### Unit of Study Code:

PSYC3914

### Coordinator:

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Consultation times: by appointment

### Other Lecturing Staff:

Dr Irina Harris  
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Consultation times: by appointment

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Consultation times: by appointment

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Consultation times: by appointment

### Tutors:

TBA- Your tutor will advise you of their consultation times in the first tutorial.

### 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:

1. PSYC (2011 or 2911 or 2111) and at least one other Intermediate Psychology Unit from PSYC (2012 or 2112), PSYC (2013 or 2113), PSYC (2014 or 2114) with marks of 75+.  
OR  
2. (PSYC2011 or 2911 or 2111 or 2013) and ANAT2010 and PCOL2011 with marks of 75+.

### Textbook:

There is no set textbook for this course, but the following are recommended and are available in the library, as either 2 hour loans or e-books (search for PSYC3014 or PSYC3914 in library catalog):

- Nolte’s The Human Brain: An introduction to its functional anatomy (Authors: Vanderah, T.W. & Gould, D.J.), 7th edition, Elsevier, 2016. (available as e-book through the library; note also that there are earlier editions of this book, authored by Nolte).
• The Wickens textbook that some of you will have from PSYC2011 also has material covered in this course, albeit at a more introductory level.
• Lectures may also provide references to other sources for you to study (e.g. research or review articles, chapters from other texts) where the most current research output may not be addressed in the textbook.

<table>
<thead>
<tr>
<th>PSYC3914 Assessment Information</th>
<th>What?</th>
<th>When due?</th>
<th>When Returned?</th>
<th>% Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assignment (2000-2500 word Report)</td>
<td>Online submission Friday 9 September (Week 7)</td>
<td>On-time submissions returned after Friday 14 October (Week 11)</td>
<td>30%</td>
<td></td>
</tr>
<tr>
<td>Compulsory*</td>
<td></td>
<td></td>
<td>This is the last possible date for submission of this assignment with or without extensions</td>
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</tr>
<tr>
<td>Presentation</td>
<td>In class Week 11, 12 or 13</td>
<td>STUVAC</td>
<td>10%</td>
<td></td>
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<tr>
<td>Non-compulsory</td>
<td></td>
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<tr>
<td>Quiz</td>
<td>Take home, due before 4pm, Friday 4 November</td>
<td>Friday 18 November</td>
<td>10%</td>
<td></td>
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<tr>
<td>Non-compulsory</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Exam</td>
<td>During exam period at the end of semester</td>
<td>University Final Results Release Date</td>
<td>50%</td>
<td></td>
</tr>
<tr>
<td>Compulsory*</td>
<td></td>
<td></td>
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</tbody>
</table>

*Completion of these components is compulsory to pass this unit. Students who fail to do so will receive an Absent Fail, regardless of their marks in other assessments.

Further information about assessments

**Report Assignment***: One 2500 word report (30% of total mark) due on Friday 9 September (Week 7). The report is based on material covered in class in week 2. If you miss class week 2, see the instructor as soon as possible.

Students who do not complete the report research by the closing date must submit an alternative piece of written work to avoid automatically failing the course. If this is considered a serious effort, they will receive 0 marks for this. A serious effort consists of writing at least 1000 words, and answering the assigned question. Non-serious efforts won’t be accepted and will result in an absent fail for the course.

**Presentation**: delivery of a presentation critically evaluating original research (10%)

**Tutorial Quiz**: (Take home, due by 4pm 4 November) assessing the tutorial material not covered in the report (10%)

**Examination***(50% of total mark): This will be a combination of multiple-choice questions and short answer questions. The exam assesses your knowledge of materials covered in lectures and readings set by the lecturing staff.

*Completion of these components is compulsory to pass this unit. Students who fail to do so will receive an Absent Fail, regardless of their marks in other assessments.
Late penalties

You will receive a penalty of 2% of the maximum value of the Report Assignment (e.g. 2 marks / 100) for each day (or part thereof) it is late, up to the closing date of the assignment, after which no more submissions will be accepted.

Assuring the Academic Integrity of PSYC3914

All written assignments will be submitted to Turnitin similarity detecting software in this unit. If we suspect your assignment has been written by someone else, we reserve the right to ask you to explain and defend the work you have submitted as your own, in person.

If you are a commencing student at the University of Sydney you are required to complete the Academic Honesty Education Module. Please do this before you submit any written work to any unit of study.

To assure the integrity of our final exam, all replacement exams will be in a different format with different questions.

