PSYC2011 – Brain & Behaviour

Unit of Study Code: PSYC2011

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Format of Unit:
3 x 1 hour lectures/week x 13 weeks
1 x 1 hour tutorial/week x 12 weeks

Credit Point Value: 6 Credit Points

Prerequisites:
12 credit points of First Year Psychology including PSYC 1001 and PSYC 1002

Assessment:

Classwork:
30% of total mark: 1,500 word Laboratory Report
Should involve 6 x 2 h of background library research
Due Date: Monday, 14th May (Week 10)

15% of total mark: 20 item multiple-choice quiz in week 13 in your normal tutorial class

5% of total mark: Participating in the debate in week 8 in your normal tutorial class AND bringing a one-page hand-written summary of personal background research in the topic.

Examination:
50% of total mark: 2/3 Multiple-choice questions; 1/3 Short answer questions

Evaluation of teaching:
Date: Week 13
Type: General Student Feedback Questionnaire
Unit of study general description:

This unit of study examines a range of phenomena and principles in learning and perception and their underlying neural substrates. The emphasis in learning is on instrumental conditioning and the principle of reinforcement, ranging from applications of this principle to its neural substrates. Also covered are analyses of aversive-based learning, such as punishment and avoidance, and anxiety, together with related neurochemical mechanisms and the effects of various psychopharmacological agents on these processes. A number of perceptual phenomena will be studied (e.g., vision and hearing, recognition of tastes and odours, touch and pain). A series of practical classes and demonstrations allow students to gain hands-on experience of how some of these principles and phenomena may be studied experimentally and applied to behavioural change.

Graduate Attributes and Student Learning Outcomes for Brain and Behaviour (Psyc2011)

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, tutorial and assessment activities in particular. They will be assessed primarily in the laboratory report and essay, and in the tutorial quiz and final examination.

1: Knowledge and Understanding of the Brain and Behaviour

Display basic knowledge and understanding the major concepts, theoretical perspectives, empirical findings, and historical trends in the study of brain and behaviour

Student learning outcomes:

(i) An interest in and appreciation of the historical and current contribution of learning theorists, neuroscientists, psychopharmacologists and sensory scientists to the understanding of the brain and behaviour and to the treatment of mental illness and neurological disorders.

(ii) Understanding basic properties of conditioning, especially instrumental learning.

(iii) Understanding the neurochemical bases of reinforcement, addiction, anxiety and depression.

(iv) Understanding basic processes of human visual and auditory perception and the vestibular system.

(v) Understanding comparative studies of complex learning, problem solving and memory.

(vi) Awareness of the relationship between theoretical research and practical applications of behavioural and physiological findings.

(vii) Ability to describe, explain and evaluate research studies in these fields.

(viii) Awareness, and some hands-on experience, of behavioural modification procedures.

(ix) Skill in reporting experimental work using standard conventions.

2: Research Methods in the study of Brain and Behaviour

Understand, apply and evaluate basic research methods in learning theory and psychopharmacology including research design, data analysis and interpretation, and the appropriate use of technologies.

Student learning outcomes:

(i) To develop a critical understanding of the major methods of research in these areas.

(ii) To critically assess the major theories and research findings in these areas.

(iii) To interpret statistical analyses.

(iv) Use basic web-search, word-processing, database, email, spreadsheet, and data analysis programs.

(v) Design and conduct basic studies to address psychological questions: frame research questions; undertake literature searches; critically analyse theoretical and empirical studies; formulate testable hypotheses; operationalise variables; choose an appropriate methodology; make valid and reliable measurements; analyse data and interpret results; and write research reports.
3: Critical Thinking Skills in the study of Brain and Behaviour
Respect and use critical and creative thinking, sceptical inquiry, and the scientific approach to solve problems related to the brain and behaviour.

Student learning outcomes:

(i) Demonstrate an attitude of critical thinking that includes persistence, open-mindedness, and intellectual engagement.
(ii) Evaluate the quality of information, including differentiating empirical evidence from speculation.
(iii) Evaluate issues and behaviour using different theoretical and methodological approaches.
(iv) Use reasoning and evidence to recognise, develop, defend, and criticise arguments and persuasive appeals.

4: Values in the study of Brain and Behaviour
Value empirical evidence; act ethically and professionally; and understand the complexity of sociocultural and international diversity.

