



UNIVERSITY OF
CALGARY
Department of Psychology

Psychology 476 (L01) – Physiological Psychology
Fall/Winter 2006/07

Lecture Day/Time:	MWF/10:00-10:50 am	Location:	Admin. 167
Lab 01 Day/Time:	W/1:00 - 3:50 pm	Lab Location:	Admin. 051
Lab 02 Day/Time:	F/1:00 - 3:50 pm	Lab Location:	Admin. 051

Instructors:	Dr. M.C. Antle	Dr. G.C. Teskey
Phone:	220-2574	220-4962
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Office:	Admin 018	Admin 016
Office Hours:	By appointment only (call or E-Mail to schedule an appointment)	

Lab Instructor:	Calvin Young	Office:	TBA
		Email:	TBA
Office hrs:	By appt. only (E-Mail to schedule an appointment)		

Course Description and Goals

This is a senior course in physiological psychology whose key philosophical theme is that behaviour and mind reflect neural activity. According to this view, the brain underlies not only relatively simple behaviours such as walking and smiling, but also elaborate affective and cognitive events such as feeling, thinking, and composing a poem. As a corollary, the emotional and cognitive problems that characterize neurotic and psychotic illness must result from disturbances of the brain. The brain is made up of individual units - the neurons and glial cells. Thus, the task of physiological psychology is to determine the relationship between behaviour and brain activity. Students will learn about these concepts through lecture material and hands-on experiments with live, behaving animals.

This course is organized into four main sections.

- Anatomy, Cellular Biology and Molecular Biology
- Neurophysiology
- Movement and Behaviour
- Plasticity

Students completing this course have found it one of the most rewarding experiences of their academic careers. It forms an unparalleled foundation for future studies in Neuroscience and Medicine. That being said, the workload will likely be much heavier than most students have experienced thus far. Students who are unable to dedicate the time and effort required for this course are advised to pursue an alternative course.

Laboratories:

Labs **begin the first week of classes** and will be held in Adm 051. The recommended lab manual is indicated below. Lab coats and rubber gloves are also recommended. Students are responsible for providing their own dissecting kits and they should bring them to the laboratory sessions. The first two or three labs will be devoted to neuroanatomy. The remaining labs will be devoted to electrophysiology, behavioural analysis and neurosurgery in preparation for second term projects. All students should be prepared to **work with live, behaving animals**, following the guidelines recommended by the Canadian Council on Animal Care.

Required Text

- Kandel, Schwartz, and Jessel. (4th Ed.). Principles of Neural Science, Academic Press, 2000.
- Vanderwolf and Cooley (2nd Ed.) The Sheep Brain: A Photographic Series, A.J. Kirby Co., 2002

Additional laboratory readings will be made available as needed.

Evaluation:

- First term: First exam (10%) – October 23rd, 2006, in class.
 Second exam (10%) – November 17th, 2006 in class
 Third exam (10%) – Scheduled by registrar December 11th-20th, 2006
 Lab projects (20%) See Lab Outline
- Second term: Fourth Exam (15%) – Due 4:00 pm to Psychology Main Office, February 26, 2007.
 Fifth Exam (15%) – Due 4:00 pm to Psychology Main Office, April 13, 2007.
- Lab project (20%) – See Lab Outline

Students enrolled in this course at the **graduate level** will be required to give a lecture in the second semester and to submit a 10 page paper on the topic of their lecture. Topics will be selected in consultation with the professor and will count as 10% of their final grade.

All laboratory projects must be completed, or students **will receive a zero for the full laboratory component of the course**. Penalty for late submission of reports and exams is 10% for each day, including weekends and holidays. No excuses apart from a medical certificate will be accepted.

Grading Scale

A+	96-100%	B+	80-84%	C+	67-71%	D+	54-58%
A	90-95%	B	76-79%	C	63-66%	D	50-53%
A-	85-89%	B-	72-75%	C-	59-62%	F	0-49%

As stated in the University Calendar, it is at the instructor's discretion to round off either upward or downward to determine a final grade when the average of term work and final examinations is between two letter grades.

To determine final letter grades, final percentage grades will be rounded up or down to the nearest whole percentage (i.e., 89.50% will be rounded up to 90%; 89.49% will be rounded down to 89%, etc.).

