

# Introduction to Neurolinguistics

2017 LSA Summer Institute, Lexington KY

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<b>Instructor</b>	Jonathan R. Brennan
<b>Times</b>	1:30 – 3:20, Tues/Fri
<b>Location</b>	114 JSB (Jacobs Science Building)
<b>Office Hrs</b>	Mon 9:30–11:00, Thurs 1:00–2:30 @ Starbucks in the William T. Young Library. Click to reserve slot (Optional, walk-ins welcome!!).

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## Course Description

This course introduces the neural machinery behind our ability to speak and understand language. Topics discussed include the brain bases of speech perception and reading, lexical processing, syntax, and semantics. We will draw on a range of state-of-the-art functional neuroimaging techniques, as well as the study of neurological and developmental language disorders. Special attention will be given to how theories of linguistic computations and representations can inform, and be informed by, our understanding of the brain.

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## Assignments & Evaluation

### Attendance (33%)

Class attendance and participation helps everyone get the most from this course. ~~Class attendance will be taken at each meeting.~~ You can miss up to two classes without penalty.

### Readings & Discussion (34%)

An online forum is maintained under the *Discussions* section on the course Canvas site. All class participants should post a substantive question or comment to the forum. Your comment may connect to the class readings, follow-up on class discussion, build on a post by another student, or raise a new question or issue.

You can post a question *before* class, or you can post a follow-up question or comment after class to build on what we discussed. The due date for your post is no later than 24 hrs after each class meeting.

You can skip posting for up to two classes without penalty.

### Quizzes (33%)

There will be **three** take-home quizzes. The first focuses on methods and is mostly multiple-choice and short-answer. The second and third, which address speech comprehension/phonology and lexical processing/concepts, respectively, is made up of just a few longer-form questions.

These are completed on Canvas via the *Assignments* section on your own time. You are welcome to use whatever notes/readings/information you want.

### Grading Scale

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	A	B	C	D	F
	<b>Pass</b>	<b>Pass</b>	<b>Pass</b>	<b>Fail</b>	<b>Fail</b>
+	97-99	87-89	77-79	67-69	
	93-96	83-86	73-76	63-67	<60
-	90-92	80-82	70-72	60-62	

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## Course Schedule & Readings

### 1 – Friday, July 7: Introduction

- Topics: What are we studying, Historical background, Brain basics
- *Optionally read:* Marr’s General Introduction and Chapter 1 on different levels of description in the cognitive sciences
- *Optionally read:* Kemmerer on The human brain

### 2 – Tuesday, July 11: Methods

- Topics: MRI, Electrophysiology
- *Read:* Kemmerer on Cognitive neuroscience methods

### 3 – Friday, July 14: Speech perception

- Topics: The human auditory system, spectral and temporal analysis
- *Read:* Poeppel, Idsardi & Van Wassenhove on Speech perception at the interface of neurobiology and linguistics
- *Optionally read:* Arnal, Poeppel & Giraud’s Neurophysiological perspective on speech processing
- *Do:* Complete the Methods Quiz by the end of the day.

### 4 – Tuesday, July 18: Phonological processing

- Topics: Phonological abstraction and representation, The mismatch negativity

- *Read:* Scharinger et al. on A comprehensive three-dimensional cortical map of vowel space
- *Optionally read:* Eulitz & Lahiri on Abstract phonological representations

**5 – Friday, July 21:** Word recognition

- Topics: Time-course of word-recognition; lexical representations and decomposition
- *Read:* Federmeier, Kutas, & Dickson on A common neural progression to meaning in about a third of a second
- *Optionally read:* TBD
- *Do:* Complete the Speech Quiz by the end of the day.

**6 – Tuesday, July 25:** Conceptual representation

- Topics: Distributed and hub accounts of concepts; semantic dementia; embodied representations
- *Read:* Patterson et al on. The representation of semantic knowledge in the human brain
- *Optionally read:* Correira et al. on Brain-based translation

**7 – Friday, July 28:** Sentence comprehension

- Topics: Prediction; time-course of syntactic and semantic analysis
- *Read:* Hagoort & Indefrey on The neurobiology of language beyond single words
- *Optionally read:* Brennan, Hale et al. on Abstract linguistic structure in the brain
- *Do:* Complete the Words Quiz by the end of the day

**8 – Tuesday, August 1:** Meaning

- Topics: Sentence structure and meaning; wrap-up
- *No reading*
- *Do:* Feel free to make your post to the Discussion board about broader issues, big questions, or “where do we go from here?” (You can also keep it more narrow if you want.)

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## LSA Ethics and Sexual Harassment Statements

- Ethics Statement (pdf)
- Sexual Harassment Statement (pdf)