# Department of Psychology Graduate Courses 2021-22

| Instructor | Semester | Area | Course Code | Course Title | Description | Schedule | Place |
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| Kim | Fall | BN | PSY5121H - Advanced Topics in Animal Behaviour and Motivation II | Opto- and Chemogenetic Neuron Manipulation - Applications for Understanding Animal Behaviours | 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. | Thu, 2-4 | SS 560A |
| Bloom | Fall | DEV | PSY5310H - Advanced Topics in Development I | Controversies in Moral Psychology: Social, Developmental, and Cognitive Perspectives | This seminar dives into the modern science of moral thought and moral action, explored through the disciplines of cognitive science, psychology, neuroscience, behavioural economics, and analytic philosophy. Topics include empathy and compassion in babies and young children; the origins of prejudice and bigotry; sexuality, disgust, and purity; punishment, revenge, and forgiveness; dehumanization, and the relationship between morality and religion. No specific requirements, but participants should be prepared to read, and discuss, articles from a wide range of intellectual disciplines. | Mon, 4-6 | SS 560A |
| Mabbott | Fall | DEV | PSY5311H - Advanced Topics in Development II | Neuroimaging of Development | The brain undergoes significant structural and functional growth during childhood and adolescence. This growth is linked to/underlies the development of cognitive, social, and emotional functions. Various neuroimaging techniques allow the in vivo study of brain maturation and experience dependent brain plasticity from infancy through to adulthood. Current research in this emerging field will be presented, with a focus on the relations between brain growth and cognitive development The course will include the presentation of a range of neuroimaging methods including MRI (e.g., fMRI, DTI, MTI, volumetric), EEG, and MEG and how neuroimaging can be used to inform our understanding of development in normal children and those with neurological compromise. | Tue, 2-4 | SS 560A |
| Barense | Fall | PCCN | PSY5205H - Memory | The Cognitive Neuroscience of Memory | Memory is one of the most complex functions performed by the human brain. In this course we will consider prominent theories regarding the nature of memory and how the brain is able to perform this remarkable feat. 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. Beyond learning about theories of memory, the course will also focus on developing practical skills relevant for careers both in and out of academia. These include: public speaking, providing constructive feedback to peers, benefiting from feedback received from peers, and succinctly describing one's ideas and convincing others of their merit – either in the written or spoken form. | Wed, 10-12 | SS 560A |
| Herrmann | Fall | PCCN | PSY5220H - Advanced Topics in Cognition I | Neural Oscillations: Methods and Applications | Oscillations are ubiquitous in the brain. In this course, we will discuss theoretical, methodological, and empirical aspects of neural oscillations. This involves discussions about how neural oscillations are typically measured and analyzed, and the conceptual and methodological challenges associated with neural oscillations. We will further discuss recent empirical work investigating neural oscillations in a variety of contexts (perception, cognition, health vs. disease, etc.). We will also briefly cover background about the recording techniques typically used to measure neural oscillations in cognitive neuroscience research (EEG, MEG, electrophysiology). Students will have multiple opportunities to hone their presentation and writing skills in this course. At the end of the course, we hope the successful student will have a detailed understanding of the common measures and methods associated with neural oscillations, be able to identify potential challenges in empirical papers, have knowledge about the most common associations between neural oscillations and perceptual/cognitive functions, and be able to use this knowledge to advance their own research. | Tue, 12-2 | SS 560A |
| Carlson | Fall | SP | PSY5403H - Social Cognition | Interpersonal Perception | This course will review theory and empirical work on interpersonal perception, covering topics such as: how we form impressions of ourselves and others, the degree to which impressions are accurate, factors that impede accuracy, and whether accuracy is adaptive. | Thu, 2-4 | Online |
| Lee, S. | Fall | SP | PSY5430H - Advanced Topics in Social Psychology I | Political Psychology | What are the psychological underpinnings of political orientation? How exactly do liberals and conservatives differ—in terms of their moral values, relational concerns, affective/attitudinal tendencies, epistemic styles/needs, and physiological processes? To what extent do they actually differ, or resemble each other? Are they both biased, only in different ways? Can we help people talk, listen, and feel across the political aisle? How does political discourse look like on social media? Why does politics, particularly on social media, feed into antiscience sentiments? Finally, how severe are political polarization and sectarianism? These are among the contemporary topics we will explore, conceptually and empirically. We will also take a look at the early roots of the field of political psychology. Along the way, we will talk about what got you interested in politics as a researcher or as a person. The course will culminate in your presentations of research ideas and designs on anything related to political psychology. | Wed, 2-4 | Online |