Lecture Schedule

Tentative Lecture schedule for Fall 2006

DATE	Lecture Topic	Chapter
Sept. 11	Introduction + Philosophy	
Sept. 13	History of physiological psychology	1
Sept. 15	Anatomy of the brain 1	17
Sept. 18	Anatomy of the brain 2 (blood + blood brain barrier)	App. B+C
Sept. 20	Anatomy of the brain 3 (blood + blood brain barrier)	App. B+C
Sept. 22	Cells of the nervous system	2
Sept. 25	Functioning of neurons	2
Sept. 27	Anatomy of the brain 4	17 + 18
Sept. 29	Anatomy of the brain 5	18
Oct. 2	Neuroanatomy Quiz (5%) during lecture period, held in Admin 051	
Oct. 4	Genes and Behaviour	3
Oct. 6	Genes and Behaviour	3
Oct. 11	Cytology & Molecular Biology 1	4
Oct. 13	Cytology & Molecular Biology 2	4
Oct. 16	Cytology & Molecular Biology 3	5
Oct. 18	Cytology & Molecular Biology 4	5
Oct. 20	Ion channels and Membrane potentials 1	6
Oct. 23	Exam #1, Short answer (10%) in class	
Oct. 25	Ion channels and Membrane potentials 2	6
Oct. 27	Ion channels and Membrane potentials 3	6-7
Oct. 30	Ion channels and Membrane potentials 4	7-8
Nov. 1	Ion channels and Membrane potentials 5	8
Nov. 3	Ion channels and Membrane potentials 6	8
Nov. 6	Action potentials 1	9
Nov. 8	Action potentials 2	9
Nov. 10	Synaptic Transmission 1	10
Nov. 15	Synaptic Transmission 2	10
Nov. 17	Exam #2, Short Answer (10%) in class	
Nov. 20	Synaptic Transmission 3	11
Nov. 22	Synaptic Transmission 4	12
Nov. 24	Synaptic Transmission 5	12
Nov. 27	Neurotransmitters 1	15
Nov. 29	Neurotransmitters 2	15
Dec. 1	Intracellular pathways 1	13
Dec. 4	Intracellular pathways 2	13
Dec. 6	Neurotransmitters Release 1	14
Dec. 8	Neurotransmitters Release 2	14

Exam #1 will cover Chapters 1, 2, 3, 4, 5, 17, 18 and Appendices B+C

Exam #2 will cover Chapters 6 through 9

Exam #3 will cover Chapters 10 through 15

Tentative Lecture Schedule for Winter 2007

DATE	Lecture Topic – This is tentative and will likely be altered.	Chapter
Jan. 8	Introduction ? Historical Overview	Notes
Jan. 10	Movement Overview	33
Jan. 12	Movement Overview	33
Jan. 15	Spinal Reflexes	36
Jan. 17	Spinal Reflexes	36
Jan. 19	Locomotion	37
Jan. 22	Locomotion	37
Jan. 24	Voluntary Movement	38
Jan. 26	Voluntary Movement	38
Jan 29	Posture	41
Jan 31	Posture	41
Feb. 2	Cerebellum	42
Feb. 5	Cerebellum	42
Feb. 7	Basal Ganglia	43
Feb. 9	Basal Ganglia	43
Feb. 12	Basal Ganglia	43
Feb. 14	Repetitive Behaviours	61
Feb. 16	Class Cancelled!	
Feb. 18-25	<i>No classes – Reading Week</i>	
Feb. 26	<i>Imaging Take home exam due (15%)</i>	Text - Various
Feb. 28	Reinforcement and Drug Addiction	Notes
March 2	Reinforcement and Drug Addiction	Notes
March 5	Reinforcement and Drug Addiction	Notes
March 7	Learning and Memory	62
March 9	Learning and Memory	62
March 12	Learning and Memory	62
March 14	Learning and Memory	62
March 16	Learning and Memory	62
March 19	Skilled learning (Reaching)	Notes
March 21	EEG and Evoked potentials	Notes
March 23	Long-term potentiation	63
March 26	Long-term potentiation	63
March 28	Kindling	Notes
March 30	Kindling	Notes
April 2	Epilepsy	46
April 4	Adult Neurogenesis	Notes
April 6	<i>No classes – Good Friday</i>	
April 9	Alzheimer Disease	Notes
April 11	Senile Dementias	Notes
April 13	Class Cancelled! Take home exam due (15%)	

Exam #4 will cover Movement

Exam #5 will cover Plasticity

Take home examinations must be handed into the Psychology main office by 4:00 pm. Date stamp your exam. Late exams will be docked 10% per day. Emailed exams will not be accepted.

