Course Outline

Advanced Topics in Integrative Neuroscience
ACB 9550; ACB 9650
Neuro 9500
Fall-Winter 2015-2016
1.0 credit

Course Manager: Dr. Arthur Brown

Course Objectives:
The objectives of this advanced graduate level neuroscience course are:
A) To provide an overview and discuss current hot topics in different areas of integrative neuroscience.
B) To provide discussion of the types of experimental models and data analyses used in neuroscience research.
C) To teach students research skills on how to review, criticize, write, discuss and present experimental results.

Text: Instructors will select recent papers and review articles to be read for each of the topic areas.

Time: 1 hour 20 minutes per week for two terms: Thursdays 9:00 - 10:20 and 10:30 – 11:50.

Place: RRI 4th floor conference room

Grading:
25% of the final grade will be based on oral presentations of recently published papers in one of the areas covered by the course. (Students will select the papers and submit it to the course manager for approval.)

25% of the final grade will be based on a written critique of one recently published paper in a selected topic of neuroscience. The paper will be provided by the course manager.

25% of the final grade will be based on a written grant proposal (NSERC discovery grant-style).

25% of the final grade will be based on participation and critical discussion of the selected material in class. At the beginning of each lecture, students will submit a written comment on the provided research paper.

Enrollment: Minimum 4, Maximum 26
Prerequisites: General introduction to neuroscience.
Course Lecture Schedule:

Overview of General Topics:
Neuroplasticity and Regeneration
Nervous system trauma
Disorders of neuroplasticity
Schizophrenia
Learning and memory
Cognitive Neuroscience
Behavioral Neuroscience

Classes held Thursday mornings  RRI 4th floor conference room

Schedule:

Fall term:
September 10:  Meet and Greet; Introduction  EVERYONE MEET AT 9:00
Fisher Room at Robarts

September 17:  Techniques and the Nervous System
Arthur Brown

Neurodevelopment/Neuroplasticity and Regeneration
September 24:  Neurodevelopment
Arthur Brown

October 1:  Neural Stem Cells
Arthur Brown

October 8:  Spinal Cord Injury
Arthur Brown

October 15:  Plasticity and Epilepsy
Mike Poulter

Disorders of neuroplasticity
October 22:  Neuroplasticity in auditory cortex
Steve Lomber
(SFN)

October 29:  Plasticity and Alzheimers
Vania Prado
November 5: Stroke  
Shawn Whitehead

November 12: Presentation catch up  
Arthur Brown

November 19: Schizophrenia  
Raj Rajakumar

November 26: Schizophrenia Mechanisms 1  
Walter Rushlow

December 3 Schizophrenia Mechanisms 2  
Walter Rushlow

December 17 Written critique due

Winter Term:
January 7: Critique discussion (Brown)

Neuroimaging/Cognition

January 14: Learning and Memory LTP  
Stan Leung

January 21: Learning and memory I  
Stefan Kohler

January 28: Learning and Memory 2  
Susanne Schmid

February 4: Imaging neuropathology in-vivo  
Ravi Menon

Behavioural Neuroscience

February 11: Imaging Cognitive Neurosci 1  
Derek Mitchell

February 18: Imaging Cognitive Neurosci 2  
Derek Mitchel
<table>
<thead>
<tr>
<th>Date</th>
<th>Topic</th>
<th>Presenter</th>
</tr>
</thead>
<tbody>
<tr>
<td>February 25</td>
<td>Sensory Motor Integration</td>
<td>Brian Corneil</td>
</tr>
<tr>
<td>March 3</td>
<td>Sensory motor control</td>
<td>Andrew Pruszynski</td>
</tr>
<tr>
<td>March 10</td>
<td>Abstract &amp; Poster Writing</td>
<td>Arthur Brown</td>
</tr>
<tr>
<td>March 17</td>
<td>Systems Neuroscience and Clinical Imaging</td>
<td>Elizabeth Osuch</td>
</tr>
<tr>
<td>March 24</td>
<td>Diseases of synaptic transmission</td>
<td>Marco Prado</td>
</tr>
<tr>
<td>March 31</td>
<td>Grant writing 1</td>
<td>Arthur Brown</td>
</tr>
<tr>
<td>April 7</td>
<td>Ethics of animal Research</td>
<td>Jacqueline Sullivan</td>
</tr>
<tr>
<td>April 14</td>
<td>Deadline grant proposal</td>
<td></td>
</tr>
</tbody>
</table>