Student learning outcomes:

(i) 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)
(ii) Be able to recognise and promote ethical practice in research.
(iii) Promote evidence-based approaches and rigour in the understanding of behaviour.
(iv) Be aware of ethical issues pertaining to the use of laboratory animals in research.

5: Communication Skills in the study of Brain and Behaviour
Communicate effectively in a variety of formats and in a variety of contexts

Student learning outcomes:

(i) Write a standard research report using American Psychological Association (APA) structure and formatting conventions.
(ii) Write effectively in a variety of other formats (e.g., essays, research proposals, reports) and for a variety of purposes (e.g., informing, arguing).
(iii) Demonstrate effective oral communication skills in various formats (e.g., debate, group discussion, presentation) and for various purposes.
(iv) Collaborate effectively, demonstrating an ability to: work with groups to complete projects within reasonable timeframes; manage conflicts appropriately and ethically.

6: Learning and the Application of the studies of Brain and Behaviour
Understand and apply psychological principles to personal and social issues.

Student learning outcomes:

(i) To develop an awareness of the applications of the theories and research findings in Neuroscience, Psychopharmacology, Perception and Learning.
(ii) Apply psychological concepts, theories, and research findings to solve problems in everyday life and in society.
(iii) Understand major areas of applied psychology and neuroscience.
(iv) Understand how basic research in psychopharmacology and neuroscience gives rise to treatments for addictions, depression, anxiety disorders and neurological disorders.

Evidence of learning:

Achieving a Pass standard in the examination demonstrates success in achieving outcomes 1 – 6. Successful achievement of Outcomes 1, 5 and 6 is shown by completion of the laboratory report at a Pass standard and of Outcome 1, 2 and 6 by a Pass mark in the Tutorial Quiz.
SYLLABUS

Fundamental principles of instrumental conditioning based on animal research and their human applications, involving both positive and aversive events, and their neural and pharmacological bases; fear, anxiety and stress; applications of research on learning; comparative studies of cognitive processes; psychopharmacology of addiction and of anxiety; genetic basis of behaviour; human auditory, visual and tactile perception and underlying brain mechanisms.

