

PSYC 3014 – Behavioural and Cognitive Neuroscience

Unit of Study Code: PSYC3014

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Format of Unit: 2 x 1 hour lectures/week x 13 weeks
1 x 2 hour tutorial/week x 10 weeks

Credit Point Value: 6 Credit Points

Prerequisite: Intermediate Psychology units including PSYC (2011 or 2111) and at least one other Intermediate Psychology Unit from PSYC (2012 or 2112), PSYC (2013 or 2113), PSYC (2014 or 2114) OR ANAT2010 and PCOL2011.

Assessment:

a) *Formal Assessment*

One 2hr **exam** (containing both multiple choice and short answer questions) (50%)

One 2000-2500 word **practical report** (35%) due Friday 9 October before 4pm (Week 10)

One **prac quiz** in week 12 (multiple choice) (10%)

Preparation and participation in **class debate** in week 13 (5%)

b) *Out of class prescribed student workload*

2 hrs/wk: Assignment research and background research for tutorials

c) *Other expected student workload*

Revision of lecture material, readings for practicals, preparation for quiz and for exam, preparation of 1 page of notes for the debate in week 13.

Unit of study general description:

This unit of study will focus on approaches to studying neurosciences incorporating molecular, preclinical and clinical models of brain function. These biological models of brain function will be linked with behavioural, affective and cognitive function and dysfunction. The implications of focal cognitive deficits in neurological patients for models of normal cognitive function will also be explored. Specific topics to be covered will be selected from the following areas: the biological basis of feeding and appetite, psychoneuroimmunology, glial cell function, the neural basis of learning and memory, sensorimotor integration, social neuroscience, language, visual cognition and praxis. In addition to lectures, a practical component will cover basic neuroanatomy and histology, and will introduce students to experimental and case-study approaches to studying neurosciences.

Administrative matters:

You should read the general administrative guidelines for submission of written work, penalties for late work, assessment criteria, procedures for applying for extensions and special consideration on the School of Psychology web page (www.psych.usyd.edu.au). It is a requirement to pass the course that you attend a minimum of 80% of pracs. **IT IS YOUR RESPONSIBILITY TO ATTEND THE PRAC YOU ARE ENROLLED IN TO BE MARKED AS PRESENT.** Tutors will NOT contact another tutor to confirm your attendance if you do not attend your enrolled prac.

Textbook

Carlson, N.R. (2010). *Physiology of Behavior*. (10th edition). Needham Heights, MA: Allyn & Bacon.

Most chapters contain material related to topics covered in lectures and practicals; lecturers and tutors will direct you to more specific sections as the course progresses.

Graduate Attributes and Student Learning Outcomes for PSYC3014 Behavioural and cognitive neuroscience

This course is structured around the graduate attributes associated with the scientist-practitioner model, the basis for the training of psychologists in Australia and internationally.

Graduate Attributes are the generic skills, abilities and qualities that students should acquire during their university experience and the School of Psychology is committed to providing an environment to promote these skills. In addition, this unit of study will provide students with generalised and transferable skills that will also be useful in careers outside psychology.

The following graduate attributes and student learning outcomes will be developed through lectures, practical classes and assessment activities. They will be assessed in the prac report, prac quiz, class debate and final exam.

1: Knowledge and Understanding of behavioural neuroscience and cognitive neuroscience

Display basic knowledge and understanding of major concepts, theoretical perspectives, empirical findings, and historical trends in behavioural and cognitive neuroscience

2: Research Methods in behavioural and cognitive neuroscience

Understand, apply and evaluate basic research methods in behavioural and cognitive neuroscience, including design of laboratory and clinical research, data collection, analysis and interpretation, literature searches and review. Demonstrate understanding of technologies used to study brain function and activity.

3: Critical Thinking Skills in behavioural and cognitive neuroscience

Respect and use critical and creative thinking, sceptical inquiry, and the scientific approach to solve problems related to the neuroscientific basis of behaviour. Develop ability to identify and evaluate the purposes, research questions, data, perspectives, inferences, concepts, implications and assumptions associated with research presented during the course.

