Unit of Study Code: PSYC3204

Coordinator:
Dr Iain McGregor
Office: Room 244 Top South Badham
Phone: 9351 3571
E-mail: iain@psych.usyd.edu.au

Other Teaching Staff:
Professor Ian Curthoys
Office: Room 410 Griffith Taylor
Phone: 9351 2865
E-mail: ianc@psych.usyd.edu.au

Dr Dale Atrens
Office: Room 476 Main Quad South
Phone: 9351 2647
E-mail: dalea@psych.usyd.edu.au

Dr Len Williams
Office: Room 507 Griffith Taylor
Phone: 9351 5750
E-mail: lea@psych.usyd.edu.au

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

Credit Point Value: 4 Credit Points

Qualifying:
12 credit points of Intermediate Psychology including PSYC 2111 and
PSYC 2112

Assessment:
Classwork:

- Tutorial quiz
  25% of the total mark
  30 October – 2 November (week 13)

- Poster presentation
  10% of the total mark
  throughout the semester

Examination:

multiple choice questions
65% of the total mark

Evaluation of teaching
and learning:
Date: week 13
Type: standard CTL evaluation
Unit of study general description:

This unit of study carries on the from the Neuroscience component of PSYC 2111, providing some more specialised coverage in the areas of psychopharmacology, molecular neuroscience, sensorimotor integration, human brain imaging and cognitive neuroscience. Topics to be covered include: **Psychopharmacology** (basic actions of drugs on the brain, mechanism of action of antidepressant, antipsychotic and anxiolytic drugs, effects of recreational drugs (cannabis, MDMA, alcohol, opiates) on brain, behaviour and cognition); **Molecular Neuroscience** (effects of drugs on gene expression, the use of knockout mice and antisense techniques); **Sensorimotor Integration** (functions of the vestibular system, the role of the hippocampus in spatial learning); **Body Weight Regulation** (neural control of body weight, ingestive behaviour, effective means of losing weight); **Brain Imaging Technologies** (findings in psychiatry and neurology, what we can learn about the fundamentals of brain function from brain imaging) and **Cognitive Neuroscience** (neural basis of cognitive abnormalities in schizophrenia and other disorders). In the first few weeks of the course, tutorials consist of demonstrations covering basic neuroanatomy, histology and neuropharmacology. In the latter part of the course, tutorials involve groups of students giving poster presentations of recent "hot" papers in the neuroscience field.

Teaching outcomes:

- Knowledge of fundamental functional neurophysiology including neuronal and synaptic transmission.
- Knowledge of the methods in behavioural neuroscience; recording, lesions, histology and immunohistochemistry; behavioural measures.
- Knowledge of psychopharmacology - for example the psychopharmacology of depression and the psychopharmacology of drugs of abuse such as MDMA and cannabis.
- Knowledge of sensorimotor integration and the functions and mechanisms of the vestibular system.
- Knowledge of the neural basis of body weight regulation and ingestive behaviour.
- Knowledge of neuropsychology - understanding brain structure and brain impairment due to strokes etc. Neuronal mechanisms of recovery after loss or damage.
- Knowledge of cognitive neuroscience; relating recent functional imaging results to behaviour and psychological function.

Tutorials
For the first six weeks, tutorials will consist of demonstrations and practicals on such topics as sheep brain dissection, histology, immunohistochemistry, single cell recording and animal models. These practicals, while not at all "gory", are not recommended for people who have a strong ethical objection to animal experimentation. In weeks 8-12, tutorials will involve poster presentations by groups of students in which they discuss a recent paper in the neuroscience field. The final tutorial (in week 13) will involve a quiz on all tutorial material.

Poster presentations
In the first tutorial (week 2) you will be required to form groups of 3 people. A poster topic will be allocated (at random - literally by drawing the topic out of a hat) to each group and you will be required to present a poster on that topic later in the semester. You will work with others in your team to prepare this poster. You will also be responsible for preparing a handout in association with each poster for the rest of the tutorial. Your poster presentation will last around 20 minutes and you must be ready to encourage and handle questions about the material.
PROVISIONAL SYLLABUS

Dr Iain McGregor will give 10 lectures on the following topics:
- Revision of basic neuroanatomy, neurophysiology and neurochemistry.
- Molecular neuroscience - the new revolution in neuroscience.
- The origins and history of psychopharmacology.
- Psychosis - neural basis, animal models, prevalence and drug treatments.
- Depression - neural basis, animal models, prevalence and drug treatments.
- MDMA ("Ecstasy") - who takes it, what it does. Does it have neurotoxic effects in humans?
- Cannabis - effects on the brain. Is it addictive? Is it a gateway drug? Does it cause schizophrenia?
- Alcohol - effects on the brain and behaviour. Anti-craving medications for treatment of alcoholism.
- Olfaction - how the brain codes odours, olfactory learning and memory.

Dr Lea Williams will give 8 lectures on the following:
- Cognitive neuroscience models of brain function.
- Models of whole brain function and brain dynamics.
- Brain Imaging Technologies in neuroscience - including PET, MRI, SPECT and functional MRI.
- Brain Imaging and Psychophysiological techniques.
- Face and facial emotion processing.
- Application of above to clinical disorders, such as schizophrenia, ADHD, phobias (psychophysiology, fMRI research).

Professor Ian Curthoys will give 4 lectures on the following:
- The role of the vestibular system in stabilizing the perceptual world.
- Vestibular compensation. Clinical implications.
- Spatial information and the hippocampus.

Dr Dale Atrens will give 4 lectures on the following:
- The diagnosis and consequences of obesity.
- Weight loss: rationale and procedures: energy restriction, exercise; anorectic, thermogenic and miscellaneous drugs; surgical procedures.
### PROVISIONAL TIMETABLE (subject to change)

<table>
<thead>
<tr>
<th>Week</th>
<th>Starting</th>
<th>Monday</th>
<th>Lecture</th>
<th>Wednesday</th>
<th>Lecture</th>
<th>Tutorial</th>
<th>Content</th>
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<tbody>
<tr>
<td>1</td>
<td>10-Jul</td>
<td>Iain McGregor</td>
<td>Iain McGregor</td>
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<td>Lea Williams</td>
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<td>Tutorial quiz</td>
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### TEXT

Carlson, N.R. (1999) *Foundations of Physiological Psychology*. 4th Ed., Boston. Allyn and Bacon. This will be supplemented by references to many recent papers in the areas. Copies of these papers should be available from Special Reserve.