THE UNIVERSITY OF TORONTO SCARBOROUGH
Department of Psychology

PSYD51: Current Topics in Perception, Winter 2018

1.0 CALENDAR DESCRIPTION

The course provides an intensive examination of selected topics in recent research on perception. Topics may include research in vision, action, touch, hearing and multisensory integration. Selected readings will cover psychological and neuropsychological findings, neurophysiological results, synaesthesia and an introduction to the Bayesian mechanisms of multisensory integration.

2.0 COURSE INFORMATION

Prerequisite: PSYB51H3 and [[0.5 credit from the PSYC50-series of courses] or NROC64H3]
Exclusion: PSYD54H3
Class meeting time: Wednesdays between 1 pm and 3 pm, Room SW 316

3.0 INSTRUCTOR CONTACT INFORMATION

Instructor: Prof. Jonathan Cant [email: jonathan.cant@utoronto.ca (please put PSYD51 in the subject line of any emails); office hours: Thursdays between 1 – 3 pm (SW 411)]

4.0 ONLINE COURSE RESOURCES

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

Blackboard and Peer Scholar will be used as the main online resources for this course. All important course-related information (e.g. announcements, syllabus, class schedule, assignment information, message boards, grades) will be available via Black Board. Peer Scholar will be used as an online peer assessment tool, and part of your final grade will come from writing assignments done via this website (see below for more detailed information). You will be able to access Peer Scholar directly from Blackboard.

5.0 DETAILED COURSE DESCRIPTION

The purpose of this seminar course is to introduce you to a select number of research areas that are currently receiving a great deal of attention in the visual cognitive neuroscience/psychology community. We will be focusing on research conducted using functional magnetic resonance imaging (fMRI), a modern brain-imaging technique used to study the structure and function of the brain (although, time permitting, we may cover research using neuropsychological and behavioural techniques as well). Specifically, we will be covering the following topics: a) visual object perception/recognition, b) visual face perception/recognition, c) visual body perception/recognition, and d) visual scene perception/recognition. The knowledge gained in these four research areas will be used as a springboard to review research in a final topic, that of visual cortical organization. Specifically, we will examine research focusing on whether the visual system is organized in a category-specific (i.e. one brain area is specialized for one type of visual processing) or distributed manner (i.e. multiple brain areas take part in multiple types of visual processing).

Class discussions and presentations of research in these areas will focus mainly on the following topics:

a) What is the research hypothesis of each experiment?
b) What is the experimental design(s) and data analysis technique(s) used in each experiment? What are some strengths and weaknesses of these designs and techniques?
c) Are the claims made in each experiment justified by the data used to support them?
d) What are some of the main theories dominating each research area?
e) What are some strengths and weaknesses of each theory?
f) What are some future directions for each research area?

It should be noted that cognitive neuroscience/psychology is a continually evolving discipline, and as such no one theory can adequately explain all phenomena within a given sub-discipline (e.g. object perception/recognition). Thus, students will be expected to think critically about the research in each topic area, and, based on the available evidence, to form their own opinion about how the brain represents various types of visual stimuli (i.e. objects, faces, bodies, and scenes).

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, public debate, constructive peer evaluation, and effective scholarly writing. Moreover, you will have developed knowledge in current topics of interest in visual cognition, perception, and memory, 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 expanded upon your core knowledge of basic principles in experimental design and data analysis, and will have learned how to critique and interpret brain-imaging studies that use fMRI.

Class Schedule:

January 10: Introduction to the course; Introduction to brain anatomy and fMRI
January 17: Introduction to object perception/recognition; class discussion
January 24: Presentations and continued class discussion on object processing
January 31: Introduction to face perception/recognition; class discussion
February 7: Presentations and continued class discussion on face processing
February 14: Introduction to body perception/recognition; class discussion
February 21: READING WEEK, NO CLASS
February 28: Presentations and continued class discussion on body processing
March 7: Introduction to scene perception/recognition; class discussion
March 14: Presentations and continued class discussion on scene processing
March 21: Introduction to visual cortical organization; class discussion
March 28: Presentations and continued class discussion on visual cortical organization
April 4: Finish presentations, and course recap

