THE UNIVERSITY OF TORONTO SCARBOROUGH
Department of Psychology

PSYC58: Cognitive Psychology Laboratory, Fall 2015

1.0 CALENDAR DESCRIPTION

This course introduces conceptual and practical issues concerning research in cognitive psychology. Students will be introduced to current research methods through a series of practical exercises conducted on computers. By the end of the course, students will be able to program experiments, manipulate data files, and conduct basic data analyses.

2.0 COURSE INFORMATION

Prerequisite: PSYB01H3 and [PSYB07H3 or (SOCB06H3) or STAB22H3] and [PSYB51H3 or PSYB57H3]
Exclusion: PSY379H
Recommended Preparation: PSYC08H3
Class Meeting Time: Lectures take place on Tuesdays between 10 am and 1 pm, in Room SW316 (there will be a few additional one-hour tutorials held after lecture, in the same classroom, from 12 – 1 pm, days TBD).
Textbook: There is no textbook for this course. Rather, students will be required to read a number of research articles relating to various topics in cognitive psychology (see 'Readings' below)

3.0 INSTRUCTOR AND TEACHING ASSISTANT CONTACT INFORMATION

Instructor: Professor Jonathan Cant [email: jonathan.cant@utoronto.ca (please put PSYC58 in the subject line of any emails)]
Office hours: Thursdays between 2 – 4 pm (SW 411)

Teaching assistant (TA): Matthew Lowe (matthew.lowe@mail.utoronto.ca)
Office hours: To be determined.

4.0 ONLINE COURSE RESOURCES

Blackboard: https://portal.utoronto.ca/webapps/portal/frameset.jsp

Blackboard will be used as the main online resource for this course. All important course-related information (e.g. announcements, syllabus, class schedule, assignment information,

message boards, and grades) will be available via Black Board.

5.0 DETAILED COURSE DESCRIPTION

This course has three main objectives. First, you will be introduced to a number of different methodological techniques used by cognitive psychologists to study the mind. Second, you will be given hands-on experience collecting, preparing, and analyzing data, using computer software that is commonly used in cognitive psychology experiments (E-Prime, Excel, and SPSS). Third, you will develop your communication skills by presenting your results to others using both oral (poster presentations) and written (formal APA research manuscript) methods. Thus, by the end of this course you will have both increased your knowledge of some core principles in cognitive psychology (objective #1), and will have gained valuable practical experience running experiments, analyzing data, and presenting scientific results (objectives #2 and #3). These objectives will be achieved through the combination of traditional lectures, hands-on laboratory exercises, and tutorials. The first two formal lectures in the course (see table under 'Class Schedule and Readings' below) will teach students about basic principles in experimental design and data analysis in cognitive psychology. Next, a number of common research topics in cognition will be covered, and for each topic I will provide an in-class lecture to familiarize students with the history and current understanding of that topic in the field of cognitive psychology. Importantly, four of these topics will be chosen for further study through the use of in-class laboratory exercises (i.e., The Stroop Effect, The Global Precedence Effect, Priming, and the Spatial Cueing of Attention). Specifically, after the lecture component, all students will take part in an actual cognitive psychology experiment in class. The data collected from this exercise will be used by students to create both a research poster (presented during the last or second-to-last class of the semester) and a formal APA research paper (different components of the paper will be due at different points in the semester; see 'EVALUATION' and 'Important Dates' below for more details). Finally, the TA for this course, Matthew Lowe, will give a number of tutorials instructing students on how to design (i.e., program), run, and analyze data from cognitive psychology experiments using the software package E-Prime (from 12 – 1 pm in SW 316 after lecture, days of tutorials to be determined).

As a student in this course, you can expect to develop and improve upon the following types of skills, all of which are important for future academic or work-related endeavors: critical reasoning, problem solving, public speaking, and effective scholarly writing. Moreover, you will have developed knowledge of core topics in cognition and perception, and will be able to relate this knowledge to the broader question of how information is represented in the human brain. Finally, you will have gained valuable hands-on experience in multiple aspects of scientific research, which is relevant not only to future academic course work, but also to securing volunteer positions in a number of labs at UTSC and ultimately to applications for graduate school.

