



# UNIVERSITY OF TORONTO

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## SCARBOROUGH

THE UNIVERSITY OF TORONTO SCARBOROUGH  
Department of Psychology

### **PSYC58: Cognitive Psychology Laboratory, Fall 2018**

#### **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 or PSYB04H3] and [PSYB07H3 or STAB22H3 or STAB23H3] and [PSYB51H3 or PSYB57H3]

**Exclusion:** PSY379H

**Recommended Preparation:** PSYC08H3

**Class Meeting Time:** Lectures take place on Wednesdays between 9 am and 12 pm, in Room SW316 (there will be a few additional one-hour tutorials held after lecture, in the same classroom, from 11 am – 12 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')

#### **3.0 INSTRUCTOR AND TEACHING ASSISTANT CONTACT INFORMATION**

Instructor: Lorna Garcia-Penton (email: [lorna.garciapenton@utoronto.ca](mailto:lorna.garciapenton@utoronto.ca))

Office hours: Friday between 1-3 pm (SW410M) or by appointment scheduled via email.

Teaching assistant (TA): Marco Sama ([marco.sama@mail.utoronto.ca](mailto:marco.sama@mail.utoronto.ca))

Office hours: Monday between 1-3 pm (SW 411A) or by appointment scheduled via email.

#### **4.0 ONLINE COURSE RESOURCES**

Quercus: <https://q.utoronto.ca/courses/61061/>

Quercus 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 quercus.

## **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 & 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, Marco Sama, 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 11 – 12 pm in SW 316 after lecture, see days in the schedule).

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:**

<b>Date</b>	<b>Topic</b>	<b>Reading</b>
September 5	Introduction to the course and Basics of Experimental Design for Cognitive Psychology	E-Prime User’s Guide Appendix B (posted on Quercus)
September 12	Basics of Data Analysis for Cognitive Psychology	
September 19	The Stroop Effect <b>Tutorial:</b> Logic of hypothesis testing	<a href="http://goo.gl/U8HOLO">http://goo.gl/U8HOLO</a>

September 26	The Global Precedence Effect <b>Tutorial:</b> Organizing data for analysis	<a href="http://goo.gl/QjN4Vj">http://goo.gl/QjN4Vj</a>
October 3	Priming (APA Introduction due) <b>Tutorial:</b> Analyzing data in SPSS	<a href="http://goo.gl/2IoSdX">http://goo.gl/2IoSdX</a>
October 10	READING WEEK, NO CLASS (Data for Stroop, Global Precedence, & Priming released)	
October 17	Spatial Cueing of Attention	<a href="http://goo.gl/yMN00K">http://goo.gl/yMN00K</a>
October 24	Tips for Data Analysis and Writing Your Methods/Results Section (Data for Spatial Cueing of Attention released)	
October 31	Visual Search	<a href="http://goo.gl/rZ70b6">http://goo.gl/rZ70b6</a> <a href="http://goo.gl/fNOYhG">http://goo.gl/fNOYhG</a>
November 7	The Attentional Blink  Tips for Making your Poster and Writing your Discussion Section (APA Method and Results sections due for Stroop, Global Precedence, and Priming)	<a href="http://goo.gl/twrBhm">http://goo.gl/twrBhm</a>
November 14	Change Blindness	<a href="http://goo.gl/kTUats">http://goo.gl/kTUats</a>
November 21	Poster Presentations (Stroop and Global Precedence Effect) (Method and Results sections due for Spatial Cueing of Attention)	
November 28	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) Treisman, 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 (10%)

Assignment 3: APA Discussion Section (20%)

Assignment 4: Poster Presentation (20%)

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 19), **The Global Precedence Effect** (September 26), **Priming Effect** (October 3), and the **Spatial Cueing of Attention** (October 17). The data generated during these experiments will be used by students to create both a *research poster* (presented on November 21 or November 28; 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 3, November 7 or 21, and November 28, 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 3. 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 (10%)**

The second component of the formal APA research paper will be the *Method and Results* sections, which will be due on November 7 (for *Stoop*, *Global Precedence*, and *Priming*) or November 21 (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 *Stoop*, *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 (20%)**

The third component of the formal APA research paper will be the *Discussion* section, which will be due on November 28. 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/> and <https://owl.english.purdue.edu/owl/resource/560/01/>), 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 (20%)**

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 21 (if your research topic is *The Stroop Effect* or *The Global Precedence Effect*) or November 28 (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 3:** APA Introduction due
- November 7:** APA Method and Results sections due (for Stroop, Global Precedence, and Priming)
- November 21:** 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)
- November 28:** 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 4).

**Missed Term Work due to Medical Illness or Other Emergency:** All students citing a documented reason for missed term work must bring their documentation to the Psychology Course Coordinator in SW427C **within three (3) business days** of the assignment due date. You must bring the following:

- (1.) A completed Request for Missed Term Work form (<http://uoft.me/PSY-MTW>), and
- (2.) Appropriate documentation to verify your illness or emergency, as described below.

**Appropriate Documentation:**

For missed **TERM TESTS** due to ILLNESS:

- Submit an **original** copy of the official UTSC Verification of Illness Form (<http://uoft.me/UTSC-Verification-Of-Illness-Form>) or an **original** copy of the record of visitation to a hospital emergency room. Forms are to be completed in full, clearly indicating the start date, anticipated end date, and severity of illness. The physician's registration number and business stamp are required.