Required Readings

January 17: Object Processing

a) Malach, R., Reppas, J.B., Benson, R.R., Kwong, K.K., Jiang, H., Kennedy, W.A., Ledden, P.J., Brady, T.J., Rosen, B.R., & Tootell, R.B.H. (1995). Object-related activity revealed by functional magnetic resonance imaging in human occipital cortex. *Proceedings of the National Academy of Sciences, USA, 92*: 8135 – 8139.

http://www.pnas.org/content/92/18/8135.full.pdf+html

b) Grill-Spector, K., Kushnir, T., Edelman, S., Avidan, G., Itzchak, Y., & Malach, R. (1999). Differential processing of objects under various viewing conditions in the human lateral occipital complex. *Neuron, 24*, 187 – 203.

http://vpnl.stanford.edu/papers/grillspectorNeuron99.pdf

January 31: Face Processing

a) Kanwisher, N., McDermott, J., & Chun, M.M. (1997). The fusiform face area: a module in human extrastriate cortex specialized for face perception. *The Journal of Neuroscience, 17*, 4302 – 4311.

http://web.mit.edu/bcs/nklab/media/pdfs/KanwisherMcDermottChunJNeuro97.pdf

b) Gauthier, I., Skudlarski, P., Gore, J.C., & Anderson, A.W. (2000). Expertise for cars and birds recruits brain areas involved in face recognition. *Nature Neuroscience, 3*, 191 – 197.

http://gauthier.psy.vanderbilt.edu/wordpress/wp-content/uploads/2012/03/Gauthieretal2000NN.pdf

c) Yovel, G., & Kanwisher, N. (2004). Face perception: domain specific, not process specific. *Neuron, 44*, 889 – 898.

http://web.mit.edu/bcs/nklab/media/pdfs/YovelKanwisher04.pdf

February 14: Body Processing

a) Downing, P.E., Jiang, Y., Shuman, M., & Kanwisher, N. (2001). A cortical area selective for visual processing of the human body. *Science, 293*, 2470 – 2473.

http://pages.bangor.ac.uk/~pss811/page6/assets/Science_01.pdf

b) Peelen, M.V., & Downing, P.E. (2004). Selectivity for the human body in the fusiform gyrus. *The Journal of Neurophysiology, 93*, 603 – 608.

http://pages.bangor.ac.uk/~pss811/page6/assets/P_D_JNEurophys.pdf

c) Taylor, J.C., Wiggett, A.J., & Downing, P.E. (2007). Functional MRI analysis of body and body part representations in the extrastriate and fusiform body areas. *The Journal of Neurophysiology, 98*, 1626 – 1633.

http://jn.physiology.org/content/98/3/1626.full.pdf+html

March 7: Scene Processing

a) Epstein, R., & Kanwisher, N. (1998). A cortical representation of the local visual environment. *Nature, 392*, 598 – 601.

http://web.mit.edu/bcs/nklab/media/pdfs/EpsteinKanwisher98.pdf

b) Epstein, R., Graham, K.S., & Downing, P.E. (2003). Viewpoint-specific representations in human parahippocampal cortex. *Neuron, 37*, 865 – 876.

http://www.psych.upenn.edu/epsteinlab/pdfs/Epstein_et_al._2003_Viewpoint-specific_scene_representations_in_human_.pdf

c) Epstein, R.A., Parker, W.E., & Feller, A.M. (2007). Where am I now? Distinct roles for the parahippocampal and retrosplenial cortices in place recognition. *The Journal of Neuroscience, 27*, 6141 – 6149.

http://www.psych.upenn.edu/epsteinlab/pdfs/Epstein_et_al._2007_Where_am_I_now_Distinct_roles_for_parahippocampal.pdf

March 21: Visual Cortical Organization

a) Haxby, J.V., Gobbini, M.I., Furey, M.L., Ishai, A., Schouten, J.L., & Pietrini, P. (2001). Distributed and overlapping representations of faces and objects in ventral temporal cortex. *Science, 293*, 2425 – 2430.

http://haxbylab.dartmouth.edu/publications/HGF+01.pdf

b) Op de Beeck, H.P., Haushofer, J., & Kanwisher, N.G. (2008). Interpreting fMRI data: maps, modules, and dimensions. *Nature Reviews Neuroscience, 9*, 123 – 135.