All Special Consideration requests are now processed centrally and Professional Practitioners certificates will be cross checked with medical service providers. Keep a hard copy of all documentation you submit until you graduate.

Disruptions to your study

This Unit of Study does not allow for informal special consideration. Simple extensions are not granted. If you experience any disruption to your study due to illness, misadventure, or other unavoidable factors, you must apply for formal Special Consideration online at www.sydney.edu.au/science/cstudent/ug/forms.shtml#special_consideration. All Special Consideration requests are processed centrally and you will be required to provide supporting information which will be checked with the professional practitioner’s office. Keep copies of all paperwork. If you have, or develop, an ongoing medical issue, you can register with Disabilities Services www.sydney.edu.au/disability.

Students who miss or cannot complete the final exam through illness or misadventure will be offered a different supplementary exam as a replacement. Note that students who apply for and are granted either special arrangements or special consideration for examinations in units offered by the Faculty of Science will be expected to sit any replacement assessments in the two weeks immediately following the end of the formal examination period. Later dates for replacement assessments may be considered where the application is supported by appropriate documentation and provided that adequate resources are available to accommodate any later date. We reserve the right to offer supplementary examinations in different formats to the original examination.

Where to get more information?

This Unit of Study Outline should be read in conjunction with the Undergraduate Student Guide which contains general administrative guidelines – available on the e-Learning site as well as on the School of Psychology website under Current Students > 2nd and 3rd Year:

It is your responsibility to ensure that you are familiar with and adhere to the Student Guide.

You should also check the e-Learning site for this course regularly for any announcements and resources related to lectures and tutorials. Academic and administrative staff will not answer questions where the answer is readily available in these sources, so please make sure you read these first before contacting them with questions.
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, neurodegenerative disease, social neuroscience, language, visual cognition and praxis. In addition to lectures, a practical component will cover basic neuroanatomy and introduce students to experimental and case-study approaches to studying neurosciences.

**Graduate Attributes in 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 laboratory report, tutorial 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

**Student learning outcomes:**

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

(ii) Understanding basic neural processes and anatomical systems underlying different types of learning and memory.

(iii) Understanding the neural control of movement and its disorders

(iv) Understanding the clinical presentation and biological bases of dementia

(v) Understanding neural systems underlying speech and language and its disorders

(vi) Understanding of concepts of neural computation

(vii) Understanding neural correlates of sleep and wakefulness

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

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

### 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.

**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 behavioural and cognitive neuroscience

Respect and use critical and creative thinking, skeptical inquiry, and the scientific approach to solve problems related to the neuroscientific bases 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.

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 behavioural and cognitive neuroscience

Student learning outcomes:
(i) Value empirical evidence; tolerate ambiguity during the search for greater understanding of behaviour and knowledge structures.
(ii) 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).
(iii) Be able to recognise and promote ethical practice in research.
(iv) Promote evidence-based approaches and rigour in the understanding of behaviour.
(v) Be aware of ethical issues pertaining to clinical interventions.
(iv) Respect diversity associated with cognitive and neurological disorder

5: Communication Skills in behavioural and cognitive neuroscience

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 behavioural and cognitive neuroscience

Student learning outcomes:
(i) To develop an awareness of the applications of the theories and research findings in learning, control of movement, memory, language, visual processing, computational modeling and sleep.
(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, movement and memory disorders and other neurological disorders.
(v) Develop a capacity for independent learning that will sustain personal and professional development in the rapidly changing field of neuroscience.
(iv) self-assess performance accurately; incorporate feedback for improved performance; purposefully evaluate the quality of one’s thinking (metacognition, part of critical thinking).
## LECTURE AND TUTORIAL TIMETABLE

Lectures are held on:
- Mondays 11-12 in Physics Lecture Theatre 1 (Rm 405)
- Thursdays 11-12 in Quadrangle Building, General Lecture Theatre K2.05