For missed **ASSIGNMENTS** due to ILLNESS:

- Submit **both** (1.) a **hardcopy** of the Self-Declaration of Student Illness Form (<http://uoft.me/PSY-self-declare-form>), and (2.) the **web-based** departmental declaration form (<http://uoft.me/PSY-self-declare-web>).

For missed term tests or assignments in OTHER CIRCUMSTANCES:

- In the case of a **death of a family member**, a copy of a death certificate should be provided.
- In the case of a **disability-related concern**, an email from your Disability Consultant at AccessAbility Services should be sent directly to both the Course Coordinator ([psychology-undergraduate@utsc.utoronto.ca](mailto:psychology-undergraduate@utsc.utoronto.ca)) and your instructor, detailing the accommodations required.
- For U of T Varsity **athletic commitments**, an email from your coach or varsity administrator should be sent directly to the Course Coordinator ([psychology-undergraduate@utsc.utoronto.ca](mailto:psychology-undergraduate@utsc.utoronto.ca)), detailing the dates and nature of the commitment. The email should be sent **well in advance** of the missed work.

Documents covering the following situations are **NOT acceptable**: medical prescriptions, personal travel, weddings, or personal/work commitments.

**Procedure:**

Submit your (1.) [request form](#) and (2.) [medical/self-declaration](#)/other documents in person **WITHIN 3 BUSINESS DAYS** of the missed term test or assignment.

**Submit to:** Course Coordinator, Room SW427C, Monday – Friday, 9 AM – 4 PM

If you are unable to meet this deadline for some reason, you must contact the Course Coordinator via email ([psychology-undergraduate@utsc.utoronto.ca](mailto:psychology-undergraduate@utsc.utoronto.ca)) within the three business day window. Exceptions to the documentation deadline will only be made under exceptional circumstances.

Within approximately one week, you will receive an email response from the Course Instructor / Course Coordinator detailing the accommodations to be made (if any). You are responsible for checking your official U of T email and Quercus course announcements daily, as accommodations may be time-critical.

Completion of this form does NOT guarantee that accommodations will be made. The course instructor reserves the right to decide what accommodations (if any) will be made. **Failure to adhere to any aspect of this policy may result in a denial of your request for accommodation.**

Note that this policy applies only to missed assignments and term tests. Missed final exams are handled by the Registrar's Office (<http://www.utsc.utoronto.ca/registrar/missing-examination>).

**Policy on missed final 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/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 essential to the pursuit of learning and scholarship in a university, and to ensuring that a degree from the University of Toronto is a strong signal of each student's individual academic achievement. As a result, the University treats cases of cheating and plagiarism very seriously. The University of Toronto's Code of Behaviour on Academic Matters ([http://www.governingcouncil.utoronto.ca/Assets/Governing+Council+Digital+Assets/Policies/PDF/ppj\\_un011995.pdf](http://www.governingcouncil.utoronto.ca/Assets/Governing+Council+Digital+Assets/Policies/PDF/ppj_un011995.pdf)) outlines the behaviours that constitute academic dishonesty and the processes for addressing academic offences. Potential offences include, but are not limited to:

In papers and assignments:

- Using someone else's ideas or words without appropriate acknowledgement;
- Submitting your own work in more than one course without the permission of the instructor;
- Making up sources or facts;
- Obtaining or providing unauthorized assistance on any assignment.



On tests and exams:

- Using or possessing unauthorized aids;
- Looking at someone else's answers during an exam or test;
- Misrepresenting your identity; and
- When you knew or ought to have known you were doing it.

In academic work:

- Falsifying institutional documents or grades;
- Falsifying or altering any documentation required by the University, including (but not limited to) doctor's notes; and
- When you knew or ought to have known you were doing so.

All suspected cases of academic dishonesty will be investigated following procedures outlined in the Code of Behaviour on Academic Matters. If students have questions or concerns about what constitutes appropriate academic behaviour or appropriate research and citation methods, they are expected to seek out additional information on academic integrity from their instructors or from other institutional resources.

Note:

You may see advertisements for services offering grammar help, essay editing and proof-reading. Be very careful. If these services take a draft of your work and significantly change the content and/or language, you may be committing an academic offence (unauthorized assistance) under the *Code of Behaviour on Academic Matters*.

It is much better and safer to take your draft to the Writing Centre as early as you can. They will give you guidance you can trust. Students for whom English is not their first language should go to the English Language Development Centre.

If you decide to use these services in spite of this caution, you must keep a draft of your work and any notes you made before you got help and be prepared to give it to your instructor on request.

### **Turnitin**

Written assignments may be subject to submission for textual *similarity review* and detection of possible *plagiarism* using the *commercial plagiarism detection software* under license to the University (<http://www.turnitin.com>). If used, students will allow their essays to be included as source documents in the Turnitin.com reference database, where they will be used solely for the purpose of detecting plagiarism. The terms that apply to the University's use of the Turnitin.com service are described on the Turnitin.com web site.

### **AccessAbility Services**

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 as soon as possible.

AccessAbility Services staff (located in Rm **SW302**, Science Wing) are available by appointment to assess specific needs, provide referrals and arrange appropriate accommodations [416-287-7560](tel:416-287-7560) or email [ability@utsc.utoronto.ca](mailto: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.

### **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](tel: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>