LECTURE AND TUTORIAL TIMETABLE

<table>
<thead>
<tr>
<th>date</th>
<th>week</th>
<th>lecture#</th>
<th>Lecture topic</th>
<th>tutorial</th>
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<tbody>
<tr>
<td>5-Mar</td>
<td>1</td>
<td>1</td>
<td>Fundamental concepts in the behavioural sciences (Johnston)</td>
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<td>2</td>
<td>Positive reinforcement and extinction (Livesey)</td>
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<td>3</td>
<td>The role of the discriminative stimulus in behaviour (Livesey)</td>
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<td>12-Mar</td>
<td>2</td>
<td>4</td>
<td>The motivating role of the reinforcer in behaviour (Livesey)</td>
<td>Behaviour analysis 1: Principles of reinforcement and behaviour analysis.</td>
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<td>5</td>
<td>Fear and punishment (Livesey)</td>
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<td>6</td>
<td>Avoidance learning (Livesey)</td>
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<td>19-Mar</td>
<td>3</td>
<td>7</td>
<td>Learned helplessness (Johnston)</td>
<td>Behaviour analysis 2: Case study in behaviour modification</td>
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<td>8</td>
<td>Choice and self-control (Johnston)</td>
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<td>Behavioural therapies (Johnston + Guests)</td>
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<td>Biological constraints on learning (Johnston)</td>
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<td>12</td>
<td>Comparative cognition (Johnston)</td>
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<td>2-Apr</td>
<td>5</td>
<td>13</td>
<td>Sociobiology: Natural selection of psychological traits (Johnston)</td>
<td>Behaviour analysis 4: All week: Recording pre-intervention behaviour. In class: Motivation and behaviour.</td>
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<td>14</td>
<td>Behavioural genetics (Johnston)</td>
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<td>15</td>
<td>Gene-environment interactions in behaviour (Johnston)</td>
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<td>6-13 Apr</td>
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<td>Easter break</td>
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<td>17</td>
<td>Dopamine: Reinforcement and learning (Corbit)</td>
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<td>18</td>
<td>Dopamine: Drugs and addiction (Corbit)</td>
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<td>23-Apr</td>
<td>7</td>
<td>19</td>
<td>Neuroendocrinology: Stress and distress (Corbit)</td>
<td>Behaviour analysis 6: Discuss results, discuss report writing.</td>
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<td>20</td>
<td>ANZAC Day Holiday</td>
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<td>21</td>
<td>Serotonin: Depression and anxiety (Corbit)</td>
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<td>30-Apr</td>
<td>8</td>
<td>22</td>
<td>Other neurotransmitters and neuropeptides (Corbit)</td>
<td>Debate: “Are drug addicts responsible for their dependency?”</td>
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<td>23</td>
<td>Neurobiology of appetite (Johnston)</td>
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<td>24</td>
<td>Neurobiology of sexual and prosocial behaviour (Johnston)</td>
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<td>7-May</td>
<td>9</td>
<td>25</td>
<td>Neurobiology of health (Johnston)</td>
<td>Neuroscience 1: Neurons and psychopharmacology</td>
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<td>26</td>
<td>Glial cells (Johnston)</td>
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<td>27</td>
<td>Touch, pain and opiates (Johnston)</td>
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<td>14-May</td>
<td>10</td>
<td>28</td>
<td>Chronic pain and neural plasticity (Johnston)</td>
<td>Neuroscience 2: Organization of the brain and cortex Final version of your Behaviour Analysis reports due, Monday 14th May</td>
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<td>29</td>
<td>Sound and hearing (Curthoys)</td>
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<td>30</td>
<td>Pitch and hearing loss (Curthoys)</td>
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<td>21-May</td>
<td>11</td>
<td>31</td>
<td>Binaural hearing (Curthoys)</td>
<td>Perception 1: Hearing and hearing loss.</td>
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<td>32</td>
<td>Vestibular System 1. Balance and space flight (Curthoys)</td>
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<td>33</td>
<td>Vestibular System 2: Inner ear controls visual stability (Curthoys)</td>
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<td>35</td>
<td>Vision (Anderson)</td>
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<td>36</td>
<td>Vision (Anderson)</td>
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<tr>
<td>4-Jun</td>
<td>13</td>
<td>37</td>
<td>Vision (Anderson)</td>
<td>Tutorial quiz held in your tutorial class. Course evaluation Behaviour analysis reports returned.</td>
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<td>38</td>
<td>The chemical senses I (Russell)</td>
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<td>39</td>
<td>The chemical senses II (Russell)</td>
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LECTURE TIME TABLE

The lectures will be audio recorded and made available through the University’s Lectopia system. The lecturer will also give the same lecture twice a day.

The Lectures will be in the following locations and times:

Monday 2pm (Wallace Theatre) and 4pm (Bosch Lecture Theatre 4)
Wednesday 2pm (Eastern Avenue Auditorium) and 4pm (Bosch Lecture Theatre 3)
Thursday 11am (Carslaw Lecture Theatre 159) and 2pm (Wallace Lecture Theatre)

TEXTS

No single textbook covers all the topics taught in this course so we must recommend more than one text. Because we realize that students may not be able to afford two books for a single course, multiple copies of these texts will be made available in the Library Reserve so you may copy the relevant sections as an alternative to buying the complete text. However, please note that in previous years that demand for the texts in Reserve is extremely high, and students have reported they have not been able to access the texts in Reserve when they have wanted them. These texts are also used in Senior level Psychology courses (PSYC3011 & PSYC3014, see below). If you plan on taking these senior level courses, you may want to buy these texts now. The two recommended texts are:

(This text will be particularly useful in Weeks 1-5 and is also used in the Senior Psychology course PSYC3011 Learning and Behaviour)

(This text will be particularly useful in Weeks 6-13 and is also used in the Senior Psychology course PSYC3014 Behavioural and Cognitive Neuroscience).

FURTHER READING

Each lecturer will provide references to sources for you to study in their lecture notes or on their eLearning site. These sources will be made available to you from the Library’s reserve section. Please look at the following website for information on what material is held in reserve for you:

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

You will be provided with detailed tutorial notes in your tutorial classes.
Academic Dishonesty and Plagiarism

1. It is your responsibility to know what academic dishonesty and plagiarism are.

Here is the link to the University’s policy:


Make sure that you understand what counts as academic dishonesty and the various types of plagiarism. The Library’s http://www.library.usyd.edu.au/skills/ ‘Plagiarism and Academic Honesty’ program will help.

