

PSYB57-09W: Introduction to Memory and Cognition

General Course Information:

Course website: University of Toronto Blackboard System (& UTSC Intranet for evaluations)

Instructor:

George Cree, Associate Professor, Psychology

Email: george.cree@utoronto.ca

Office: S-559

Office Hours: Monday 3-4, Tuesday 2-3

TA:

Ben Amsel, Graduate Student -- Email: ben.amsel@utoronto.ca Office: S-561

Office Hours: appointments can be booked through email.

Eve Foster, Graduate Student – Email: eve.forster@utoronto.ca

Office Hours: appointments can be booked through email.

Class Times and Location:

Monday: 1-3, room AA-112

Tuesday: 1-2, room AA-112

Pre-requisites: [PSYA01 & PSYA02] or PSYA01Y. Note: if you do not have these prerequisites, and you require them for your degree, drop this course now! You will not be allowed to take them later if PSYB57 appears on your transcript, and this will have serious consequences for your ability to graduate.

Co-requisites: There are no co-requisites for this course.

Course Content:

This course is concerned with the study of the human mind, with a focus on the methods used by cognitive psychologists to understand how the brain gives rise to the mind. This is an interdisciplinary area that represents an attempt by cognitive psychologists, neuroscientists, computer scientists, linguists, and philosophers to discover how mental processes are implemented in the brain. The approach focuses on human cognitive and emotional processes and relies heavily on the methods and findings of neuroscience, in that the brain is used as a constraint on how models of the mind must be designed. Our focus will be on the contributions of cognitive psychology, but we will sample methods and theories from the other related fields as appropriate. This is the kind of research that is currently receiving intense coverage in the media, and this course should provide you with a deeper understanding of what you might read and hear about outside of the classroom.

The topics covered are the major ones in higher-level cognition, and include: concepts and mental representations, long-term memory, working memory, attention, control processes, emotion, decision making, reasoning, problem solving, and language processing. To understand the cognitive-neuroscience approach to these topics, students will be introduced to the behavioral reaction time methods of cognitive psychology, to some elementary neuroanatomy, to the logic of studies with neurological patients, to functional neuroimaging techniques such as functional Magnetic Resonance Imaging (fMRI), and to the basics of computational modeling, with a focus on connectionist modeling.

Required Readings:

Smith, E. E., & Kosslyn, S. M. (2007). Cognitive Psychology: Mind and brain. Pearson Education, Canada, Ltd. ISBN: 0-13-182508-9

St. James, J., Schneider, W., & Eschman, A. (2005). PsychMate Student Guide. Version 2.0. Pittsburgh: Psychology Software Tools, Inc.

Rumelhart, D.E. (1989). The architecture of mind: A connectionist approach. In M. Posner (Ed.), Foundations of Cognitive Science. MIT Press.

Available online: <http://cognet.mit.edu/library/books/view?isbn=0262161125> – Please read Chapter 4 of the book that this link takes you to (the chapter authored by David Rumelhart).

Schedule of Topics, Readings & Assignments:

- Week 1: Smith & Kosslyn Chapter 1: How the Brain Gives Rise to the Mind
PsychMate 5.1: Reaction Time Procedures
PsychMate 6.1: Introduction to Brain Imaging and Brain Tutor
- Week 2: Smith & Kosslyn Chapter 2: Perception
PsychMate 1.2: Signal Detection
- Week 3: Smith & Kosslyn Chapter 3: Attention
PsychMate 1.8: Change Blindness
- Week 4: Smith & Kosslyn Chapter 4: Representation and Knowledge in Long-Term Memory
PsychMate 2.3: Typicality in Categorization
- Week 5: Smith & Kosslyn Chapter 5: Encoding and Retrieval from Long-Term Memory
PsychMate 2.7: Recall, Recognition, and Encoding Specificity
- Week 6: Smith & Kosslyn Chapter 6: Working Memory
PsychMate 6.2: Working Memory and the fMRI
- Week 7: Smith & Kosslyn Chapter 7: Executive Processes
PsychMate 1.5: Attentional Interference and the Stroop Effect
- Week 8: Smith & Kosslyn Chapter 8: Emotion and Cognition
PsychMate 3.5: Automaticity and Stereotyping
- Week 9: Smith & Kosslyn Chapter 9: Decision Making
PsychMate 3.1: The Prisoner's Dilemma
- Week 10: Smith & Kosslyn Chapter 10: Problem Solving and Reasoning
PsychMate 2.5: Executive Control, Planning, and the Tower of London
- Week 11: Smith & Kosslyn Chapter 11: Motor Cognition and Mental Simulation
PsychMate 1.3: Rotation of Mental Images
- Week 12: Smith & Kosslyn Chapter 12: Language
PsychMate 4.1: Human Factors in Telephone Systems

