PSYC 2101– Foundations of Neuroscience  
Department of Psychology  
The University of Hong Kong

Lectures:  
Mondays 12:30 – 14:20, CPD 2.45

Instructor: Dr Dorita CHANG  
Office: JCT607  
Email: changd@hku.hk (please indicate the appropriate course code in the subject line!)  
Office hours: Thursdays, 13:30 – 14:30

Coordinator: Mr Justin AU *contact for administrative/technical problems only  
Office: JCT619  
Email: justyno@hku.hk

Tutor: Ms Nicole WONG  
Office: JCT686  
Email: nicole26@connect.hku.hk  
Office hours: By appointment

Course Description  
This course covers the fundamental principles of neuroscience. Topics include history of neuroscience, neurons and glia, neuronal membrane at rest, action potential, synaptic transmission, neuroanatomy, the somatic sensory system, chemical senses: taste and smell, the auditory system, vision and the eye, vision and the brain, spinal control of movement, brain control of movement, chemical control of the brain and behavior, development in the nervous system, memory systems, learning and memory: molecular biology, emotion and attention.

Learning Objectives  
The course aims to provide a theoretical and experiential foundation for students who wish to explore the fundamentals of neuroscience and ready students for further training in neuroscience.

Textbook and Materials  

Computer Resources  
Lecture slides (if applicable for the week) will be made available on Moodle.

Assessment  
Class and tutorial participation  
Participation 5%  
Thought Paper Submissions 10%  
(your choice of two, or top two of three if you elect to submit three)

Other Homework  
Term Paper 25%
Tests

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<tr>
<th>Test</th>
<th>Weight</th>
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<tbody>
<tr>
<td>Midterm Quiz</td>
<td>30%</td>
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<tr>
<td>Final Quiz</td>
<td>30%</td>
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Thought papers (softcopy submission, due Wednesday of the assigned week, at 12 pm)

For many weeks there will be assigned reading sets that complement material covered in class. These readings are taken from the literature and present some of the current issues/debates in Neuroscience. ALL students are expected to review these readings prior to each tutorial to facilitate discussion.

Over the course of the term, you are required to select two readings from different weeks and write a thought paper for each (max 2 pages, double spaced). For weeks where two papers are provided, you may select to write your thoughts based on either of the two papers, or discuss them both integratively. Each of these thought papers will carry a weight of 5% of your total grade (for a total of 10%). You may also elect to submit up to a total of three thought papers for grading, with your grade for this component determined as the top two scores earned.

These thought papers serve three main purposes. 1) They introduce you to the literature. 2) They train you on how to write in a concise and scientific manner. 3) They encourage you to think critically about a particular topic. The thought paper should not be a mere summary, but should describe things you liked or disliked about the paper, or how you think any aspects could be done differently. Your thought paper could be a question, a criticism or a problem, an alternative interpretation of experiments, or a suggestion for follow-up experiments.

Individual paper (softcopy submission only, due December 7)

As a part of the term’s assessment, each student will be required to review a topic in Neuroscience in depth, culminating in a term paper. The absolute maximum length of essays is 2000 words of text (excluding the cover sheet and references).

In your essay, prepare an integrative synthesis of a topic in Neuroscience of your choice based on the seed readings provided in our weekly thought paper topics (any of the topics from weeks 4-13) and lecture topics, along with any additional readings you consider important and relevant. You should address the issue of whether your readings in your chosen area are converging towards a coherent picture; or if there are incongruities, identify them and suggest a resolution (i.e., future proposed research directions, or alternative explanations). If you are having trouble deciding whether your intended framework is too broad or narrow, feel free to consult your lecturer or tutor.

Quizzes

There will be one mid-term quiz (October 8) and one final quiz (December 3). The quiz materials MUST be returned. Leaving the testing room with quiz materials will be viewed as academic dishonesty. In the event of a missed quiz (with valid medical documentation), a single make-up quiz will be arranged (essay-format only).

There will be no make-up quizzes arranged for a make-up quiz...

Class and tutorial participation

Scientific work in the Neurosciences, as well as in other professional areas, relies heavily on the good will and collaboration from peers. Other than undergoing extensive peer-
review on our work, our ideas advance from discussion with others. The class and tutorial participation is to recognize a person’s contribution to help others learn in this course.

