Department of Psychology
Graduate Courses
2017-2018
revised November 14, 2017

FALL TERM (Sept. 11 - Dec. 1, 2017)

Course	Title	Instructor	Day	Time	Location
PSY1000HF	Directed Studies (MA)				
PSY2001HF	Design of Experiments I: *General Linear Model*	Cunningham, W.	Tue	10-1	SS560A
PSY2002HF	Design of Experiments II: *Advanced Statistical Methods for Interpersonal Perception Research*	Carlson	Tue	11-2	SS560
PSY5110HF	Advanced Topics in Behavioural Neuroscience I: *Rhythms of the Brain in Cognition and Pathologies*	Takehara	Thur	1:30-3:30	SS560A
PSY5112HF	Advanced Topics in Behavioural Neuroscience III: *Behavioural Epigenetics*	Zovkic	Thur	11-1	SS4004/5
PSY5201HF	Audition: *Cognitive Hearing Science of Communication and Aging*	Pichora-Fuller	Mon	3-5	SS4004/5
PSY5203HF	Higher Cognition: *Cognitive Neuroscience*	Moscovitch	Wed	9:30-12	SS560A
PSY5205HF	Memory: *The Cognitive Neuroscience of Memory*	Barense	Tue	2-4	SS560A
PSY5220HF	Advanced Topics in Cognition I: *Cognitive Control as a Double-Edged Sword*	Hasher	Wed	1:30 - 3:30	SS560A
PSY5304HF	Language Development	Johnson	Tue	4-6	SS560A
PSY5310HF	Advanced Topics in Development I: *Social-Emotional Development*	Malti	Mon	4-6	UTM DH4005

SPRING TERM (Jan. 8 - Apr. 5, 2018)

Course	Title	Instructor	Day	Time	Location
PSY3001HS	Professional Psychology: *Research Ethics and Survival Skills*	Erb	Thur	2-4	SS560A
PSY5111HS	Advanced Topics in Behavioural Neuroscience II: *Opto- and Chemogenetic Neuron Manipulation - Applications for Understanding Animal Behaviours*	Kim	Mon	2-4	SS560A
PSY5210HS	Advanced Topics in Perception I: *Multisensory Integration*	Campos	Wed	2-4	SS560A
PSY5212HS	Advanced Topics in Perception III: *Functional MRI of the Human Visual System*	Bernhardt-Walther	Wed	10-12	SS560
PSY5303HS	Cognitive Development: *Probabilistic Models of Cognition*	Buchsbaum, D.	Thur	10:30 - 12:30	SS560A
PSY5311HS	Advanced Topics in Development II: *Perceptual/Cognitive and Motor Development*	Schmuckler	Mon	7-9	SS560A
PSY5402HS	Personality: *Fundamentals in Personality Psychology*	Fournier	Tue	12-2	SS560A
PSY5403HS	Social Cognition: *Decision Making - Computational and Neural Approaches*	Hutcherson	Tue	10-12	SS560A

Reading week: February 19-23

DEPARTMENT OF PSYCHOLOGY
GRADUATE COURSES
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(Revised June 15, 2020)

FALL TERM (September 11 - December 1, 2017)

PSY1000HF   Directed Studies   **Instructors: Faculty**

Under the direction of a two-person committee, students in the M.A. year will (a) complete a programme of prescribed reading in their general area of specialization (b) prepare a major paper, which will include a proposal for M.A. thesis research (c) defend the paper to the satisfaction of the two-person committee.

PSY1200HF   Replicability and Good Research Practices   **Instructor: Schimmack**

This course will examine the replication crisis in psychology. First, the crisis is examined from a historic perspective. Second, statistical tests of questionable research practices and replicability are introduced. Basic understanding of statistics, including statistical power, is expected. Third, solutions to the problems such as a priori power planning, preregistration and data sharing are discussed.

PSY2001HF   General Linear Model   **Instructor: Cunningham**

This course is designed to introduce the student to the General Linear Model and two of its most common expression: Analysis of Variance and Multiple Regression. Additionally, student we be asked to familiarize themselves with some of the current theoretical issues in realm of data analysis itself, e.g., the value of testing the null hypothesis.

PSY2002HF   Advanced Statistical Methods for Interpersonal Perception Research   **Instructor: Carlson**

This course is designed to introduce you to advanced statistical tools used in personality and interpersonal perception research. You will learn how to use multilevel modeling (MLM) to index the accuracy and bias of perceptions in a variety of social contexts including dyads (e.g., romantic partners), groups (e.g., friends), and one-with-many designs (e.g., a supervisor and subordinates). This discussion will include how to use the Actor Partner Independence Model (APIM) to index perceptions among dyads and the Social Relations Model (SRM) to index perceptions in groups. You will also learn how to use response surface analysis (RSA) to index if and how accuracy and bias matter. Finally, we will use structural equation modeling (SEM) to explore issues related to measurement of perceptions. For example, you will learn how to use multi-method assessment (e.g., self- and peer-reports) to improve the validity of individual difference measures. The course will involve weekly readings, lab assignments in R, and a final project implementing the tools learned in class. While the course will focus on interpersonal perception, we will also discuss how these statistical tools can be applied to other areas of psychology.