<table>
<thead>
<tr>
<th>Date</th>
<th>Lecture #</th>
<th>Topic</th>
<th>Lecturer</th>
<th>Tutorial (2 hrs)</th>
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<tbody>
<tr>
<td>25 July</td>
<td>1</td>
<td>Introduction and History of Neuroscience</td>
<td>IH</td>
<td>No tutorial</td>
</tr>
<tr>
<td>Week 1</td>
<td>2</td>
<td>Long term potentiation</td>
<td>LC</td>
<td></td>
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<tr>
<td>1 Aug</td>
<td>3</td>
<td>Neural bases of Pavlovian conditioning</td>
<td>LC</td>
<td>Animal models of mental disorders</td>
</tr>
<tr>
<td>Week 2</td>
<td>4</td>
<td>Neural bases of extinction</td>
<td>LC</td>
<td></td>
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<tr>
<td>8 Aug</td>
<td>5</td>
<td>Consolidation, reconsolidation and erasure</td>
<td>LC</td>
<td>Behavioural Neuroscience</td>
</tr>
<tr>
<td>Week 3</td>
<td>6</td>
<td>Motivation</td>
<td>LC</td>
<td></td>
</tr>
<tr>
<td>15 Aug</td>
<td>7</td>
<td>Instrumental learning</td>
<td>LC</td>
<td>Behavioural Neuroscience II</td>
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<tr>
<td>Week 4</td>
<td>8</td>
<td>Sleep I</td>
<td>LC</td>
<td></td>
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<tr>
<td>22 Aug</td>
<td>9</td>
<td>Sleep II</td>
<td>LC</td>
<td>Neuroanatomy II</td>
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<tr>
<td>Week 5</td>
<td>10</td>
<td>Biological Rhythms</td>
<td>LC</td>
<td>(in the Anatomy lab)</td>
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<tr>
<td>29 Aug</td>
<td>11</td>
<td>Movement and motor control I</td>
<td>JH</td>
<td>Clinical Research Methods</td>
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<tr>
<td>Week 6</td>
<td>12</td>
<td>Movement and motor control II</td>
<td>JH</td>
<td></td>
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<tr>
<td>5 Sept</td>
<td>13</td>
<td>Biological Bases of Dementias</td>
<td>JH</td>
<td>No tutorial: Finalize your report</td>
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<tr>
<td>Week 7</td>
<td>14</td>
<td>Dementia: Clinical Syndromes</td>
<td>IH</td>
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<tr>
<td>12 Sep</td>
<td>15</td>
<td>High Level Visual Processing I</td>
<td>IH</td>
<td>Clinical Research Methods II</td>
</tr>
<tr>
<td>Week 8</td>
<td>16</td>
<td>High Level Visual Processing II</td>
<td>IH</td>
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<tr>
<td>19 Sept</td>
<td>17</td>
<td>Episodic Memory I</td>
<td>IH</td>
<td>Clinical Research Methods III</td>
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<tr>
<td>Week 9</td>
<td>18</td>
<td>Episodic Memory II</td>
<td>IH</td>
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<tr>
<td>26 Sep</td>
<td></td>
<td></td>
<td>IH</td>
<td>No tutorials</td>
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<tr>
<td>Study Break</td>
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<tr>
<td>5 Oct</td>
<td>19</td>
<td>Semantic Memory</td>
<td>IH</td>
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<td>Week 10</td>
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<tr>
<td>10 Oct</td>
<td>20</td>
<td>Brains vs. Computers I</td>
<td>AH</td>
<td>Student Presentations: Critical</td>
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<tr>
<td>Week 11</td>
<td>21</td>
<td>Brains vs. Computers II</td>
<td>AH</td>
<td>assessment of neuroscience research.</td>
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<tr>
<td>17 Oct</td>
<td>22</td>
<td>Attention and the parietal lobe I</td>
<td>AH</td>
<td>Student Presentations: Critical</td>
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<tr>
<td>Week 12</td>
<td>23</td>
<td>Attention and the parietal lobe II</td>
<td>AH</td>
<td>assessment of neuroscience research.</td>
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<tr>
<td>24 Oct</td>
<td>24</td>
<td>Language I</td>
<td>IH</td>
<td>Student Presentations: Critical</td>
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<tr>
<td>Week 13</td>
<td>25</td>
<td>Language II, Revision, Exam Prep</td>
<td>IH</td>
<td>assessment of neuroscience research.</td>
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<tr>
<td>31 Oct</td>
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<td>Study Break</td>
<td>IH</td>
<td>No classes</td>
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<td>Week 14</td>
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<tr>
<td>7 Nov</td>
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<td>Exam Period</td>
<td>IH</td>
<td>No classes</td>
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<tr>
<td>Week 15</td>
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<tr>
<td>14 Nov</td>
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<td>Exam Period</td>
<td>IH</td>
<td>No classes</td>
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<tr>
<td>Week 16</td>
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IH = Irina Harris, LC = Laura Corbit, JH = Justin Harris, AH = Alex Holcombe