**Academic Dishonesty**
Academic dishonesty will not be tolerated. Any student who engages in any form of academic dishonesty (e.g., cheating on exams, plagiarism, interfering with grading) will receive a grade of F in this course and will be reported to the Department/Faculty Office/University Disciplinary Committee for further disciplinary action. There will be no exceptions. If you are not sure what constitutes the academic offense of plagiarism, consult your Lecturer or Tutor. You may also consult the relevant HKU webpage on plagiarism at [http://www.hku.hk/plagiarism](http://www.hku.hk/plagiarism). Department of Psychology has formulated departmental policies/guidelines on student misconduct. Visit the website at [http://www.psychology.hku.hk/~main/?page_id=1814](http://www.psychology.hku.hk/~main/?page_id=1814) for more information.

**Plagiarism**
A hardcopy and a softcopy are required for all written assignments. The softcopy will be checked for plagiarism against a database of articles, books, webpages, and essays submitted by students at HKU and other universities. No credit will be given for an assignment that contains plagiarized materials. Further penalties will also be applied. These penalties include a zero mark for participation in course tutorials and a zero mark for the course. Plagiarism will also be reported to your Faculty for consideration of possible disciplinary action.

**Assignment Submissions**
Late assignments are subject to a penalty of 25% deduction per-day, unless valid medical proof (medical certificate) is presented. Each assignment submission should be accompanied by a title page with the course code, Lecturer’s name, your name, UID, and tutorial session written clearly.

**Assessment Feedback**
We strive to return assessment results (i.e., assignment and quiz results) within three weeks of submission. Students will be invited to retrieve (assignments) or view (quizzes) their exercises throughout the term. Answer keys (if relevant) will be posted on Moodle.
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<thead>
<tr>
<th>WK</th>
<th>DATE</th>
<th>CONTENTS / ASSIGNED CHAPTERS</th>
<th>THOUGHT READINGS</th>
<th>TUTORIAL</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Sep 3</td>
<td>Introduction &amp; Organization A brief tour through the history of Neuroscience</td>
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<tr>
<td>2</td>
<td>Sep 10</td>
<td>Foundations I. Neurons and Glia (Chapter 2)</td>
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<td>3</td>
<td>Sep 17</td>
<td>Foundations II. The Neuron at rest, The Action Potential (Chapters 3, 4)</td>
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| 4  | Sep 24 | Foundations III. The Action Potential con’t, Synaptic Transmission (Chapters 4 con’t, 5) | *Altering neural transmission*  
Boudreau, A. C., & Wolf, M. E. (2005). Behavioral sensitization to cocaine is associated with increased AMPA receptor surface expression in the nucleus accumbens. Journal of Neuroscience, 25(40), 9144-9151. | Tutorial I. (shifted to Sep 25 due to holiday) |
| 5  | Oct 1  | Foundations IV. Neuroanatomy (Chapter 7)  
*No class (Public Holiday)*  
Half-lecture/dissection to be held in tutorial this week *(LG.59)* | | Half-lecture / Brain dissection |
| 6  | Oct 8  | Midterm Quiz (CPD2.45) | | |
| 7  | Oct 15 | *No class (Reading Week)* | | |
| 8  | Oct 22 | Systems Neuroscience I. The visual system (Chapter 10)  
*Consequences of visual deprivation*  
| 9  | Oct 29 | Systems Neuroscience II. The auditory and vestibular systems (Chapter 11)  
*Music and auditory neuroscience*  
| 10 | Nov 5  | Systems Neuroscience III. Movement (Chapter 14)  
*Those darn mirror neurons again*  
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<tr>
<th>Date</th>
<th>Event</th>
<th>Notes</th>
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<tr>
<td>11 Nov 12</td>
<td>Plasticity I. Genesis, Pruning (Chapter 23)</td>
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<td>12 Nov 19</td>
<td>Plasticity II. Memory – Structures, Systems (Chapter 24)</td>
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<td>13 Nov 26</td>
<td>Plasticity III. Learning – Molecular Mechanisms (Chapter 25)</td>
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<td>14 Dec 3</td>
<td>Final Quiz (CPD3.01)</td>
<td>Tutorial VI.</td>
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Note: The schedule, readings, and assignments are subject to change. Any changes will be announced in class.