<table>
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<tr>
<th>Instructor</th>
<th>Semester</th>
<th>Area</th>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>Kim</td>
<td>Fall</td>
<td>BN</td>
<td>PSYS1211H - Advanced Topics in Animal Behaviour and Motivation II</td>
<td>Opto- and Chemogenetic Neuron Manipulation - Applications for Understanding Animal Behaviours</td>
<td>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.</td>
<td>Thu, 2-4</td>
<td>SS 560A</td>
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<tr>
<td>Bloom</td>
<td>Fall</td>
<td>DEV</td>
<td>PSYS110H - Advanced Topics in Development</td>
<td>Controversies in Moral Psychology: Social, Developmental, and Cognitive Perspectives</td>
<td>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 purify; 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.</td>
<td>Mon, 4-6</td>
<td>SS 560A</td>
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<tr>
<td>Mabbott</td>
<td>Fall</td>
<td>DEV</td>
<td>PSYS111H - Advanced Topics in Development</td>
<td>Neuroimaging of Development</td>
<td>The brain undergoes significant structural and functional growth during childhood and adolescence. This growth is linked to underlying 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 neurodevelopmental disorders. 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.</td>
<td>Tue, 2-4</td>
<td>SS 560A</td>
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<tr>
<td>Barense</td>
<td>Fall</td>
<td>PCCN</td>
<td>PSYS5205H - Memory</td>
<td>The Cognitive Neuroscience of Memory</td>
<td>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.</td>
<td>Wed, 10-12</td>
<td>SS 560A</td>
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<tr>
<td>Herrmann</td>
<td>Fall</td>
<td>PCCN</td>
<td>PSYS222H - Advanced Topics in Cognition I</td>
<td>Neural Oscillations: Methods and Applications</td>
<td>Oscillations are ubiquitous in the brain. In this course, we will discuss theoretical, methodological, and empirical aspects of neural oscillations. This involves discussing 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 developed 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.</td>
<td>Tue, 12-2</td>
<td>SS 560A</td>
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<td>Carlsson</td>
<td>Fall</td>
<td>SP</td>
<td>PSYS403H - Social Cognition</td>
<td>Interpersonal Perception</td>
<td>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 aisles? 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.</td>
<td>Thu, 2-4</td>
<td>Online</td>
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<tr>
<td>Lee, S.</td>
<td>Fall</td>
<td>SP</td>
<td>PSYS426H - Advanced Topics in Social Psychology I</td>
<td>Political Psychology</td>
<td>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 creativity, creativity emerges as a function of the dynamic interaction of component cognitive and neurological processes that support it.</td>
<td>Wed, 2-4</td>
<td>Online</td>
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<tr>
<td>Vartanian</td>
<td>Fall</td>
<td>SP</td>
<td>PSYS402H - Personality</td>
<td>Cognitive Neuroscience of Creativity</td>
<td>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.</td>
<td>Mon, 2-4</td>
<td>SS 560A</td>
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<td>Schrimmack</td>
<td>Fall</td>
<td>SP</td>
<td>PSYS1210H - Selected Topics in Psychology</td>
<td>Advanced Statistical Methods for Correlational Design</td>
<td>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.</td>
<td>Wed, 12-2</td>
<td>Online</td>
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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 a focus of both basic and applied research. 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.

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.

We will be included and contrasted against scientific areas of focus.

### Course Schedule

**Mon, 2-4**
- SS 560A

**Tue, 2-4**
- SS 560A

**Wed, 2-4**
- Online or SS 560A

**Mon, 12-2**
- TBC

**Tue, 10-12**
- In person: room TBC

**Wed, 5-7**
- SS 560A

**Tue, 4-6**
- SS 560A

**Thu, 2-4**
- SS 560A

**Tue, 10-12**
- SS 560A

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**Arruda Carvalho**
**Winter**
**BN**
**PSY5110H - Advanced Topics in Behavioural Neuroscience I**
**Emotional Learning Circuits**

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**Takehara**
**Winter**
**BN**
**PSY5120H - Advanced Topics in Neuropsychology I**
**Rhythms of the Brain in Cognition and Disease**

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**Cirelli**
**Winter**
**DEV**
**PSY5304H - Language Development**
**Auditory Development**

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**Helwig**
**Winter**
**DEV**
**PSY5303H - Cognitive Development**
**Moral Cognition in Moral Development**

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**Campos**
**Winter**
**PCON**
**PSY5210H - Advanced Topics in Perception I**
**Multisensory Integration**

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**Farber**
**Winter**
**PCON**
**PSY5204H - Attention**
**Attention, Working Memory, and Visual Awareness**

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**McAndrews**
**Winter**
**PCON**
**PSY5221H - Advanced Topics in Cognition II**
**Memory Networks in the Brain: Discovery, Development and Disruption**

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**Cheung**
**Winter**
**SP**
**PSY5431H - Advanced Topics in Social Psychology I**
**Population Well-Being**

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**Farb**
**Winter**
**SP**
**PSY5426H - Advanced Topics in Personality I**
**Foundations of Contemplative Science**
This course is intended to introduce students to contemporary models of personality processes and dynamics that focus on understanding personalities in context. Topics to be covered include: 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 TESSELLA 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.