



PSY 236

Biopsychology and Learning

S2 Day 2019

Department of Psychology

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General Information

Unit convenor and teaching staff

Unit Convenor

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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)]

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:

Understand the key principles and processes of learning, mechanisms of behavioural neuroscience, neurophysiology, and neuropharmacology

Effectively use electronic databases to search for papers in relevant topics.

Demonstrate written and oral communication skills, including through participation in class discussions.

Develop self-awareness skills by identifying and setting targets, and applying time management

Critically analyse the key concepts of biopsychology and learning

Solve problems by comparing alternative interpretations of neuroscience data and formulating new explanations

Assessment Tasks

Name	Weighting	Hurdle	Due
<u>Research Report</u>	40%	No	Week 7
<u>Final Examination</u>	60%	No	Examination period

Research Report

Due: **Week 7**

Weighting: **40%**

This is a 1,200 word research report based on a behavioural experiment that will be conducted in the first practical class of the session. Details will be provided in that class, and it will be due 5pm on Friday 13th September, 2019.

On successful completion you will be able to:

- Understand the key principles and processes of learning, mechanisms of behavioural neuroscience, neurophysiology, and neuropharmacology
- Demonstrate written and oral communication skills, including through participation in class discussions.
- Develop self-awareness skills by identifying and setting targets, and applying time management
- Critically analyse the key concepts of biopsychology and learning
- Solve problems by comparing alternative interpretations of neuroscience data and

formulating new explanations

Final Examination

Due: **Examination period**

Weighting: **60%**

Ninety multiple choice questions each with five response options. Forty questions (40) examine material covered in the lecture topics of weeks 1-6; and fifty (50) questions will examine material covered in the lecture topics covered in weeks 7-12. Material from the practicals will also be included.

On successful completion you will be able to:

- Understand the key principles and processes of learning, mechanisms of behavioural neuroscience, neurophysiology, and neuropharmacology
- Effectively use electronic databases to search for papers in relevant topics.
- Demonstrate written and oral communication skills, including through participation in class discussions.
- Critically analyse the key concepts of biopsychology and learning
- Solve problems by comparing alternative interpretations of neuroscience data and formulating new explanations

Delivery and Resources

Lectures: The unit will be taught weekly through on-line audio and video recordings of several topics. These topics will be reviewed in a 1 hr session in the lecture theatre. The review sessions are designed to give all students face-to-face review of the lecture topic material, with opportunity for question and answer time.

Practical Classes: Students will attend a practical class once a fortnight. These classes extend lecture material by examining research and practical applications of the more theoretical material covered in lectures.

There will be **online quizzes** for students to self-assess their understanding of the lecture content. These quizzes do not contribute to the assessment marks of the students.

The **textbooks** used in this unit are:

Mazur, J.E. (2017). *Learning and Behavior* (8th Ed. International Ed.). Engelwood Cliffs, NJ: Prentice-Hall. Library has electronic copy available through ebookcentral-proquest

Alloway, T. Wilson, G. & Graham, J. (2012). *Sniffy the Virtual Rat Lite*, Version 3.0.

Kalat, J.W. (2019, 2015, 2013, 2009, 2007). *Biological Psychology* (13th, 12th, 11th, 10th or 9th ed).

Unit Schedule

Week starting		Topic	LECTURER	TEXT	TUTORIAL
1	29 July	Introduction to Learning. Non-associative learning. Classical Conditioning 1 — Introduction, terms and forms of CC	Irwin	Mazur Ch. 1-3	NO PRACTICAL
2	5 Aug	Classical Conditioning 2 — Variations of CC and limitations in CC Classical Conditioning 3 — Temporal parameters of CC — Inhibition and extinction of CR	Irwin	Mazur Ch. 3-4	Practical One Learning I Motor skill (Stream A)
3	12 Aug	Classical Conditioning 4 — Contingency — Rescorla Wagner	Irwin	Mazur Ch. 4	Practical One Learning I Motor Skill (Stream B)
4	19 Oct	Operant conditioning	Irwin	Mazur Ch. 5 & 6	Practical Two Learning II (Sniffy 1) (Stream A)
5	26 Aug	Extinction	Irwin	Pp 64-66, 126	Practical Two Learning II (Sniffy 1) (Stream B)
6	2 Sept	Punishment Escape and Avoidance learning	Irwin	Mazur 7	Practical Three Learning III (Sniffy 2) (Stream A)
Biopsychology					
7	9 Sept	Behavioural Neuroscience: Genetics, Animal models of addiction	Baracz	Kalat Ch. 4 & 12	Practical Three Learning III (Sniffy 2) (Stream B)
SESSION BREAK					
8	30 Sept	The Nervous Systems. Brain Cells.	Baracz	Kalat Ch. 1 & 3	NO PRACTICAL