2. Note that:

i) the School of Psychology will penalise **all** submitted work that is plagiarised.

ii) Students should note that all assignments (including group projects) will be run through similarity detecting software. This software detects similarities between (a) your assignment and both print and online sources, and (b) assignments submitted by other students, from both current and previous years. If similarities are found, they will be investigated so as to determine the nature of the plagiarism. See Part 5 of the University's policy.

Avoiding plagiarism – key points

• Plagiarism is a serious offence and may result in failure in the course. Even where students are completing an exercise together, each student must submit separate written work. Incorporation of any material from another student's assignment is regarded as plagiarism.

• In writing essays or reports to meet coursework requirements, you should use your own words. In some contexts (e.g., theoretical research) it is appropriate to use an occasional quotation. This should be indicated in the conventional way by enclosing the passage within quotation marks and by providing a precise (page number) reference for the source of the quote. In many contexts, especially reports of empirical work, quotations are best avoided.

• “Using your own words” means that you should not borrow from the writing of others – whether from fellow students or published authors. For example, it is not acceptable to base an essay on text from various sources that you have then edited to some degree – even if you cite these sources. First of all, there is the ethical issue arising from the dishonesty of presenting as your own work something which is essentially the work of others. In addition, there are good educational reasons for avoiding this, even where you feel that someone else has expressed some idea far more clearly than you could. One reason is that you must learn to express yourself clearly in writing; like most other skills, this only comes with practice. Another, is the failure to understand information or ideas at all thoroughly if all you have done is reproduce (with some editing) what someone else has written about the topic.

• When you express in your own words what you have learned from various sources, you should cite each source. The standard convention for most written work in psychology is to list references at the end of your essay or report, rather than, for example, to use footnotes. To express some idea without giving a citation implies that it is your own idea. Therefore, if it is in fact an idea obtained from someone else, this needs to be acknowledged. Listing a set of sources implies that you have read them all. Therefore, you should list as references only those you have actually read. If you are depending on a secondary source, then make this clear, e.g., ... salivary conditioning (Pavlov, 1927; cited in Mazur, 1998).
• The points made here also apply to non-textual material. For example, graphs or tables of data included in a report should be your own work and not copied from others. Very occasionally you may need to ‘quote’ a figure from some other source; if you do so, you should make its origin quite clear.

• In general, avoid letting other students use your work for any kind of assessment. On the rare occasion where this may be appropriate, make sure that the other student acknowledges your contribution as the original author.

• In some cultures, students show their respect for a teacher by copying what the teacher has said or written. In Australian University education, copying a teacher (even if paraphrasing) is plagiarism if the source is not cited.
Research and resource support for Psychology students

The University of Sydney Library has 12 libraries in different locations, on different subjects with different facilities. Fisher Library is where you will find the physical collection of most relevance to your Psychology studies. Fisher Library is located on Eastern Ave, Camperdown campus. We also have loads available online – find us at sydney.edu.au/library/<https://www.owa.usyd.edu.au/exchweb/bin/redir.asp?URL=https://www.owa.usyd.edu.au/Exchweb/bin/redir.asp?URL=http://sydney.edu.au/library/>.

Matthew Davis is the Faculty Liaison Librarian for Psychology. Matthew is available to help you find and use library resources for your assignments or research. You can email him at library.psychology@sydney.edu.au <mailto:library.psychology@sydney.edu.au> or phone on 9351 3629. The Psychology Librarian is located at Badham Library, level 1, Badham Building, Science Rd, Camperdown Campus.

Psychology books in high demand

The 2 hour collection is located on Level 3 of Fisher Library. Most of your required and recommended items from the reading lists will be here. You can find a list of your required readings in the catalogue by searching under your Unit of Study code http://opac.library.usyd.edu.au/search/r<https://www.owa.usyd.edu.au/exchweb/bin/redir.asp?URL=https://www.owa.usyd.edu.au/Exchweb/bin/redir.asp?URL=http://opac.library.usyd.edu.au/search/r/>. Some material in the list is also available to read online.

Psychology subject guide


Need a refresher after the long vacation?

Watch and listen to these online learning objects and get back up to speed with information literacy skills on topics such as research, essay writing and referencing. http://www.library.usyd.edu.au/skills/