Psychology 461 – Cognitive Neuroscience of Memory - Fall 2005

Class Time: Thursdays 12:30-2:20pm Location: PAS 4288

Instructor: Dr. Myra Fernandes <u>mafernan@watarts.uwaterloo.ca</u>
Office Hours: Mondays 10-11am or by appointment Office: PAS 4054

Required Course Text and Articles:

<u>The Oxford Handbook of Memory</u> (2000). Endel Tulving and Fergus I. M. Craik, Eds. New York, NY: Oxford University Press.

Selected articles: available for photocopying in PAS 4028

Course Description:

This course considers the cognitive and neural organization of memory. We will examine why some memories are better remembered than others, the nature of true and false memories, the effects of drugs on studying, remembering, and forgetting, and the consequences of brain injury to memory function. The biological basis of human memory has been examined with four methods: analyses of neurological patients, investigations using neuroimaging, experiments with animals, and basic theoretical cognitive research. By reviewing and discussing classic and current research using these methods, and their findings, students will develop an understanding of how cognitive neuroscience informs current theories of memory function. I encourage discussion from students to clarify material. I think the class will be much better if you participate by asking, and answering, questions! It is also extremely important that you read the assigned material as well as attend lectures!

Overview of Evaluation:

"Take-Home" Tests	2 X 30% each	60%
"Research" Presentation		30%
Participation during Research Presentations		6%
"Ideas for Future Research" Presentation		4%

Description of Evaluations:

"Take-Home" Tests 2 X 30% each = 60%

- For the first test, you will be given a sheet of questions on September 22nd; You will choose 2 of these from the set, and write a 3 page answer to each (i.e. hand in 6 pages total); due date is October 13th; Questions will be based on the material presented in the text and in lectures
- For the second test, you will be given a sheet of questions on November 24th; You will choose 2 of these from the set, and write a 3 page answer to each (i.e. hand in 6 pages total); due date is December 8th; Questions will be based on the material presented in the text and during presentations (note: you must choose to answer questions on a topic other than that on which you presented).

 Your answers for each test should be type-written, double-spaced, in 12 point font, with 2 cm margins all around; your name and ID number should appear in the header; page numbers and the course number should appear in the footer; A title page is not needed.

"Research" Presentation 30%

- Each student will be given 35 minutes to review a topic in cognitive neuroscience.
- During the presentation students should highlight key findings from classic studies, based on the assigned reading for that topic.
- Students must also choose 2 more recent papers (from 2001 to present) from published journals, which use a technique in cognitive neuroscience, and discuss whether it agrees or disagrees with the classic work.
- Students should then outline the general conclusion and state of knowledge on their topic.
- A copy of your Power Point presentation must be **emailed to the Instructor on the day prior to your presentation** (by 4pm).
- Following the 35 minute presentation, each student will <u>lead a 15 minute Discussion</u>
 <u>Session</u>. During this time you will ask your classmates a couple of "Questions" relating to your topic, and engage them in a discussion of possible answers. You can bring in extra materials (newspaper clippings) or prepare demos related to your prepared "Questions"; these will help engage your classmates in the Discussion Session.
- Make your "Questions" provocative, to invite discussion from your classmates, or come
 prepared to defend your particular "Answers" to your "Questions", if many different
 "Answers" are possible. Alternatively, frame your Questions such that students have to
 pick one side of a debate, and defend it, or have students provide examples from every
 day life to support their answers.

Participation during Research Presentations

6%

During the Research Presentations (except your own), you will be expected to participate in the Discussion Session by providing some of your own "Answers" to "Questions" posed by the presenter. For each of the 12 presentations you can earn 0.5% (12 X 0.5% = 6% total)

"Ideas for Future Research" Presentation

4%

- Each student will prepare a short presentation (6-7 minutes in length) in which a
 possible future research question, on one of the topics from this course, is proposed.
 You will present your question, the approach to be taken, and potential implications
 of the study.
- A copy of your Power Point presentation must be emailed to the Instructor by Wednesday November 30th (by 4pm).