9	7 Oct	Neurophysiology, Neurochemistry, Communication by Receptors.	Baracz	Kalat Ch. 1 & 2	Practical Four Neuroanatomy I Kalat Ch. 2 & 3 (Stream A)
10	14 Oct	Neurotransmitters. Neurotransmitter System Dysfunction.	Baracz	Kalat Ch. 2, 14 & App. A	Practical Four Neuroanatomy I Kalat Ch. 2 & 3 (Stream B)
11	21 Oct	Substance Abuse, Addiction,	Baracz	Kalat Ch. 14	Practical Five Neuroanatomy II Kalat Ch. 3 & 4 (Stream A)
12	28 Oct	Neurobiology of Learning and Memory.	Baracz	Kalat Ch. 12	Practical Five Neuroanatomy II Kalat Ch. 3 & 4 (Stream B)
13	4 Nov	Revision Quiz covering Learning and Biopsychology			NO PRACTICAL

Learning and Teaching Activities

Online lectures

All lectures will be provided by video recordings on-line (via Echo in iLearn).

Practical Classes

These classes will run every week but students need to check with the University Timetable as to which Stream (A or B) they will need to attend.

Online Quiz

These quizzes are for students to self-assess their understanding of the lecture content of the unit and do not contribute to their marks for the unit

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 or if you are a Global MBA student contact 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) 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

If you are a Global MBA student contact 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/.

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

- Understand the key principles and processes of learning, mechanisms of behavioural neuroscience, neurophysiology, and neuropharmacology
- Critically analyse the key concepts of biopsychology and learning
- Solve problems by comparing alternative interpretations of neuroscience data and 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

- Understand the key principles and processes of learning, mechanisms of behavioural neuroscience, neurophysiology, and neuropharmacology

- Effectively use electronic databases to search for papers in relevant topics.
- Demonstrate written and oral communication skills, including through participation in class discussions.
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Assessment tasks

- Research Report
- Final Examination

Learning and teaching activities

- All lectures will be provided by video recordings on-line (via Echo in iLearn).
- These classes will run every week but students need to check with the University Timetable as to which Stream (A or B) they will need to attend.
- These quizzes are for students to self-assess their understanding of the lecture content of the unit and do not contribute to their marks for the unit

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

- Understand the key principles and processes of learning, mechanisms of behavioural neuroscience, neurophysiology, and neuropharmacology
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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

- Understand the key principles and processes of learning, mechanisms of behavioural neuroscience, neurophysiology, and neuropharmacology
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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

- Understand the key principles and processes of learning, mechanisms of behavioural neuroscience, neurophysiology, and neuropharmacology
- Effectively use electronic databases to search for papers in relevant topics.
- Demonstrate written and oral communication skills, including through participation in class discussions.
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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

- Understand the key principles and processes of learning, mechanisms of behavioural neuroscience, neurophysiology, and neuropharmacology
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- Demonstrate written and oral communication skills, including through participation in class discussions.
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Assessment tasks

- Research Report
- Final Examination

Learning and teaching activities

- All lectures will be provided by video recordings on-line (via Echo in iLearn).
- These classes will run every week but students need to check with the University Timetable as to which Stream (A or B) they will need to attend.
- These quizzes are for students to self-assess their understanding of the lecture content of the unit and do not contribute to their marks for the unit

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

- Understand the key principles and processes of learning, mechanisms of behavioural neuroscience, neurophysiology, and neuropharmacology
- Demonstrate written and oral communication skills, including through participation in class discussions.
- Critically analyse the key concepts of biopsychology and learning
- Solve problems by comparing alternative interpretations of neuroscience data and

formulating new explanations

Assessment task

- Research Report

Learning and teaching activity

- These classes will run every week but students need to check with the University Timetable as to which Stream (A or B) they will need to attend.

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

- Understand the key principles and processes of learning, mechanisms of behavioural neuroscience, neurophysiology, and neuropharmacology
- Demonstrate written and oral communication skills, including through participation in class discussions.
- Critically analyse the key concepts of biopsychology and learning
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- These quizzes are for students to self-assess their understanding of the lecture content of the unit and do not contribute to their marks for the unit

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

- Understand the key principles and processes of learning, mechanisms of behavioural neuroscience, neurophysiology, and neuropharmacology
- Critically analyse the key concepts of biopsychology and learning
- Solve problems by comparing alternative interpretations of neuroscience data and formulating new explanations

Learning and teaching activities

- All lectures will be provided by video recordings on-line (via Echo in iLearn).