PSY5110HF   Rhythms of the Brain in Cognition and Pathologies   **Instructor: Takehara**

The brain generates rhythms in many frequency domains from neurons firing hundreds of times per second to monthly neuro-endocrine cycles. Synchronization of these rhythms allows for functional connections between brain regions and is associated with many cognitive processes, including memory, perception, and action-selection. These same brain rhythms show abnormal patterns in certain psychiatric disorders. This course will discuss selected topics on the link between brain rhythms and cognition by surveying studies that use methodologies ranging from single-unit recordings in animal models to magnetoencephalography studies in humans. The goal of this course is to provide a theoretical and experimental

framework for studying physiological mechanisms that underlie cognitive functions and mental disorders.

PSY5112HF   Behavioural Epigenetics   Instructor: Zovkic

Epigenetics encompasses the study of stable alterations in gene activity that occur independent of changes to genetic sequence. Epigenetics has been implicated in all aspects of behaviour, from responding to maternal behaviour in early life to mediating cognitive function in aging and dementia. This course will describe how epigenetic mechanisms shape development, learning, memory, stress response, and mental illness in animal models.

PSY5201HF   Cognitive Hearing Science of Communication and Aging   Instructor: Pichora-Fuller

Cognitive Hearing Science is an emerging field of interdisciplinary research concerning the interactions between hearing and cognition, especially as these domains relate to human communication in spoken language or music. It follows a trend over the last half century for interdisciplinary fields to develop, including Neuroscience, then Cognitive Science, then Cognitive Neuroscience, and then Cognitive Vision Science. A common theme is that an interdisciplinary approach is necessary to understand complex human behaviours, to develop technologies incorporating knowledge of these behaviours, and to find solutions for individuals with impairments that undermine typical behaviours. Cognitive Hearing Science is illustrated in research on five general topics: 1. the effects of reduced auditory input on communication; 2. attention and communication in complex scenes and adverse ecologies; 3. communication technologies and interventions to boost performance; 4. relationships between auditory perception, visual perception, and motor production of communication behaviours; 5. changes in performance and brain organization with development, aging, and rehabilitative training of communication behaviours. The course will use the specific topics of interest to the students to explore how basic and translational research are shaping theory and practice in this new field.

PSY5203HF   Cognitive Neuroscience   Instructor: Moscovitch

The core course in cognitive neuroscience will cover a variety of functions, including memory, attention, face and object-recognition, spatial cognition, language, emotion and consciousness, as well as touch on topics in social cognition such as theory of mind, decision making and empathy. Evidence for the involvement of specific brain areas in these functions from human lesion and neuroimaging studies will be addressed. A brief overview of brain anatomy and neuroimaging techniques will be included.

PSY5205HF   The Cognitive Neuroscience of Memory   Instructor: Barense

In this course we will consider prominent theories regarding the nature of memory and how the remarkable feat of memory is enabled by the brain. We will survey current research in the field, focusing on controversial areas of inquiry. The goal of this approach is to provide insight into how details of experimental design can influence how theoretical models are developed. Students will generate their own hypotheses about the organization of memory and design experiments to test these hypotheses.

PSY5220HF   Cognitive Control as a Double-Edged Sword   Instructor: Hasher

This course will consider the notion of cognitive control, a term that has come into wide-spread use as an explanatory mechanism, most often suggesting that good control results in good cognition, including better attention, more effective learning, larger working memory capacity and more accurate long term memory. There is also a substantial neuroimaging literature on control. There are also notable cases in the literature which report that poor control can actually result in better performance on a range of tasks. These papers come from the child development and aging literatures. In addition to trying to define cognitive control, we will read papers from the child, young adult and aging literatures showing the strengths and weaknesses of good 'control'.

PSY5304HF   Language Development   **Instructor: Johnson**

This graduate seminar will survey recent findings in language development. Discussions will be focused primarily on early language acquisition in typically developing children, but some discussion of special populations will be included. Sample topics to be explored include phonological development, multilingualism, word learning, social cognition, sociolinguistics, sensitive periods for language acquisition, comparative communication, and relating speech perception to speech production. We will also discuss the merits and drawbacks of different methodologies used in language acquisition studies (e.g., eye tracking, EEG, corpus studies, etc.). These topics may be slightly adjusted to best reflect students' interests. Students with diverse academic backgrounds are invited to enrol.