Class Schedule and Readings:

Date	Topic	Reading
September 8	Introduction to the course and Basics of Experimental Design for Cognitive Psychology	E-Prime User's Guide Appendix B (posted on blackboard)
September 15	Basics of Data Analysis for Cognitive Psychology	
September 22	The Stroop Effect	http://goo.gl/U8HOLO
September 29	The Global Precedence Effect	http://goo.gl/QjN4Vj
October 6	Priming (APA Introduction due)	http://goo.gl/2IoSdX
October 13	READING WEEK, NO CLASS	
October 20	NO CLASS	
October 27	Begin Spatial Cueing of Attention Tips for Data Analysis and Writing Your Methods/Results Section	http://goo.gl/yMN00K
November 3	Finish Spatial Cueing of Attention	
November 10	Visual Search Tips for Making your Poster and Writing your Discussion Section (APA Method and Results sections due for Stroop, Global Precedence, and Priming)	http://goo.gl/rZ70b6 http://goo.gl/fNOYhG
November 17	The Attentional Blink Change Blindness	http://goo.gl/twrBhm http://goo.gl/kTUats
November 24	Poster Presentations (Stroop and Global Precedence Effect) (Method and Results sections due for Spatial Cueing of Attention)	
December 1	Poster Presentations (Priming and Spatial Cueing of Attention) (APA Discussion section due)	
To be determined	Final Exam	

References for Readings:

The Stroop Effect: Stroop, J.R. (1935). Studies of interference in serial verbal reactions. *Journal of Experimental Psychology, 28,* 643-662.

The Global Precedence Effect: Navon, D. (1977). Forest before trees: The precedence of global features in visual perception. *Cognitive Psychology, 9,* 353-383.

Priming: Meyer, D.E., & Schvaneveldt, R.W. (1971). Facilitation in recognizing pairs of words: Evidence of a dependence between retrieval operations. *Journal of Experimental Psychology, 90,* 227-234.

Spatial Cueing of Attention: Posner, M.I., Snyder, C.R.R., Davidson, B.J. (1980) Attention and the detection of signals. *Journal of Experimental Psychology: General, 109,* 160-174.

Visual Search: (1) Neisser, U. (1964). Visual search. *Scientific American 210*(6), 94-102. (2) Tresiman, A.M., & Gelade, G. (1980). A feature-integration theory of attention. *Cognitive Psychology, 12,* 97-136.

The Attentional Blink: Raymond, J.E., Shapiro, K.L., & Arnell, K.M. (1992). Temporary suppression of visual processing in an RSVP task: An attentional blink? *Journal of Experimental Psychology: Human Perception and Performance, 18,* 849-860.

Change Blindness: Rensink, R.A., O'Regan, J.K., & Clark, J.J. (1997). To see or not to see: the need for attention to perceive changes in scenes. *Psychological Science, 8*, 368-373.

6.0 EVALUATION

Participation in Laboratory Experiments (10%)
Assignment 1: APA Introduction (10%)
Assignment 2: APA Method and Results Sections (20%)
Assignment 3: APA Discussion Section (15%)
Assignment 4: Poster Presentation (15%)
Final Exam (30%)

Participation in Laboratory Experiments (10%)
An integral component of this laboratory course is the opportunity to take part in four different cognitive psychology experiments, conducted in class. These experiments will investigate: The Stroop Effect (September 22), The Global Precedence Effect (September 29), Priming (October 6), and the Spatial Cueing of Attention (October 27). The data generated during these experiments will be used by students to create both a research poster (presented on November 24 or December 1; see 'Schedule' and 'Important Dates' for more details) and a formal APA research paper (with the Introduction, Method and Results, and Discussion sections due October 6, November 10 or 24, and December 1, respectively). Thus, it is extremely important that students attend these four classes, as the quality of their own and their classmates' poster and research paper critically depends upon having an adequate sample size to conduct statistical analyses. I will be taking attendance during these four classes, and each class missed carries a penalty of 2.5% of the students' final grade. No penalty will be applied if the student provides valid documentation for their absence (e.g., documented family emergency, or UTSC medical certificate). If the student does not wish to participate in the in-class experiments, they will be required to hand in four separate research papers (each 1000 words in length), the topic of which will be selected by the instructor in a one-on-one meeting with the student. The due dates of these four papers will be the date of each in-class experiment.

