

The University of Waterloo

Psychology 396 Research methods in behavioural neuroscience

Winter term, 2008

Instructor: Dr. C. Ellard, PAS 4010, ext. 36852, cellard@watarts.uwaterloo.ca

Teaching assistant: Punya Singh, PAS 2234, p9singh@uwaterloo.ca

Animal health technician and lab demonstrator: Nancy Gibson, PAS 1244 ext. 34825, ngibson@uwaterloo.ca

Course readings:

Vanderwolf, C. H. & Cooley, R. K. The sheep brain: A photographic series.

Crossman & Neary, Neuroanatomy: An illustrated colour text. (Elsevier)

Original journal articles as required to complete assignments

Purpose of the course:

In this course, the content will be drawn from the particular subdiscipline of psychology known as behavioural neuroscience. Behavioural neuroscience involves the study of the relationship between structures in the nervous system and behaviour. So, in this course, you will learn some things about the structure of the nervous system (and how to study that structure) and some things about behaviour (and how to study behaviour). As behavioural neuroscientists are interested in both humans and animals, we will conduct experiments on both humans (ourselves) and animals (gerbils).

A brief note about vivisection: This is a course that involves the conduct of experiments with animals (gerbils) and handling of tissue (gerbil, sheep). As you may know, some people have ethical objections to the use of biological tissue for research or teaching. If you have such objections, and you have somehow found yourselves in this course, you might want to consider an alternative. If for some reason this is not possible, you should speak to me about alternatives. It might be important for you to know that your contact with animals will be limited to observation (and possibly some handling) of normal animals. We will, of course, ensure that you are properly trained in this regard.

Evaluation:

The evaluation process in the course will consist of the following:

Anatomy tests. This test will be 1/2 practical (January 24)(a "bell-ringer" -- I'll explain later what this means) and 1/2 written (January 31). In total, these tests will be worth 20% of your grade. (10% x 2).

Seminar. For the seminar, you and your group members will take over one class on an assigned topic (see syllabus). I'll say much more about the seminar, but for now remember that the main requirement is that you design the seminar as a group and that you all contribute equally to the oral presentation. I will give the class a short set of readings to do to prepare for the seminar and I will give each seminar group a set of papers to prepare. Of course, you're encouraged to go beyond these papers. The seminar will be worth 20 % of your grade.

Short assignment on the human spatial cognition experiment. This assignment will consist of written answers to a series of questions designed to guide you through the process of analyzing and presenting results. 10% Due March 4.

Short assignment on the animal spatial cognition experiment. This assignment will consist of written answers to a series of questions designed to guide you through the process of analyzing and presenting results. 10% Due March 25.

Short assignment on animal ethics. 10% Due February 14.

Full experimental paper on either the animal or the human experiment. This paper will be a full experimental write-up (intro, method, results, discussion) adhering to the APA format. A major goal of the course is to teach you how to write such papers. 20% Due on the last day of term (April 7).

UW-ACE assignments. 10%. This course includes some online learning units. These learning units are designed to help you both by guiding your readings in neuroanatomy early in the course and also by helping you to understand how to write different parts of an APA paper. In total, there are 8 online learning units and each of them contains some form of feedback (self-assessment quizzes, other kinds of short assignments) with their own deadlines and rewards.

A brief note about avoidance of academic offenses: All students registered in the courses of the Faculty of Arts are expected to know what constitutes an academic offense, to avoid committing academic offenses, and to take responsibility for their academic actions. When the commission of an offense is established, disciplinary penalties will be imposed in accord with Policy #71 (Student Academic Discipline). For information on categories of offenses and types of penalties, students are directed to consult the summary of Policy #71 (Student Academic Discipline) which is supplied in the Undergraduate Calendar (p.1:11). If you need help in learning how to avoid offenses such as plagiarism, cheating, and double submission, or if you need clarification of

aspects of the discipline policy, ask your course instructor for guidance. Other resources regarding the discipline policy are your academic advisor and the Undergraduate Associate Dean.

A brief note about deadlines: There are many different types of evaluation in this course and it will be very important for you to plan ahead. I will try to give you advice about *what* to be working on *when*, but the final responsibility for organizing your time rests with you. Occasionally, in extenuating circumstances, I may grant extensions of deadlines but you will need to talk to me in advance and you will need to obtain signed, written permission for the extension. If you fail to do so, late work will be assessed a penalty of 5%/day, including weekend days.

Syllabus:

| | |
|------------------------|--|
| January 8(C)* | Introduction, discussion of goals of the course |
| January 10(L) | Sheep brain dissection I – external features |
| January 15(L) | Sheep brain dissection II – midsagittal section, other dissections |
| January 17(L) | Sheep brain dissection III – coronal and horizontal sections |
| January 22(L) | Sheep brain dissection IV – review and practice quiz |
| January 24(L) | Practical neuroanatomy exam (10%) |
| January 29(L) | Lecture/discussion: Neuroanatomical systems |
| January 31(C) | Systems neuroanatomy test (10%) |
| February 5(C) | Animal ethics and experimentation (Gibson) |
| February 7(C) | Animal ethics and experimentation – hands on (Gibson) Group 1: First half Group 2: Second half |
| February 12 (L) | Group 1: Histology I (Gibson) Group 2a: Human spatial cognition |
| February 14 (L) | Group 2: Histology I (Gibson) Group 1a: Human spatial cognition |
| February 26 (L) | Group 1: Histology II (Gibson) Group 2b: Human spatial cognition |
| February 28 (L) | Group 2: Histology II (Gibson) Group 1b: Human spatial cognition |
| March 4 (C) | Interim summary and prognosis for the rest of the term |
| March 6 (L) | Group 2a: Animal spatial cognition |
| March 11 (L) | Group 2b: Animal spatial cognition |
| March 13 (L) | Group 1a: Animal spatial cognition |
| March 18 (L) | Group 1b: Animal spatial cognition |

| | |
|---------------------|---|
| March 20 (L) | Seminar 1: Taxes and landmarks |
| March 25 (C) | Seminar 2: Ariadne's thread |
| March 27 (C) | Seminar 3: Mosaic maps |
| April 1 (C) | Seminar 4: Cognitive maps |
| April 3 (C) | Seminar 5: Real, virtual, and other electronic spaces |

***C=meet in HH324, L=meet near 2nd floor lab doors**