PSY5310HF   Social-Emotional Development   **Instructor: Malti**

This course provides an overview of current issues and trends in social-emotional development. Social-emotional development includes the ability to identify and understand one's own feelings, to accurately read and comprehend emotional states in others, to regulate emotions and their expression in an appropriate manner, to develop empathy for others, and to establish and maintain close relationships. We will discuss various theories on social-emotional development and significant empirical research on social-emotional development from infancy to adolescence. We will examine the role of emotions in healthy development, and explore practices to enhance social-emotional development. Lastly, we will highlight controversial issues that have long dominated scholarly discussions in the field of social-emotional development research.

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PSY3001HS   Research Ethics and Survival Skills   Instructor: Erb

This course will deal with issues surrounding ethical conduct in research, intellectual property, ethical treatment of data, identifying and dealing with scientific misconduct. In addition, we will discuss how to prepare effective presentations, how to apply for scholarships, postdoctoral positions and/or jobs (academic and non-academic). These are all skills which will help you in writing your PhD proposal. Members of the Department with expertise in particular areas (e.g., journal editors, members of granting councils, people fresh from the job market) will contribute. Primary requirements are participating in class discussions and completing occasional short written pieces on the required readings.

PSY5111HS   Opto- and Chemogenetic Neuron Manipulation - Applications for Understanding Animal Behaviours
Instructor: Kim

The course will survey a variety of genetic neuron manipulation methods being used in the systems neuroscience field, with a particular focus on light-induced neuron manipulation methods and their applications to study a range of cognitive and emotional behaviours and underlying neural circuitry.

PSY5210HS   Multisensory Integration   Instructor: Campos

Historically, perceptual research has focused on studying individual sensory modalities (vision, audition, proprioception, vestibular inputs) in isolation. However, more recent investigations have begun to consider how these sensory inputs are *integrated* in the brain. In this course we will review the basic tenets of multisensory integration and review supporting empirical research using physiological, psychophysical/behavioural, and computational modelling techniques. We will also consider how multisensory integration changes throughout development and aging and how it may be affected by sensory loss and cognitive loss.

PSY5212HS   Functional MRI of the Human Visual System   Instructor: Bernhardt-Walther

In this hands-on class we will explore the functional properties of the human visual system using fMRI. We will cover the functional architecture of the visual system from the retina to high-level visual regions in the temporal lobe. Following introductions to the basics of fMRI and appropriate safety training, students will acquire their own fMRI data using functional localizers for retinotopic as well as higher-level visual regions. Students will learn how to analyze data, starting from pre-processing to regression analysis using general linear models. Visual regions of interest will be identified in the brain volume and on the cortical surface. Multivariate analysis techniques for decoding will be covered as time permits. Data analysis will be based on Freesurfer, Afni, Suma and Matlab, with heavy use of bash shell scripting. Basic familiarity with the Linux/Unix operating system is required.

PSY5303HS   Probabilistic Models of Cognition   **Instructor: Buchsbaum**

How can we understand intelligent behaviour as computation? This course will explore the probabilistic approach to understanding cognition, which models learning and reasoning as inference in complex probabilistic models. We will examine how a broad range of empirical phenomena, including intuitive physics, concept learning, causal reasoning, social cognition, and language understanding, can be modelled, and read and discuss research articles using this modelling approach. There are no formal prerequisites for this class. However, this is a graduate-level course, which will move relatively quickly and have technical content. Students should already be familiar with the basics of probability and programming.

PSY5311HS   Perceptual/Cognitive and Motor Development   **Instructor: Schmuckler**

This class will explore ideas related to perceptual/cognitive development, motor development, and perceptual-motor integration. The class will be organized both topically (e.g., object perception, infant cognition, multisensory perception, object perception and language development, tool-use, perceptual-motor integration) as well as conceptually (e.g., the distinction between development and learning, the continuity of development, universal versus particularistic aspects of development).

PSY5402HS   Fundamentals in Personality Psychology   **Instructor: Fournier**

This course is intended to introduce junior social-personality-abnormal graduate students in years MA1 or PhD1 to personality psychology – the scientific study of individual differences. Students will be introduced to core concepts in the field (e.g., traits, goals, and needs) and to the questions and controversies that currently surround them. Discussion topics will include personality architecture (structure and processes), personality development (stability and change), and the prediction of consequential outcomes (e.g., health, longevity, and happiness). Students will thus have the opportunity to develop their understanding of the field as well as to learn how personality psychologists think about and conduct research.

PSY5403HS   Decision Making – Computational and Neural Approaches   **Instructor: Hutcherson**

How do we know what we like? Why do people sometimes make choices they regret? How can we help people make better decisions? This course will provide an introduction to major topics and debates in the field of neuroeconomics and decision neuroscience. Students will develop a basic familiarity with neural and computational models of valuation, decision making, reward learning, self-control, and social behaviour. Instruction will include critical analysis of both foundational and more recent papers, student presentations and discussion of ongoing debates in the field, as well as hands-on exploration of tools and techniques for computational model-fitting. Some basic knowledge of computer programming (or willingness to learn) will be helpful.