http://web.mit.edu/bcs/nklab/media/pdfs/OpdeBeeck_etal_NatRevNS2008.pdf

6.0 EVALUATION

Summary of required readings: 20%
Class Participation: 10%
Class presentation: 20%
Peer assessment: 10%
Final Essay: 40%

Summary of Required Readings (20%)
During the weeks where I will be introducing a research topic (i.e. object processing, face processing, body processing, scene processing, and visual cortical organization), you are expected to come to class having read the required readings for that particular topic. You will be required to submit a two-page summary (two pages total, not two pages for each article) of the required readings for that week, which will be due in paper form at the beginning of class. This two-page summary should include a brief description of the study (i.e. motivation, general findings, general conclusion), followed by a more detailed analysis of the study guided by the six questions listed in the "DETAILED COURSE DESCRIPTION" section above (i.e. points a – f). You should bring an additional copy of your summary to class to use when taking part in the in-class discussions for each research topic.

Class Participation (10%)
You are required to take part in the in-class discussions for each research topic. This makes up 10% of your final mark, and does not represent free marks simply for attending class. Attendance will be taken at each class, and you are expected to contribute to the discussion of each research topic, either in the form of contributing new ideas/questions to the discussion, answering questions submitted by other students, or both. Credit will be awarded if you actively contribute to the online message boards (via Blackboard). Failure to engage in class discussions will result in you losing a percentage of your final grade.

Class Presentation (20%)
You will be required to give one presentation in class (using presentation software like PowerPoint or Keynote), based on an original research article from one of the five research topics covered in the course. On the first day of class I will solicit volunteers for presentations for each of the five research topics. If we cannot fill all of the available slots, I will randomly assign students to present on a particular research topic. This presentation is worth 20% of your final grade, and should be no longer than 10-12 minutes in length. Once you have selected your research topic, you will need to conduct a literature search to find an original research article (i.e. not one of the articles we discussed in class) to present to the class. Your presentation should be similar in structure to the summary of required readings, but there certainly is flexibility in how you choose to present your article to the class (as long as you cover the most important points in the article). You are required to obtain the instructor's approval for your selected article. This can be done by emailing the instructor with a link to your article, or by emailing the article as a .PDF attachment. Importantly, one week before your presentation (i.e. the Wednesday before your presentation), you are required to submit, via Peer Scholar, a rough draft of your PowerPoint slides (these do not have to be overly polished, but must contain enough information to give someone a sense of what you are going to be presenting), with point form notes in the 'notes' section underneath each slide, outlining what you are going to be talking about on each slide. These rough-draft materials will be used for the peer assessment component of the course (see below for more detail), and will make up a small percentage of your presentation mark (5% of the total 20%). Note that since you need to submit these materials to Peer Scholar one week before your actual presentation date, you should be seeking approval for your article well in advance of the rough draft deadline. For example, if you are presenting on Wednesday January 24, your rough-draft materials are due on Wednesday January 17, and you should be seeking approval of your article around January 12 or 13.

Peer Assessment (10%)
In this course you will be required to evaluate other students' presentations (but you will not be giving them a grade). This makes up 10% of your final grade, and includes evaluations of both the rough-draft materials the presenters submit online, as well as a brief evaluation of the presentation itself after the student has presented. The entire peer assessment component of this course will take place via Peer Scholar. The goal of the assessment of the rough-draft materials is to give the presenter constructive feedback with which to improve upon their presentation, before they have actually presented (e.g. constructive feedback on the clarity of their slides, the design and content of their slides, etc.). The presenter can then use this feedback to give a more polished presentation in class the next week. Your feedback to the presenter must be submitted to Peer Scholar no later than 6 pm the Friday after they submitted their rough-draft materials online (to ensure that they have enough time to go over the feedback and incorporate any valuable suggestions into their presentation for the following Wednesday). After the student has presented, you are required to provide a brief assessment of the presentation, again via Peer Scholar. This assessment will be due by no later than 6 pm the Friday after the student gave their presentation in class.

Please keep these evaluations limited to one short paragraph in length, and be sure to include both positive comments about what was good about the presentation, and constructive feedback on what could be improved for future presentations. The goal of this second peer assessment is to ensure that students have the opportunity to learn from their experience and subsequently improve upon their presentation skills for the future. Note that as a student in this course you will be evaluating other student presentations, and other students will be evaluating your presentation. Thus, please provide the type of feedback that you yourself would like to receive. Your peer assessment grade will be based on all of the assessments that you submit to Peer Scholar.