APA Introduction (10%)
On the first day of class, each student will select a topic for their research paper, choosing from the four topics covered during the in-class experiments (i.e., Stoop, Global Precedence

Effect, Priming, or Spatial Cueing of Attention). If a student misses the first day of class, then the instructor will select a topic for them. The first component of the formal APA research paper will be the Introduction, which will be due on October 6. In general, the Introduction should be structured so as to first introduce the research topic, then provide an in-depth review of the literature pertaining to that topic, and finish by introducing the current study (i.e., brief description of the design of the study and relevant hypotheses).

APA Method and Results Sections (20%)
The second component of the formal APA research paper will be the Method and Results sections, which will be due on November 10 (for Stroop, Global Precedence, and Priming) or November 24 (for Spatial Cueing of Attention). The purpose of a Method section in a formal research paper is to provide the reader with enough information to understand the design of your study, and to replicate your findings, should they want to pursue that avenue. A detailed and well-written Method section can help a reader understand the results of a study, and typically includes separate sections describing the *Participants* who took part in the study, the *Apparatus and Equipment* used to conduct the study, and the *Design and Procedure* of the study (i.e., the sequence of events that a participant encounters while taking part in the study). The TA will help you to obtain information about the design and procedure of each in-class experiment by examining the E-Prime scripts used to run the experiments, during the tutorial sections.

The Results section clearly describes the main findings in your study, and summarizes all of the relevant statistical tests that you conducted. It should start with a brief description of how you analysed your data (e.g., the type of experimental design you used, the type of statistical tests used), and then proceed to describe the results of the statistical tests in a clear and organized manner (e.g., if describing results from more than 1 dependent variable, results from each dependent variable should be grouped and separated from each other). A critical component of Results sections are figures and tables summarizing findings. You will be expected to generate your own figures and tables, based on the analysis of your particular data set (i.e., results from either the Stroop, Global Precedence, Priming, or Spatial Cueing experiment), and reference these visual aids at appropriate points in the Results section. You will receive instruction on how to import your data from E-Prime into Excel, how to appropriately organize and pre-process your data in Excel, and how to conduct relevant statistical tests in SPSS.

APA Discussion Section (15%)
The third component of the formal APA research paper will be the Discussion section, which will be due on December 1. The purpose of the Discussion is to provide an interpretation of the data described in the Results section. It should start with a brief summary of the main findings of your experiment, and then provide detailed interpretations of these findings, in relation to previous research that both supports and contradicts your interpretations. Near the end of your Discussion you should also discuss limitations of your study, future directions that this research could be taken into, and conclude with a paragraph summarizing your main results and interpretations.

Formatting: All components should be prepared according to APA format (see http://www.apastyle.org/manual/), should be written in 12-point font, should be double-spaced with 1 inch margins, and should include both a title page and reference list. The page limits for each section are (which do not include a title page and reference list):

Introduction: no longer than six pages double spaced
Method and Results: no limit
Discussion: no longer than eight pages double spaced

While there is no upper limit for the amount of references used, you should use at least 10 references in the Introduction (that are different from the references discussed in class) and 10 references in the Discussion (different from both the references discussed in class and used in the Introduction).

Note: all papers are due in hard copy at the beginning of the specified class.

Poster Presentation (15%)
In addition to written research papers, scientists communicate their findings to the academic community through the use of oral presentations. In this laboratory course you will give one type of oral presentation, a poster presentation, which will take place either on November 24 (if your research topic is The Stroop Effect or The Global Precedence Effect) or December 1 (if your research topic is Priming or the Spatial Cueing of Attention). Examples of poster presentations (made in PowerPoint) will be given in class, but briefly, a research poster summarizes and presents all of the relevant information covered in a research paper. Thus, there is an Introduction, Method, Results, and Discussion section. Good practices for making posters will be covered in class, but in general, you should use a little text as possible, in favour of multiple visual aids. Students will be able to team up with one or two additional students to make and present their poster. A good strategy would be to form a group of 3, and allocate the work evenly. For example, one student could make and present the Introduction section of the poster, a second student could make and present the method and results, and the third student could make and present the discussion section. Each presentation should be no longer than 10 minutes in length, and will be followed by a five-minute question-and-answer period.

Note: a PDF version of the poster should be emailed to the instructor before class on the day of your group's presentation.

Final Exam (30%)
The final examination will cover material from all of the lectures, laboratory experiments, tutorials, and assigned readings. Since some of the material presented in class will not be covered in the readings (and vice versa), it is important to both attend class and to read the required readings.