If you fail to hand in a test on time, miss your scheduled presentation during the term, or miss one of your class-mates presentations:

It is the student's responsibility to provide, in a timely manner, acceptable documentation to support a medical, compassionate, or religious claim for missing the above mentioned course events.

If you feel that you have a medical or personal problem that is interfering with your work, you should contact your instructor and the Academic Counselling Office as soon as possible. Problems may then be documented and possible arrangements to assist you can be discussed at the time of occurrence rather than on a retroactive basis. In general, retroactive requests for grade revisions on medical or compassionate grounds will not be considered. For example, in the case of illness, the student must provide an official illness certificate on appropriate letterhead from their physician, which states that, due to medical reasons, it was impossible for the student to attend the course event, or hand in the "take-home" test at the scheduled time. A note on a prescription pad is not an acceptable medical certificate.

Course Web page / Using UWACE:

What is UW-ACE?

It is a web-based course management system that enables instructors to manage course materials and interact easily and efficiently with their students. Here, I will post lecture notes online, along with the course syllabus. Course announcements will also be posted on UWACE.

UWACE can also be used to send and receive course email, establish and monitor message boards and chat rooms, post marks to the grade-book, and track student progress.

How do I log into UW-ACE?

Type http://www.uwace.uwaterloo.ca and log on using your Quest/UWdir userid and password.

What should I do if I can't get logged into UW-ACE?

If you know that you should have access to a course using UW-ACE, but are having trouble logging in, please confirm that your QUEST/UWdir userid and password are correct. You can verify your userid and password by going to http://ego.uwaterloo.ca/~uwdir/UW-Passwd.html. Please note that UW-ACE is case sensitive, so you must type your password with the appropriate upper and lower case letters. If you confirm that your userid and password are correct and still can not log in, please check with your instructor to ensure that you are on the class roster.

If you are on the class roster, you may require upper and lower case letters in your password and not be aware of it. You will need to change your password. Please go to https://ego.uwaterloo.ca/~uwdir/Passwd.html and use the password specifications indicated on this page. In addition, you can reset your account by going to http://ego.uwaterloo.ca/~uwdir/UnLock.html and supplying your faculty e-mail account password. If you are still encountering difficulties, please e-mail uwacehelp@ist.uwaterloo.ca stating your name, Uwuserid, student ID number and the course to which you wish access.

Can I forward my UW-ACE e-mail to another account?

Although the facility for forwarding your e-mail account to another account exists within UW-ACE, student accounts are automatically set back to userid@uwaterloo.ca (forwarding is

removed) despite any intervention to have e-mail accounts forwarded. You will need to log into UW-ACE to retrieve your course e-mail.

Note for students with disabilities:

The Office for Persons with Disabilities (OPD), located in Needles Hall, Room 1132, collaborates with all academic departments to arrange appropriate accommodations for students with disabilities without compromising the academic integrity of the curriculum. If you require academic accommodations to lessen the impact of your disability, please register with the OPD at the beginning of each academic term.

Note on avoidance of academic offences:

All students registered in the courses of the Faculty of Arts are expected to know what constitutes an academic offence, to avoid committing academic offences, and to take responsibility for their academic actions. When the commission of an offence is established, disciplinary penalties will be imposed in accord with Policy #71 (Student Academic Discipline). For information on categories of offences and types of penalties, students are directed to consult the summary of Policy #71 which is supplied in the Undergraduate Calendar (section 1; on the Web at http://www.adm.uwaterloo.ca/infoucal/UW/policy_71.html). If you need help in learning how to avoid offences such as plagiarism, cheating, and double submission, or if you need clarification of aspects of the discipline policy, ask your TA or course instructor for guidance. Other resources regarding the discipline policy are your academic advisor and the Undergraduate Associate Dean. Please also note the following link to the Arts Faculty Web page, "How to Avoid Plagiarism and Other Written Offences: A Guide for Students and Instructors" (http://watarts.uwaterloo.ca/~sager/plagiarism.html)

About Your Instructor

In my research I aim to understand the processes involved in higher cognitive functions such as memory, attention and language. I use a combination of behavioural tests and neuro-imaging to identify the brain basis of these functions. In addition I study how the normal aging process affects cognition, particularly one's ability to carry out memory tasks concurrently with other tasks (dual-tasking). This work is used to test and refine current models of how memory encoding and retrieval operate.