| Vartanian | Fall | SP | PSY5402H - Personality | Cognitive Neuroscience of Creativity | Historically, there has been longstanding interest in the biological bases of creativity. Recent advances in our understanding of the psychological bases of creativity in conjunction with the advent of modern neuroimaging techniques have enabled researchers to make novel inroads into the neurological bases of creativity. We will examine how large-scale brain networks contribute to the emergence of creative thoughts, how creative ideas are represented in the brain, the relationship between psychopathology and creativity, as well as the involvement of basic cognitive processes such as attention and memory in creative cognition. The intent is to demonstrate that as a form of higher-order cognition, creativity emerges as a function of the dynamic interaction of component cognitive and neurological processes that support it. | Mon, 2-4 | SS 560A |
| Schimmack | Fall | SP | PSY1210H - Selected Topics in Psychology | Advanced Statistical Methods for Correlational Design | This course examines the use of structural equation modeling to test measurement models and to analyze non-experimental (correlational) designs with a focus on causal modeling and longitudinal designs. The methods will be illustrated with examples from personality, social, cognitive, and developmental psychology. | Wed, 12-2 | Online |

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| Arruda Carvalho | Winter | BN | PSY5110H - Advanced Topics in Behavioural Neuroscience I | Emotional Learning Circuits | Fear learning is essential for survival. It is thus not surprising that fear is one of the most robust and evolutionarily conserved behavioural phenomena, and as such one of the best-studied topics in neuroscience. In this seminar course, we will explore what is known (and not known) about the circuitry of fear and emotional learning, focusing on animal studies as a translatable and powerful model for fear and anxiety disorders in humans. We will explore questions such as 'how are fear memories encoded in the brain?', 'Can we erase fearful or traumatic memories?', 'Does the way we process fear and trauma change across our lifetime?', 'How does the passage of time change fear memories?', 'Can we manipulate fear circuits to treat depression, or anxiety?' We will examine these questions across the synaptic, cellular, circuit and behavioural levels towards a better understanding of the biological basis of fear processing in the brain. | Mon, 2-4 | TBC |
| Takehara | Winter | BN | PSY5130H - Advanced Topics in Neuropsychology I | Rhythms of the Brain in Cognition and Disease | The brain generates various patterns of rhythmic activity. The time scale of these rhythms ranges from millisecond-scale spiking activity to second-scale oscillatory activity. Over the past few decades, electrophysiological investigations have made remarkable progress in connecting various cognitive processes with neural activity patterns in freely behaving rodents. More recently, longitudinal single-cell imaging has uncovered novel neural activity dynamics that challenge traditional theories. In parallel, the application of these tools to animal disease models has identified pathophysiology that links molecular/histological abnormality with behavioural deficits. This seminar aims to review these rodent studies and discuss mechanisms of cognition at the neuronal ensemble level. | Tue, 2-4 | SS 560A |
| Cirelli | Winter | DEV | CANCELLED<br>PSY5304H - Language Development | Auditory Development | This course examines auditory perception across the lifespan, with a specific focus on infancy and early childhood. After briefly reviewing the basic development of the auditory system (anatomical, physiological and neural development), we will focus on the perception of socially-meaningful auditory patterns such as language and music. We will also discuss the social-emotional effects of shared auditory experiences (e.g. infant's responses to song and speech) across the lifespan. | CANCELLED | CANCELLED |
| Helwig | Winter | DEV | PSY5303H - Cognitive Development | Moral Cognition in Moral Development | Morality is a complex phenomenon, encompassing cognition, emotion, and behavior. This course examines the role of cognition in moral development, across infancy, childhood, and into adulthood. Areas to be explored include evidence of moral cognition in infancy, morality in non-human species, cooperation and reciprocity in early childhood, theory of mind and morality, morality in cultural contexts, reasoning about social inequality, democracy, rights, and tolerance, and children's evaluations of parenting and socialization practices. Issues to be addressed include (as appropriate) the universality or relativity of moral concepts, nativist (innate) versus developmental perspectives on origins, and debates about the limitations of cognitive or rationalist explanations of morality. We will examine these issues from a variety of perspectives, including comparative (animal) studies, cultural psychology, and social-cognitive developmental perspectives. | Wed, 12-2 | Online or SS 560A |
| Campos | Winter | PCCN | PSY5210H - Advanced Topics in Perception I | Multisensory Integration | 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. | Tue, 10-12 | In person: room TBC |
