Instructor: Nino Grillo
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Office: room 215 of Linguistics Department (1085 Docteur Penfield)
Office Hours: By appointment
Course Pack: Available at https://mycourses.mcgill.ca/webct/logon/83481625011
Prerequisites: An introductory course in Linguistics, Psychology, or Neuroscience at the 200 level or above.

Synopsis:
The goal of the neuroscience of language is to understand how language is represented in the brain. In order to conduct and/or understand studies in this area some background knowledge is required. This background knowledge includes linguistics, neurobiology, and methods for relating brain to behavior (eg, fMRI, EEG). In this course we will go over the necessary background information and then discuss some exciting studies that reveal how and where aspects of language are processed in the brain.

Evaluation:
Assignments: 4, worth 15% each; Final exam: 40%
Assignment 1: Handed out Sept 20th Returned on Sept 27th
Assignment 2: Handed out Oct 16th Returned on Oct 23rd
Assignment 3: Handed out Oct 30th Returned on Nov 6th
Assignment 4: Handed out Nov 20th Returned on Nov 27th

Course Outline:

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<tr>
<th>TOPIC</th>
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| 1. What we need to know to study it  
2. Earliest brain-language model and its view of language  
3. Relevance of Linguistics to brain-language models  
4. Introduction to Linguistic divisions  
| 1. Modularity vs Holism  
2. Evidence for modularity  
3. **Basic concepts in neuroscience**
   1. Anatomy of neurons
   2. Functioning of neurons
   3. Organization of the brain
   4. Methods for investigating brain anatomy (MRI, cytoarchitecture, neurochemical)

4. **Methods for relating brain and behavior**
   1. Standard tools for experimental linguistics (grammaticality judgment, RT measurement, error analysis)
   2. Brain lesions
   3. fMRI
   4. Electrophysiological techniques (ERP, electrical stimulation)

5. **The neurobiology of speech sounds**
   1. Basic concepts in phonetics and phonology
   2. How we can learn about units of phonetic analysis
   3. How we can learn about the way this computation is carried out, and what part(s) of the brain do that
   4. The brain and phonology

6. **The neurobiology of words**
   1. Words - morphology and the lexicon (evidence from aphasia and MEG)
   2. The neural substrate of words

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<td>1. Sentence structure - syntax</td>
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<td>2. Phrase structure</td>
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<td>1. Aphasia: language production</td>
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<td>1. Is there a relationship between syntax, motor actions, and math?</td>
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<td>2. fMRI and aphasia studies testing whether they tap into the same neural substrates</td>
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<td>1. The N400 as an index of semantic processing</td>
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<td>2. Problems with this interpretation</td>
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<td>3. A pure index of semantic processing in Aphasia and MEG studies</td>
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<td>1. Experimentally induced problems: measurement errors</td>
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