



**Psychology 398 / 3.0 – Selected Topics in Psychology:
Functional Neuroimaging of Human Cognitive Brain Function
Winter 2017**

Course Instructor: Jason Gallivan
Office: Humphrey Hall 356/Botterell Hall 239

Course Description:

Brain imaging, and functional magnetic resonance imaging (fMRI) in particular, has become a critical tool in the study of human brain function and organization. This course will cover brain imaging technology, current tools and techniques for experimental design and analysis, as well as delve into details about brain areas, connectivity and topography. Throughout, the course will highlight the prominent role of fMRI in the burgeoning field of cognitive neuroscience and review, using specific examples, what human neuroimaging has revealed about the functional organization of the mechanisms underlying goal-directed behaviour (e.g., perception, planning, memory, language, decision-making, etc.). In addition, we will discuss the merits and limitations of fMRI as a tool for cognitive neuroscientists and the ways in which it can be combined with other techniques.

Intended Student Learning Outcomes:

Upon completion of this course, a successful student should be able to:

1. Understand how fMRI works and how it is commonly used to investigate cognitive processes in the brain
2. Understand, in principle, both basic and advanced fMRI analyses and how corresponding results should be interpreted
3. Understand some basic human functional neuroanatomy and topography
4. Critically read and scrutinize an fMRI paper and understand the strengths and weaknesses of the presented findings (i.e., appreciate what a research paper *does* and *does not* show)
5. Understand the merits and limitations of fMRI as it compares to other methodologies used in cognitive neuroscience
6. Apply active learning, critical thinking and problem-solving to the study of human cognitive neuroscience

Relevance of Course: Information taught in this course is highly relevant for students interested in the human brain and behaviour, cognitive and systems neuroscience, neurobiology, computer science, philosophy, medicine, clinical psychology, research and teaching.

Textbook &/or Courseware Package: There is no required textbook for this course. Required

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| Wednesday March 15 | Lecture 16: Executive Functions & Decision-making |
| Monday March 20 | Team Project Work Time – Q&A |
| Wednesday March 22 | Team Video Presentations: Vision & Perception |
| Monday March 27 | Team Video Presentations: Motor Systems & Action Control |
| Wednesday March 29 Monday April 3 | Team Video Presentations: Memory |

To up the ante,

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| C+ | 67-69 | Acceptable |
| C | 63-66 | Minimally Acceptable (Hons.) |
| C- | 60-62 | Minimally Acceptable (Gen.) |
| D+ | 57-59 | Unsatisfactory Pass |
| D | 53-56 | Unsatisfactory Pass |
| D- | 50-52 | Unsatisfactory Pass |
| F | | |