Important Dates

October 6: APA Introduction due
November 10: APA Method and Results sections due (for Stroop, Global Precedence, and Priming)
November 24: First round of group poster presentations (The Stroop Effect and The Global Precedence Effect)
APA Method and Results sections due (for Spatial Cueing of Attention)
December 1: Second round of group poster presentations (Priming and Spatial Cueing of Attention)
APA Discussion section due
TBD: Final exam

Policy on late assignments: late assignments will lose 10% for each day past the deadline that they are not submitted. Extensions will only be granted with proper documentation (i.e., documented family emergency, or UTSC medical certificate). Please note, according to UTSC policy, I am not permitted to extend the deadline for any assignment past the last day of classes for the semester (December 1).

Policy on missed examinations: students are expected to write the final examination. If a student fails to write the final examination, they may petition the Registrar's office for permission to write a deferred exam, but note that the Registrar's office only grants these petitions under conditions of illness or extreme emergency at the time of the examination (see http://www.utsc.utoronto.ca/~registrar/current_students/deferred_exams for more details). Thus, you must ensure that you have proper documentation to support your petition (e.g., documented family emergency, or UTSC medical certificate). Students who fail to provide proper documentation for missing the final exam will receive a mark of 0% on that exam.

7.0 ADDITIONAL INFORMATION

Help With Writing
If you would like help with academic writing, the following resources are available to you:

- The Centre for Teaching and Learning (AC312) Writing Centre offers students one-to-one appointments and supplementary materials to help improve upon their writing skills.
http://ctl.utsc.utoronto.ca/home/
http://ctl.utsc.utoronto.ca/twc/

- The English Language Development Centre offers support and specialized writing programs for students who do not speak English as their primary language.

http://ctl.utsc.utoronto.ca/eld/

- Advice on academic writing

http://www.writing.utoronto.ca/advice

Academic Integrity
Academic integrity is taken very seriously at UTSC, as it is important to maintain our community which honours the values of honesty, trust, respect, fairness, and the responsibility to protect students within this community, and the value of the degree towards which they are all working towards.

Students are directed to read the appropriate policy, specifically, the University of Toronto's *Code of Behaviour on Academic Matters*, which can be found at the following website:

http://www.governingcouncil.utoronto.ca/policies/behaveac.htm

According to Section B of the *Code*, it is an offence for students:
• To use someone else's ideas or words in their own work without acknowledging that those ideas/words are not their own with a citation and quotation marks, i.e. to commit plagiarism.
• To include false, misleading or concocted citations in their work.
• To obtain unauthorized assistance on any assignment.
• To provide unauthorized assistance to another student. This includes showing another student completed work.
• To submit their own work for credit in more than one course without the permission of the instructor
• To falsify or alter any documentation required by the University. This includes, but is not limited to, doctor's notes.
• To use or possess an unauthorized aid in any test or exam.

There are other offences covered under the *Code*, but these are by far the most common. Please respect these rules and the values which they protect.

Written assignments may be subject to submission for textual similarity review using the commercial plagiarism detection software under license to the University (http://www.turnitin.com). All papers submitted for such checking will be included as source documents in the reference database for the purpose of detecting plagiarism of papers subsequently submitted to the system.

Access*Ability* Services
If you are a student with a disability (e.g. physical, learning), you are encouraged to contact Access*Ability* Services (S302, 416-287-7560) to arrange accommodation for the course. After you have provided the appropriate documentation, staff in Access*Ability* Services assess your needs and determine appropriate and reasonable accommodations, and I liaise with them where appropriate. All information that Access*Ability* Services collects from students about their disabilities is kept in strict confidence as prescribed by law.
http://www.utsc.utoronto.ca/ability

Literature Searches
Students can use the following resources when conducting literature searches to find relevant articles for their presentation and final essay:

The UTSC Library (AC235)
http://www.library.utoronto.ca/utsc/

PubMed
http://www.ncbi.nlm.nih.gov/pubmed

PsychINFO
http://www.apa.org/pubs/databases/psycinfo/index.aspx

Google Scholar
http://scholar.google.ca/

For Your Health
The Health and Wellness Centre (SL270, 416-287-7065) provides diagnostic, treatment and referral services for all illnesses ranging from the medical to psychological to health promotion. The professional staff of physicians, nurses and counselors provides personal advice and assistance with family issues, eating disorders, depression, stress, drug and alcohol abuse, relationship issues, a positive space for gender/sexuality issues, and more.

http://www.utsc.utoronto.ca/wellness