| Ferber | Winter | PCCN | PSY5204H - Attention | Attention, Working Memory, and Visual Awareness | How does our brain give rise to our abilities to perceive information, act on it, think about it, and maintain it after it has been removed from view? This course examines cognitive and neural systems that guide our awareness, behaviour, and mental capacity. We will review the basic facts, classic and recent research papers, theories, and methods of study in the field exploring how the processing of visual information is instantiated in neural activity. Major emphasis is placed on attentional systems, working memory, and the study of visual awareness. | Wed, 5-7 | SS 560A |
| McAndrews | Winter | PCCN | PSY5221H - Advanced Topics in Cognition II | Memory Networks in the Brain: Discovery, Development and Disruption | Research in cognitive neuroscience, behavioral neuroscience, and neuropsychology has been converging over the past decade to study brain networks that support memory rather than focusing on single structures. In this course, we will review literature on the emergence of this line of thinking, the current data regarding 'canonical' episodic memory networks in the healthy adult, changes in early development and later life, disruption to canonical networks in neurological diseases and disorders, and research on perturbing these networks for purposes of enhancement. Although we will focus largely on episodic memory, there is emerging understanding of how this form of memory interacts with other knowledge structures and representations such as schemas, and this will be a common thread throughout the course. | Tue, 4-6 | SS 560A |
| Cheung | Winter | SP | PSY5431H - Advanced Topics in Social Psychology II | Population Well-Being | The course will explore the determinants, consequences, and policy relevance of population-level subjective well-being. Subjective well-being refers to the cognitive assessment and affective feelings about the quality of one's life. We will read and discuss research articles from within and beyond psychology to promote a multidisciplinary understanding of subjective well-being research. Topics include: Is population well-being a viable policy indicator? How do major population events impact population well-being? What are the benefits of population well-being? Students will have access to a large population well-being dataset to enrich in-class discussions with empirical data. | Thu, 2-4 | SS 560A |
| Farb | Winter | SP | PSY5420H - Advanced Topics in Personality I | Foundations of Contemplative Science | The course will introduce the emerging field of contemplative science, a rapidly growing, interdisciplinary subfield of psychology whose purpose is to understand the effects of introspective practices aimed at cultivating well-being. The curriculum will review successes and challenges across several mechanistic lines of inquiry, including research on attention, self-reference, emotion regulation, and body awareness. Interdisciplinary evidence will be addressed, beginning with the establishment of clinical effects and then branching out into investigations using cognitive, social, developmental and neuroscientific paradigms. A brief overview of historical contemplative traditions will be included and contrasted against scientific areas of focus. | Tue, 10-12 | SS 560A |

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| Fournier | Winter | SP | PSY5421 - Advanced Topics in Personality II | Persons in Context | This course is intended to introduce students to contemporary models of personality processes and dynamics that focus on understanding persons in context. Topics to be covered include: methods of ecological momentary assessment, models of the structure and organization of psychological situations, models of the momentary person-situation interaction processes that underlie long-term personality continuity, development, and change (e.g., the PERM, PERSOC, and TESSERA frameworks), interpersonal models that emphasize the importance of other people in defining the psychological situation for the person, and the correlates and consequences of how people both perceive and are perceived by the social world around them. | Tue, 12-2 | TBC |
| Duncan | Fall *alternating weeks* | Module | PSY3100 F1 - Psychological Science Skills, LEC 0101 | Programming for Psychology 1: Introduction to Python and Experiment Programming | Over recent years computer programming skills have become a requirement for conducting psychological research across many subdisciplines. We designed this module to provide new graduate students with foundational programming skills that will enable their later acquisition of more specialized methods. It will begin with introductory concepts and good practices (e.g., version control, logistical statements, and debugging). We will then move on to experiment programming, surveying specialized software for stimulus presentation (e.g., PsychoPy, Psychtoolbpx, Inquisit, and Qualtrics), with a focus on PsychoPy. No computer programming background is expected or required. | Mon, 12-2 | Online |
| Joordens | Fall *6 weeks* | Module | PSY3100 F3 - Psychological Science Skills, LEC 0103 | The Science of Learning | We are sometimes guilty of viewing our teaching as distinct from our research but, in fact, there is an ever-growing research base underlying effective teaching. Given how important our teaching role is, we should be aware of that evidence-base as well, and we should base our efforts and approaches in the classroom on that evidence. In this course we will discuss research on issues such as how to enhance student engagement, the effective use of micro-learning, how assessments can be used to deepen learning and promote skill development, how to enhance community with a class, and how to best prepare students for a successful future. We will also consider the role of educational technologies in the future of education. | Mon, 2-4 | Online |