4: Values in behavioural and cognitive neuroscience

Value empirical evidence; tolerate ambiguity during the search for greater understanding of behaviour and knowledge structures; use information in an ethical manner (e.g., acknowledge and respect the work and intellectual property rights of others through appropriate citations in oral and written communication); be able to recognise and promote ethical practice in neuroscience research; promote evidence-based approaches to understanding behaviour; respect diversity associated with cognitive and neurological disorder; complete projects within reasonable timeframes.

5: Communication Skills in behavioural and cognitive neuroscience

Write a standard research report using American Psychological Association (APA) structure and formatting conventions. Demonstrate effective oral communication skills in various formats (e.g., debate, discussion of materials in pracs) and for various purposes (asking clear questions, explaining and critiquing research). Collaborate effectively, demonstrating an ability to work with fellow students in pracs; manage conflicts appropriately and ethically. Demonstrate effective interpersonal communication skills including the abilities to listen accurately and actively, identify the impact or potential impact of one's behaviour on others, provide constructive feedback to others, adopt flexible techniques to communicate sensitively and effectively with diverse ethnic and cultural partners, including in the context of team-work.

6: Learning and the application of behavioural and cognitive neuroscience

Understand and apply psychological principles to personal and social issues. Relate concepts, theories, and research findings in behavioural and cognitive neuroscience to solving problems in everyday life and in society. Reflect on one's own experiences and in order to identify and articulate one's personal, sociocultural, and professional values related to issues raised in the course. Apply psychological principles to promote personal development through self-regulation in setting and achieving career and personal goals; self-assess performance accurately; incorporate feedback for improved performance; purposefully evaluate the quality of one's thinking (metacognition, part of critical thinking). Develop a capacity for independent learning that will sustain personal and professional development in the rapidly changing field of neuroscience

LECTURE AND TUTORIAL TIMETABLE

Lectures are held on Mondays at 11am and Thursdays at 11am, Quadrangle Building
General Lecture Theatre N205

Date	Lecture #	Topic	Lecturer	Tutorial (2 hrs)
27 July Week 1	1	A history of the neurosciences	KC	No tutorial
	2	LTP	IJ	
3 Aug Week 2	3	LTP	IJ	Neuroanatomy
	4	Neural bases of Pavlovian conditioning	IJ	
10 Aug Week 3	5	Neural bases of Pavlovian conditioning	IJ	BN Prac I: Animal models in Neurosci
	6	Movement and motor control	IJ	
17 Aug Week 4	7	Movement and motor control	IJ	BN Prac II: Histology
	8	Dementias	IJ	
24 Aug Week 5	9	fMRI & applications	KS	CN Case study I: Patient case history
	10	fMRI & applications	KS	
31 Aug Week 6	11	fMRI & applications	KS	CN Case Study II: Patient Assessment
	12	Semantic memory 1	KC	
7 Sept Week 7	13	Semantic memory 2	KC	Neurolinguistics
	14	Word retrieval	KC	
14 Sep Week 8	15	Speech production 1	KC	No tutorial
	16	Speech production 2	KC	
21 Sep Week 9	17	The Psychology of Emotion & Mood	AK	fMRI and electrophysiology
	18	Affective Neuroscience: A biological basis for emotion & mood	AK	
28 Sep Break		No class		No tutorial
		No class		
5 Oct Week 10	Labour Day	No class		No tutorial Reports due before 4pm Fri 9 October
	19	Affective Neuroscience: Disorders of Emotion & Mood	AK	
12 Oct Week 11	20	Sleep	AH	Computational modelling
	21	Sleep, Biorhythms	AH	
19 Oct Week 12	22	Biorhythms	AH	Quiz on tutorial work
	23	Attention and the parietal lobe I	AH	
26 Oct Week 13	24	Attention and the parietal lobe II	AH	Debate and course assessment
	25	Brains vs computers	AH	

KC = Karen Croot, IJ = Ian Johnston, KS = Kiley Seymour, AK = Andrew Kemp, AH = Alex Holcombe, BN = Behavioural Neuroscience, CN = Cognitive Neuroscience, fMRI = functional magnetic resonance imaging

