



# PSYX236

## Biopsychology and Learning

S2 OUA 2019

*Department of Psychology*

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## General Information

Unit convenor and teaching staff

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Prerequisites

(PSYX104 and PSYX105) or (PSYC104 and 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.open.edu.au/student-admin-and-support/key-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
<a href="#">Research Report</a>	40%	No	Week 7
<a href="#">Final Examination</a>	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 tutorial of the unit. Details will be provided in that tutorial, and it will be due 5pm on Friday 13<sup>th</sup> 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 tutorial exercises 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, which is recorded and also available as online lectures. The review sessions are designed to give all students a review of the lecture topic material.

**Tutorial exercises:** Students will complete online tutorial exercises once a fortnight. These tutorials 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

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

In addition, **optionally**, students may purchase the following software (used in tutorial exercises): Alloway, T. Wilson, G. & Graham, J. (2012). *Sniffy the Virtual Rat Lite*, Version 3.0.

## Unit Schedule

Week starting		Topic	LECTURER	TEXT	TUTORIAL
1	29 July	<b>Introduction to Learning.</b> <b>Non-associative learning.</b> <b>Classical Conditioning 1</b> — Introduction, terms and forms of CC	Irwin	Mazur Ch. 1-3	
2	5 Aug	<b>Classical Conditioning 2</b> — Variations of CC and limitations in CC <b>Classical Conditioning 3</b> —Temporal parameters of CC — Inhibition and extinction of CR	Irwin	Mazur Ch. 3-4	<b>Tutorial One</b> Learning I Motor skill
3	12 Aug	<b>Classical Conditioning 4</b> — Contingency — Rescorla Wagner	Irwin	Mazur Ch. 4	
4	19 Oct	<b>Operant conditioning</b>	Irwin	Mazur Ch. 5 & 6	<b>Tutorial Two</b> Learning II (Sniffy 1)
5	26 Aug	<b>Extinction</b>	Irwin	Pp 64-66, 126	
6	2 Sept	<b>Punishment</b> <b>Escape and Avoidance learning</b>	Irwin	Mazur 7	<b>Tutorial Three</b> Learning III (Sniffy 2)
<b>Biopsychology</b>					
7	9 Sept	Behavioural Neuroscience: Genetics, Animal models of addiction	Baracz	Kalat Ch. 4 & 12	
<b>MID-SESSION BREAK</b>					
8	30 Sept	The Nervous Systems. Brain Cells.	Baracz	Kalat Ch. 1 & 3	
9	7 Oct	Neurophysiology, Neurochemistry, Communication by Receptors.	Baracz	Kalat Ch. 1 & 2	<b>Tutorial Four</b> Neuroanatomy I Kalat Ch. 2 & 3

10	14 Oct	Neurotransmitters. Neurotransmitter System Dysfunction.	Baracz	Kalat Ch. 2, 14 & App. A	
11	21 Oct	Substance Abuse, Addiction,	Baracz	Kalat Ch. 14	<b>Tutorial Five</b> Neuroanatomy II Kalat Ch. 3 & 4
12	28 Oct	Neurobiology of Learning and Memory.	Baracz	Kalat Ch. 12	
13	4 Nov	Revision Quiz covering Learning and Biopsychology			

## Policies and Procedures

### Late Submission - applies unless otherwise stated elsewhere in the unit guide

Unless a Special Consideration request has been submitted and approved, (a) a penalty for lateness will apply – two (2) marks out of 100 will be deducted per day for assignments submitted after the due date – and (b) no assignment will be accepted more than seven (7) days (incl. weekends) after the original submission deadline. No late submissions will be accepted for timed assessments – e.g. quizzes, online tests.

### Extension Request

#### **Special Consideration Policy and Procedure** (<https://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policies/special-consideration>)

The University recognises that students may experience events or conditions that adversely affect their academic performance. If you experience serious and unavoidable difficulties at exam time or when assessment tasks are due, you can consider applying for Special Consideration.

You need to show that the circumstances:

1. were serious, unexpected and unavoidable
2. were beyond your control
3. caused substantial disruption to your academic work
4. substantially interfered with your otherwise satisfactory fulfilment of the unit requirements
5. lasted at least three consecutive days or a total of 5 days within the teaching

period and prevented completion of an assessment task scheduled for a specific date.

If you feel that your studies have been impacted submit an application as follows:

1. Visit [Ask MQ](#) and use your OneID to log in
2. Fill in your relevant details
3. Attach supporting documents by clicking 'Add a reply', click 'Browse' and navigating to the files you want to attach, then click 'Submit Form' to send your notification and supporting documents
4. Please keep copies of your original documents, as they may be requested in the future as part of the assessment process

### Outcome

Once your submission is assessed, an appropriate outcome will be organised.

## OUA Specific Policies and Procedures

### Withdrawal from a unit after the census date

You can withdraw from your subjects prior to [the census date](#) (last day to withdraw). If you successfully withdraw before the census date, you won't need to apply for Special Circumstances. If you find yourself unable to withdraw from your subjects before the census date - you might be able to [apply for Special Circumstances](#). If you're eligible, we can refund your fees and overturn your fail grade.

If you're studying Single Subjects using FEE-HELP or paying up front, you can [apply online](#).

If you're studying a degree using HECS-HELP, you'll need to [apply directly to Macquarie University](#).

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

### 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.
- 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

- Research Report
- Final Examination

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

## 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

- 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

## **Assessment tasks**

- Research Report
- Final Examination

## **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.
- 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**

- Research Report
- Final Examination

## **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
- 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**

- Research Report
- Final Examination

## **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

## 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
- Solve problems by comparing alternative interpretations of neuroscience data and 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

- 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