University of Calgary Curriculum Objectives

1) This course addresses the following core competencies:

- Critical and creative thinking
- Analysis of problems
- Effective oral and written communication
- Gathering and organizing information
- Abstract reasoning and its applications
- Insight and intuition in generating knowledge
- Interpretive and assessment skills

With the following course characteristics:

- Class discussion; students are prompted to think critically about course material
- Test questions where students are required to address theoretical issues
- Laboratory assignments where students are required to integrate previous research in order to frame an hypothesis, describe the results, and interpret those results in the context of previous research
- A final laboratory project which is the student's own design where the results are presented orally in class and written in manuscript format

2) This course addresses the following curriculum features:

- An experiential learning component relevant to the program objectives
- Integration of research

With the following course characteristics:

- Weekly laboratory experiments and demonstrations
- A large proportion of the readings for laboratory topics are from published research articles
- Class discussion on conceptual and methodological issues in research

Reappraisal of Grades

A student who feels that a piece of graded term work (term paper, essay, test, etc.) has been unfairly graded, may have the work re-graded as follows. The student shall discuss the work with the instructor within fifteen days of being notified about the mark or of the item's return to the class. If not satisfied, the student shall immediately take the matter to the Head of the department offering the course, who will arrange for a reassessment of the work within the next fifteen days. The reappraisal of term work may cause the grade to be raised, lowered, or to remain the same.

If the student is not satisfied with the decision and wishes to appeal, the student shall address a letter of appeal to the Dean of the faculty offering the course within fifteen days of the unfavourable decision. In the letter, the student must clearly and fully state the decision being appealed, the grounds for appeal, and the remedies being sought, along with any special circumstances that warrant an appeal of the reappraisal. The student should include as much written documentation as possible.

Plagiarism and Other Academic Misconduct

Intellectual honesty is the cornerstone of the development and acquisition of knowledge and requires that the contribution of others be acknowledged. Consequently, plagiarism or

cheating on any assignment is regarded as an extremely serious academic offense. Plagiarism involves submitting or presenting work in a course as if it were the student's own work done expressly for that particular course when, in fact, it is not. Students should examine sections of the University Calendar that present a Statement of Intellectual honesty and definitions and penalties associated with Plagiarism/Cheating/Other Academic Misconduct.

Academic Accommodation

It is the student's responsibility to request academic accommodations. If you are a student with a documented disability who may require academic accommodation and **have not** registered with the Disability Resource Centre, please contact their office at 220-8237. Students who have not registered with the Disability Resource Centre are not eligible for formal academic accommodation. You are also required to discuss your needs with your instructor no later than fourteen (14) days after the start of this course.

Absence From A Test

Make-up exams are NOT an option without an official University medical excuse (see the University Calendar). You must contact the instructor before the scheduled examination or you will have forfeited any right to make up the exam. At the instructor's discretion, a make-up exam may differ significantly (in form and/or content) from a regularly scheduled exam. Except in extenuating circumstances (documented by an official University medical excuse), a makeup exam is written within two (2) weeks of the missed exam.

A completed Physician/Counselor Statement will be required to confirm absence from a test for health reasons. The student will be required to pay any cost associated with the Physician Counselor Statement.

Course Credits for Research Participation

Students in most psychology courses are eligible to participate in Departmentally approved research and earn credits toward their final grades. A maximum of two credits (2%) per course, including this course, may be applied to an individual's final grade. **To get 2%** added to the final grade in a full course, like this one, you have to acquire **a total of 4 bonus credits** towards the course. These credits may be acquired in the Fall and/or in the Winter Session. Students can create an account and access the Research Participation System website at <http://ucalgary.sona-systems.com>. The last day to participate in research in the Fall semester is December 7, 2006. The last day to participate in research in the Winter semester is April 12, 2007.

Student Organizations

Psychology students may wish to join the Psychology Undergraduate Students' Association (PSYCHS). They are located in the Administration building, room 170 or may be contacted at 220-5567.

Student Union VP Academic: Phone: 220-3911 suypaca@ucalgary.ca
Student Union Faculty Rep.: Phone: 220-3913 socialscirep@su.ucalgary.ca

Important Dates

The last day to drop this course and **still receive a fee refund** is September 22, 2006. The last day to withdraw from this course is April 13, 2007.