, and be able to handle ambiguity and complexity, enabling them to be adaptable in diverse and changing environments.

This graduate capability is supported by:

Learning outcomes

- Gain a general understanding of the principles and processes of learning, mechanisms of behavioural neuroscience, neurophysiology, and neuropharmacology.
- Communication and information technology skills: using electronic databases to search for papers in relevant topics.
- Written and oral communication skills: participating in class discussions.
- Self-awareness skills: identifying and setting targets, time management.
- Information skills: formulating arguments, judging the relevance and accuracy of information, comparing different points of view.
- Problem solving: comparing alternative interpretations of neuroscience data, formulating new explanations.

Assessment tasks

- Research Report

- Final Exam
- Topic On-Line Quiz

Commitment to Continuous Learning

Our graduates will have enquiring minds and a literate curiosity which will lead them to pursue knowledge for its own sake. They will continue to pursue learning in their careers and as they participate in the world. They will be capable of reflecting on their experiences and relationships with others and the environment, learning from them, and growing - personally, professionally and socially.

This graduate capability is supported by:

Learning outcomes

- Gain a general understanding of the principles and processes of learning, mechanisms of behavioural neuroscience, neurophysiology, and neuropharmacology.
- Communication and information technology skills: using electronic databases to search for papers in relevant topics.
- Written and oral communication skills: participating in class discussions.
- Self-awareness skills: identifying and setting targets, time management.
- Information skills: formulating arguments, judging the relevance and accuracy of information, comparing different points of view.
- Problem solving: comparing alternative interpretations of neuroscience data, formulating new explanations.

Assessment tasks

- Research Report
- Final Exam
- Topic On-Line Quiz

Discipline Specific Knowledge and Skills

Our graduates will take with them the intellectual development, depth and breadth of knowledge, scholarly understanding, and specific subject content in their chosen fields to make them competent and confident in their subject or profession. They will be able to demonstrate, where relevant, professional technical competence and meet professional standards. They will be able to articulate the structure of knowledge of their discipline, be able to adapt discipline-specific knowledge to novel situations, and be able to contribute from their discipline to inter-disciplinary solutions to problems.

This graduate capability is supported by:

Learning outcomes

- Gain a general understanding of the principles and processes of learning, mechanisms

of behavioural neuroscience, neurophysiology, and neuropharmacology.

- Communication and information technology skills: using electronic databases to search for papers in relevant topics.
- Written and oral communication skills: participating in class discussions.
- Self-awareness skills: identifying and setting targets, time management.
- Information skills: formulating arguments, judging the relevance and accuracy of information, comparing different points of view.
- Problem solving: comparing alternative interpretations of neuroscience data, formulating new explanations.

Assessment tasks

- Research Report
- Final Exam
- Topic On-Line Quiz

Critical, Analytical and Integrative Thinking

We want our graduates to be capable of reasoning, questioning and analysing, and to integrate and synthesise learning and knowledge from a range of sources and environments; to be able to critique constraints, assumptions and limitations; to be able to think independently and systemically in relation to scholarly activity, in the workplace, and in the world. We want them to have a level of scientific and information technology literacy.

This graduate capability is supported by:

Learning outcomes

- Gain a general understanding of the principles and processes of learning, mechanisms of behavioural neuroscience, neurophysiology, and neuropharmacology.
- Communication and information technology skills: using electronic databases to search for papers in relevant topics.
- Written and oral communication skills: participating in class discussions.
- Self-awareness skills: identifying and setting targets, time management.
- Information skills: formulating arguments, judging the relevance and accuracy of information, comparing different points of view.
- Problem solving: comparing alternative interpretations of neuroscience data, formulating new explanations.

Assessment tasks

- Research Report
- Final Exam

- Topic On-Line Quiz

Problem Solving and Research Capability

Our graduates should be capable of researching; of analysing, and interpreting and assessing data and information in various forms; of drawing connections across fields of knowledge; and they should be able to relate their knowledge to complex situations at work or in the world, in order to diagnose and solve problems. We want them to have the confidence to take the initiative in doing so, within an awareness of their own limitations.

This graduate capability is supported by:

Learning outcomes

- Gain a general understanding of the principles and processes of learning, mechanisms of behavioural neuroscience, neurophysiology, and neuropharmacology.
- Communication and information technology skills: using electronic databases to search for papers in relevant topics.
- Written and oral communication skills: participating in class discussions.
- Self-awareness skills: identifying and setting targets, time management.
- Information skills: formulating arguments, judging the relevance and accuracy of information, comparing different points of view.
- Problem solving: comparing alternative interpretations of neuroscience data, formulating new explanations.

Assessment tasks

- Research Report
- Final Exam
- Topic On-Line Quiz

Effective Communication

We want to develop in our students the ability to communicate and convey their views in forms effective with different audiences. We want our graduates to take with them the capability to read, listen, question, gather and evaluate information resources in a variety of formats, assess, write clearly, speak effectively, and to use visual communication and communication technologies as appropriate.

This graduate capability is supported by:

Learning outcomes

- Gain a general understanding of the principles and processes of learning, mechanisms of behavioural neuroscience, neurophysiology, and neuropharmacology.
- Communication and information technology skills: using electronic databases to search

for papers in relevant topics.

- Written and oral communication skills: participating in class discussions.
- Self-awareness skills: identifying and setting targets, time management.
- Information skills: formulating arguments, judging the relevance and accuracy of information, comparing different points of view.
- Problem solving: comparing alternative interpretations of neuroscience data, formulating new explanations.

Assessment task

- Research Report

Engaged and Ethical Local and Global citizens

As local citizens our graduates will be aware of indigenous perspectives and of the nation's historical context. They will be engaged with the challenges of contemporary society and with knowledge and ideas. We want our graduates to have respect for diversity, to be open-minded, sensitive to others and inclusive, and to be open to other cultures and perspectives: they should have a level of cultural literacy. Our graduates should be aware of disadvantage and social justice, and be willing to participate to help create a wiser and better society.

This graduate capability is supported by:

Learning outcomes

- Gain a general understanding of the principles and processes of learning, mechanisms of behavioural neuroscience, neurophysiology, and neuropharmacology.
- Communication and information technology skills: using electronic databases to search for papers in relevant topics.
- Written and oral communication skills: participating in class discussions.
- Self-awareness skills: identifying and setting targets, time management.
- Information skills: formulating arguments, judging the relevance and accuracy of information, comparing different points of view.
- Problem solving: comparing alternative interpretations of neuroscience data, formulating new explanations.

Socially and Environmentally Active and Responsible

We want our graduates to be aware of and have respect for self and others; to be able to work with others as a leader and a team player; to have a sense of connectedness with others and country; and to have a sense of mutual obligation. Our graduates should be informed and active participants in moving society towards sustainability.

This graduate capability is supported by:

Learning outcomes

- Gain a general understanding of the principles and processes of learning, mechanisms of behavioural neuroscience, neurophysiology, and neuropharmacology.
- Communication and information technology skills: using electronic databases to search for papers in relevant topics.
- Written and oral communication skills: participating in class discussions.
- Self-awareness skills: identifying and setting targets, time management.
- Information skills: formulating arguments, judging the relevance and accuracy of information, comparing different points of view.
- Problem solving: comparing alternative interpretations of neuroscience data, formulating new explanations.

Changes since First Published

Date	Description
23/09/2018	The number of questions for the final exam did not match the number listed in the unit guide students have on the iLearn website. The number has been changed from 80 to 90.
31/07/2018	The dates in the lecture schedule were corrected for the weeks following the Session break