Note: You are not required to provide peer assessment to the students who are presenting on the same day as you (i.e. you are not required to evaluate the rough-draft materials or the in-class presentations of these students).

Final Essay (40%)

The final component of this course is a 2000 word essay, which will be due the final day of class (April 4). The theme of this essay will combine the first four research topics we covered in class (object, face, body, and scene processing), with that of the final research topic, visual cortical organization. Using any combination of the first four research topics, you will evaluate the evidence for either a category-specific or distributed visual cortical representation. You are expected to pick one of the two types of cortical organization, and, using a well-formed thesis statement, argue why the evidence is more compelling for this type of cortical organization over the other type. You can use the articles we discussed in class as references, but you are expected to include as many new as old articles in the reference list of your essay. In fact, in addition to exploring the fMRI literature, you are encouraged to use references that fall outside the field of neuroimaging when developing your argument (e.g. neuropsychological experiments, behavioural experiments, transcranial magnetic stimulation, or TMS, experiments). Students should bring a paper copy of their essay to class on April 4, and should also submit an electronic copy of their essay to the instructor (send to jonathan.cant@utoronto.ca).

Due Dates

January 17: - Summary of required reading for object perception/recognition
- Rough-draft materials for students presenting on January 24

January 19: - Peer assessments of rough-draft materials (students presenting exempt)

January 24: - Object perception/recognition presentations

January 26: - Peer assessments of presentations (students who presented exempt)

January 31: - Summary of required reading for face perception/recognition
- Rough-draft materials for students presenting on February 7

February 2: - Peer assessments of rough-draft materials (students presenting exempt)

February 7: - Face perception/recognition presentations

February 9: - Peer assessments of presentations (students who presented exempt)

February 14: - Summary of required reading for body perception/recognition
- Rough-draft materials for students presenting on February 28

February 16: - Peer assessments of rough-draft materials (students presenting exempt)

February 28: - Body perception/recognition presentations

March 2: - Peer assessments of presentations (students who presented exempt)

March 7: - Summary of required reading for scene perception/recognition
- Rough-draft materials for students presenting on March 14

March 9: - Peer assessments of rough-draft materials (students presenting exempt)

March 14: - Scene perception/recognition presentations

March 16: - Peer assessments of presentations (students who presented exempt)

March 21: - Summary of required reading for visual cortical organization
- Rough-draft materials for students presenting on March 28

March 23: - Peer assessments of rough-draft materials (students presenting exempt)

March 28: - Visual cortical organization presentations

March 30: - Peer assessments of presentations (students who presented exempt)

April 4: - Final essays due

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 (April 6).

Policy on missed term work due to medical illness or 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:
In the case of missed term work due to **illness**, only an **original copy** of the official UTSC Verification of Illness Form will be accepted (http://uoft.me/UTSC-Verification-Of-Illness-Form). 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.

In the case of **medical emergency**, an original copy of the record of visitation to a hospital emergency room should be provided.

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 communication should be sent directly to the Course Coordinator (psychology-undergraduate@utsc.utoronto.ca) from your Disability Consultant at AccessAbility Services, detailing the accommodations required. The Course Instructor should also be copied on this email.

For U of T **Varsity athletic commitments**, an email communication should be sent directly to the Course Coordinator (psychology-undergraduate@utsc.utoronto.ca) from a coach or varsity administrator, 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, anything related to personal travel, weddings/personal/work commitments.

Procedure:

Submit your (1.) request form and (2.) medical/other documents in person **within 3 business days** of the missed test or assignment. Forms should be submitted to **SW427C between 9 AM - 4 PM**, Monday through Friday. If you are unable to meet this deadline for some reason, you must contact the Course Coordinator via email (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 Blackboard course announcements daily, as accommodations may be time-critical. The Course Instructor reserves the right to decide what accommodations (if any) will be made for the missed work.

Failure to adhere to any aspect of this policy may result in a denial of your request for accommodation.

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/ppjun011995.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.

Access*Ability* 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 or email 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) 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