| Duncan | Winter *alternating weeks* | Module | PSY3100 S2 - Psychological Science Skills, LEC 0102 | Programming for Psychology 2: Introduction to R for Data Wrangling and Visualization | This module builds off foundational skills developed in Programming for Psychology 1, but focuses on working with data in R. Wee will cover data management, restructuring, and quality control followed by data visualization. A variety of tools will be surveyed, but most examples will be taught in R and will involve the application of tools included in Tidyverse packages. Background in computer programming is not required, but students are encouraged to take Programming for Psychology 1 before this module to become comfortable with version control and basic programming concepts. | Mon, 10-12 | SS 560A |
| Bernhardt-Walther | Winter *alternating weeks* | Module | PSY3100 S4 - Psychological Science Skills, LEC 0104 | Machine Learning for Psychological Research | In this module I will introduce important concepts for understanding machine learning techniques. We will then work on practical, hands-on exercises for using machine learning methods in psychological research. Students are encouraged to bring data from their own research projects for the applied, hands-on component. A basic understanding of programming in Python and/or R is prerequisite. | Mon, 2-4 | TBC |
| Diaconescu | Winter *alternating weeks* | Module | PSY3100 S5 - Psychological Science Skills, LEC 0105 | Bayesian Models of Perception and Decision-Making | This module is designed for graduate students with diverse backgrounds (neuroscience, brain physiology, perception, cognition, abnormal psychology) who would like to apply computational modelling techniques to study cognition, perception, or abnormal behaviour. The course will teach not only the theory of computational modeling, but also demonstrate open-source software in application to example data sets. | Wed, 10-12 | SS 560A |
| Anderson | Fall | Core | PSY3001 - Professional Psychology | Professional Psychology | This is the first half of Professional Psychology, for PhD1 students. It will cover topics to help you succeed in graduate school, including research ethics, mental health, scholarship writing, being an effective TA, and professional relationships. The second half of Professional Psychology will occur in the PhD3 year, and will focus in preparing for your post-graduate career. | Mon, 10-12 | Online |
| Cunningham | Fall | Core | PSY2001 - Statistics I | The General Linear Model | This course is designed to introduce the student to the General Linear Model and two of its most common expressions: Analysis of Variance and Multiple Regression. Additionally, students will 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. | Tue, 10-12 | Online |
| Page-Gould | Winter | Core | PSY2002 - Statistics II, LEC 0101 | Introduction to Advanced Statistical Methods | This course will provide a practical introduction to a number of different advanced statistical methods used in psychological research. Specifically, the course will cover the following topics: (1) Path analysis and Mediation; (2) Mixed effects/multilevel modelling; (3) Non-gaussian models (e.g., logistic regression) and bootstrapping; (4) Bayesian Hypothesis Testing; (5) Factor analysis, including exploratory factor analysis/principal components analysis, confirmatory factor analysis, and cluster analysis; (6) Structural Equation Modelling; and, (7) Time-based analysis like time series, lagged regression, and latent growth curves. The course will place a strong emphasis on practical application, such that every class will include demonstrations, electronic copies of sample syntax in SPSS and R, and brief computer-based data analysis exercises. You will also learn to be an active consumer of quantitative psychology articles, as well as develop generalizable strategies for statistical reporting. You will only need to be familiar with one of the following statistical packages: R or SPSS. The course will have a final project where you will be required to use one of the analyses you learn in class to analyze your own data or public data and then write methods, results, and discussion sections that describe your findings. You will also be expected to complete lab assignments that involve conducting analyses on example datasets in the statistical software package of your choice. The goal is for you to leave the class with an understanding of when and how to apply each of the statistical techniques you learn. Knowledge of these modern statistical tools will increase the flexibility of your research designs and the statistical rigour with which you analyze your data. | Wed, 2-4 | TBC |
| Buchsbaum, B. | Winter | Core | PSY2002 - Statistics II, LEC 2101 | Multivariate Methods and Data Science | This course will cover classical and modern applications of multivariate methods for data analysis. Topics will include principal components analysis, linear discriminant analysis, MANOVA, high-dimensional regression, and neural networks. There will also be a focus on data visualization, statistical prediction and inference using non-parametric methods, and programming tools and techniques using the R statistical language. | Wed, 2-4 | TBC |
| Williams | Fall | Cross-Listed | CSC2558 - Topics in Multidisciplinary HCI | Designing Intelligent Self-Improving Systems Through Human Computation, Randomized A/B Experiments and Statistical Machine Learning | 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. | Wed, 4-6 | Online |