Course Evaluation: There are three evaluative mechanisms in this course:

Midterm Exam: 45%

The first exam will cover the material discussed in the first 6 weeks, including Smith and Kosslyn textbook chapters 1-6, the assigned PsychMate chapters, and the associated lectures. There will be 80 multiple-choice questions and 20 marks worth of short answer questions. The test will be scheduled for 2 hours, by the Registrar's office, during the midterm exam period. This exam will be worth 45% of the final grade.

Final Exam: 45%

The second exam will be the same as the first, but will cover the last six weeks of the course. The exam will be scheduled by the Registrar's office during the final exam period. This exam will be worth 45% of the final grade. The exam is non-cumulative, but note that material from the first six weeks may be tested indirectly to the extent that material builds as the chapters progress.

PsychMate Experiments: 10%

Each week you will be asked to read 1 or 2 chapters from the PsychMate manual, and to complete the associated experiment(s). The data will be submitted by the program to a central server, downloaded by the instructor, and discussed in class. *Beginning in Week 3*, you will receive 1% towards your final grade for each experiment that you complete on time. PsychMate experiments must be completed, and the data submitted, before 11:59 pm of the Monday of that week, so that the data will be available to discuss in class the following day.

Policies on Missed Exams

The only reasons considered valid for missing an exam (or assignment deadline) are (1) you are not in an appropriate physical condition to write an exam, as verified by a medical professional, or (2) you are not in an appropriate mental condition to write an exam, as verified by a medical or counseling professional, or (3) it is a University of Toronto recognized religious holiday for a religion you are part of as verified by documentation from an appropriate religious leader.

If you miss the midterm exam for one of the reasons listed above, there will be a make-up exam scheduled that will be as similar as possible in length and difficulty to the original midterm. The time and location of the make-up exam will be posted on blackboard, and announced in class, as soon as the information is available. Contact the course instructor as soon as possible to confirm details of the make-up exam.

Illness that extends only a day before the deadline for submission of the PsychMate experiments will not be considered a sufficient reason to be allowed to submit the data late. You have access to the system immediately upon purchasing the manual and activating your account – you are encouraged to complete the assignments as soon as possible to avoid penalties due to unforeseen circumstances (e.g., illness, computer crashes, etc.). Plan ahead!

If you miss the final exam I cannot provide a make-up. Instead you will have to petition to be allowed to write a deferred final exam during the next exam period (up to four months away).

Policies on academic integrity

Please review the UTSC Code on Academic Behaviour:

[http://www.utsc.utoronto.ca/courses/calendar/University_of_Toronto_Policies.html#Code of Behaviour on Academic Matters](http://www.utsc.utoronto.ca/courses/calendar/University_of_Toronto_Policies.html#Code_of_Behaviour_on_Academic_Matters)

AccessAbility

Students with diverse learning styles and needs are welcome in this course. In particular, if you have a disability/health consideration that may require accommodations, please feel free to approach me and/or the AccessAbility Services Office as soon as possible. The UTSC AccessAbility Services staff (located in S302) are available by appointment to assess specific needs, provide referrals and arrange appropriate accommodations: (416) 287-7560 or ability@utsc.utoronto.ca. The sooner you let us know your needs the quicker we can assist you in achieving your learning goals in this course.

The above schedule, policies, procedures, and assignments in this course are subject to change in the event of extenuating circumstances.