The following pages contain the Tentative Schedule for classes:

Торіс	Readings	Date
Overview of Course	Text: Ch. 2, p.33-43	Thurs.
History of Memory Research	Article: Schacter, DL. (1999). The Seven Sins of Memory. <u>American</u> <u>Psychologist, 54,</u> 182-203.	September 15 th
Short-term and working memory Approaches and Debates in Memory Research	Text: Ch. 5, p 77-92 Article: Weldon, MS. (1999). The memory chop shop: issues in the search for memory systems. In Memory: Systems , process, or function? Debates in psychology. JK Foster and M Jelicic (Eds.) pp. 162-204. London, UK: Oxford University Press	Thurs. September 22nd
Encoding and retrieval	Text: Ch. 6, p. 93- 107	Thurs.
Effects of Divided Attention	Article: Fernandes, M.A., Moscovitch, M., Ziegler, M., & Grady, C. (2005). Brain regions associated with successful and unsuccessful retrieval of verbal episodic memory under divided attention. Neuropsychologia, 43, 1115-1127.	September 29 th
Recollection and Familiarity	Text: Ch. 14, p. 215-228 and Ch. 15, p 229-244	Thurs.
Methods of assessment : Cognition, Neuropsychology, and Animal work	Article: Sternberg, R. (2003). Memory: Models and Research Methods. In Cognitive Psychology. Belmont, CA: Thomson, Wadsworth	October 6 th

Topic	Readings	Date
Non-Conscious forms of Human Memory	Article: Roediger, HL III. (1990). Implicit Memory: Retention without Remembering. American Psychologist, 45, 1043-1056.	Thurs.
'Is the brain fallible?' Distortions of Memory	Text: Ch. 10, p 149-162	October 13 th
'Who told me that?' Source Monitoring	Text: Ch. 12, p 179-195	Thurs.
'Is the brain ready yet?' Memory in Infancy and Early Childhood	Text: Ch. 17, p 267-282	October 20 th
'He said she said' Memory and Theory of Mind	Text: Ch. 19, p 297-312	Thurs.
'Routes to memory' Spatial Memory	Text: Ch. 23, p 363-378	October 27 th
'I remember it like it was yesterday'	Text: Ch. 24, p 379-392	Thurs.
Memory for Emotional Events 'Does your cat remember?' Episodic Memory in Non- Humans	Article: Griffiths, D, Dickinson, A, & Clayton, N (1999). Episodic memory: What can animals remember about their past? Trends in Cognitive Sciences, 3, 74-80.	November 3 rd

Topic	Readings	Date
'Growing old' Memory changes in healthy older adults	Text: Ch. 25, p. 395-409	Thurs.
'Can you see it?' Brain Imaging of Memory	Text: Ch. 31, p. 501-519	November 10 th
'Pharmaceuticals and beyond' Drugs and Memory 'Awareness' Consciousness and Memory	Text: Ch. 33, p. 539-554 Text: Ch. 38, p. 609-625	Thurs. November 17 th
'I know a guy' Case Studies of Memory Loss	Article: Graham, KS, & Hodges, JR. (1997). Differentiating the roles of the hippocampal complex and neocortex in long-term memory storage: Evidence from the study of semantic dementia and Alzheimer's disease. Neuropsychology, 11, 77-89.	Thurs. November 24 th
'Putting it all together' Models of Memory	Text: Ch. 39, p. 627-643	
Ideas for Future Research		Thurs. December 1 st