School of Psychology Plagiarism Policy information for Students

Plagiarism is not permitted

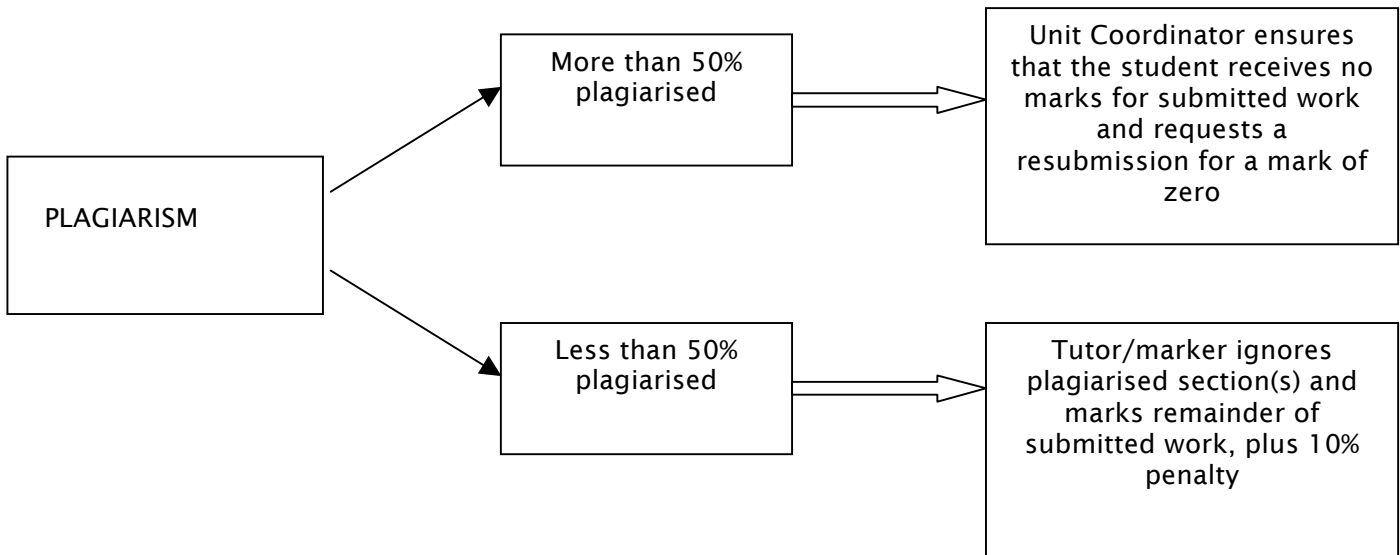
i) Are you sure you know what plagiarism is?

Please refer to the University policy on plagiarism:

<http://www.usyd.edu.au/senate/policies/Plagiarism.pdf>

ii) The School of Psychology will penalise **all** submitted work that is plagiarised;

iii) The School of Psychology is using software to detect **all** forms of plagiarism.



THE UNIVERSITY OF SYDNEY LIBRARY

<http://www.library.usyd.edu.au/>

The University of Sydney Library is a distributed system of 14 libraries with a collection of over 5 million items. Fisher Library is located on Eastern Avenue, Camperdown Campus. Fisher Library has the most resources relevant to Psychology.

Poppy Prezios is your Psychology Faculty Liaison Librarian. You can find her at Badham Library Ground Floor, Badham Building Science Rd, Camperdown Campus. You can phone her on 0434 606 913 or email at p.prezios@library.usyd.edu.au.

Psychology books in high demand

Reserve (located on Level 2 of Fisher Library) is a 2 hour loan collection. Most of the required and recommended items will be here. Details of items required can be located in the catalogue.

<http://opac.library.usyd.edu.au/search/r>

Psychology Guide

includes links to Psychology databases, internet resources, information on tests and more.

<http://libguides.library.usyd.edu.au/psychology>

Finding items on your reading lists

Your reading lists will contain different styles of citations, depending on the type of publication. The link below will take you to help on finding items on your reading list.

<http://elearning.library.usyd.edu.au/learn/readinglist/index.php>