Syllabus: BCS 265 Language & the Brain

Day: Tuesdays and Thursdays
Time: 2:00pm-3:15pm
Place: Bausch & Lomb Hall, Rm 269.

Instructor: Rajeev Raizada, Ph.D. Assistant Professor of Brain & Cognitive Sciences.
http://raizadalab.org

Office: Rochester Center for Brain Imaging, 2B201.

Office Hours: by appointment.

Teaching Assistant: Famya Baig: **fbaig@u.rochester.edu**

E-mail: **rajeev.raizada@gmail.com** . I also have a bcs.rochester.edu e.mail, but I don't use it much, so please don't send e.mail to there.

A note on sending e.mail: If you e.mail me about something, e.g. to request a meeting, then please state that explicitly in the subject line of your e.mail, e.g. "Re: Request to meet about BCS 265". If your subject line is about an unrelated topic, inherited as a reply to an old mail, e.g. "Re: Readings for this week" or "Re: Fwd: Re: Hi", then the chances of me noticing your request are much lower. By the way, content-relevant subject-lines will be useful for any mail that you ever send to anybody at any time. Also, please do not send large file attachments. If you want to send a published paper, find a direct PDF link using Google Scholar. Otherwise, use Dropbox.com weblinks instead.

Course Overview & Objectives:

1. Language comprehension and production will be covered based on anatomy, physiology, and the physical dimensions critical to language processing.

2. The material presented will be used to strengthen your own knowledge about language processing in the brain as it relates to theory, as well as your own real world experiences with language.

3. Activities required for this class will be used to strengthen you own knowledge about language and the brain, as well as your ability to critically assess psychological and neuropsychological research.

Assignments & Grading

Group Participation: 5 points x 13 = 65 points total

Student Presentations: 25 points

Research Proposal: 160 points total

- Topics 10 points
- Title Page, Abstract, References: 10 points

- Introduction: 15 points
- Annotated bibliographies: 20 points each (60 points total)
- Methods Outline: 10 points
- Methods Section: 20 points
- Results/Discussion: 15 points

Final Paper: 20 points

Total possible points: 250 points

Grading Scale: A = 89.5-100, B = 79.5-89.4, C = 79.4-69.5, D = 69.4-59.5, E = 59.4-0

Group Discussion.
On days we have a chapter reading, students will be separated into groups of 3-5 students. You will be given a set of questions to answer within your group. In order to receive credit for the group discussion, you must post either a 1) discussion point or 2) discussion question on Piazza.

Student Presentations.
You have been assigned to a day to present. You will be required to find a research paper related to the topic discussed in class the previous day. You will have 15 minutes to present, with 10 minutes of discussion after the presentation. Each presentation must critically synthesize the research paper. At the end of the presentation, you will be required to come up with no less than 3 discussion questions to present to the class.

Research Proposal.
The final course project will include a proposal of research (about 10 pages, more or less). Your research paper will include a Title Page (page 1), Abstract (page 2, about 150 words), an Introduction(3-5 pages), the 3 Annotated Bibliographies (about 150 words, more or less to be included in the Introduction), a proposed Methods (1-3 pages), a proposed Results and General Discussion section (2-3 pages) and References (1-2 pages). The final draft of the research paper will be due during final exams week. The full draft is worth 100 points and will include all sections discussed above. You will be graded on APA format as well as content.

Topic & Articles.
You will be required to choose a topic related to Language in the Brain. This topic will be selected by you and approved by me. Based on the topic you choose, find at least 3 peer-reviewed journal articles that have a language and brain component that have been published within the last 10 years (2002-2012; peer-reviewed articles should be at least 4 to 7 pages in length).

Title Page, Abstract & Keywords.
The Abstract will include no more than a 150-word summary of your research proposal. Come up with at least 5 keywords associated with your research proposal (e.g., Language will likely be one of them).

Annotated Bibliographies.
The final course grade will also be determined by an evaluation of 3 annotated bibliographies, due on days listed below. Each annotated bibliography will be worth 10 points each. The annotated bibliography will consist of a typed summary and critical review of 3 peer-reviewed articles. Each

article will be summarized and evaluated separately, and should not exceed 1 single-spaced, typed page.

Introduction, Methods, Results/Discussion & References.
Each of these sections will eventually be integrated and will become the final paper.Each of these sections will have a template associated with the requirements. Use the template to help you formulate your assignments and for grading purposes (see the class website on Piazza.com for more information about the requirements of each of these sections).

Email & Discussion Board.

I feel more comfortable being contacted for very specific questions regarding the course or a specific issue you might need to discuss that would be inappropriate to share in front of the class (e.g., illness or setting up a meeting with one of us). During the week, I will make every effort to reply to e- mails within 24hrs. I will also announce in class if there are times that we will be less available (e.g., out of town) so that students can take that into account.

An alternative manner to contact me will be to post your question on the discussion board made available to you via Piazza. You may anonymously post your questions about assignments, confusing topics in class or anything else course related. It is likely that if you have the question, many other students will as well. I will try to answer each question within a 24 hour period. If posting anonymously, students are also required to behave maturely while using the discussion board. If anyone acts inappropriately (i.e., being rude or bullying) to the instructor, TAs or another student, the anonymous option will be taken away and you will be identifiable by your name when you ask a question.

Extra Credit.
There will be opportunities for students to obtain extra credit in the course:

1). Students may resubmit any written assignments 1 week after they are handed back with subsequent edits made, with the opportunity to receive partial credit back.

2) Other opportunities will be announced in class or in conjunction with assignments.

Make-up Policies. There is no standard make-up policy for this class. Make an appointment to speak with me directly.

Academic Honesty, Cheating & Plagiarism.

The term “plagiarism” includes, but is not limited to, the use, by paraphrase or direct quotation, of the published or unpublished work of another person without full or clear acknowledgment. It also includes the unacknowledged use of materials prepared by another person or agency engaged in the selling of term papers or other academic materials. The term,Äúacademic misconduct,Äù includes, but is not limited to, all acts of cheating and plagiarism as defined herein. Please refer to the University of

Rochester's Code of Academic Honesty: http://www.rochester.edu/college/honesty/ , for the treatment of related offenses. You are expected to uphold the highest standards of academic honesty.

Center for Excellence in Teaching and Learning.

Any student who may need class or test accommodations based on the impact of a disability is encouraged to speak with me privately to discuss your specific needs. Students who require assistance in how to take notes, to study for exams, or to write clearly should contact CETL in Lattimore 107. More details can be found at: http://www.rochester.edu/college/cetl/ . CETL coordinates reasonable accommodations for students with documented disabilities.

Diversity Statement.

Diversity means the fair representation of all groups of individuals, the inclusion of minority perspectives and voices, and the appreciation of different cultural and socioeconomic group practices. We aspire to foster and maintain an atmosphere that is free from discrimination, harassment, exploitation, or intimidation. Academic courses will aim at providing opportunities for students to discuss issues of diversity including, but not limited to, ethnicity, gender, disability, and sexual orientation as they can be related to course content. The University of Rochester has adopted policies prohibiting discrimination based upon race, sex, disability, or sexual orientation.

Electronic Communication.

Course announcements as well as consultation with the instructor may occur via e-mail or Piazza. Each student must maintain an e-mail account and is responsible for notifying the instructor if their e-mail address changes during the term.

Tentative Course Schedule

NOTE: This is a tentative schedule that could possibly change throughout the course of the semester. PDFs of all the readings will be downloadable on Piazza.

Week 1

Thursday January 15

General intro to class. Introductions. Discussion of overall aims and structure. Mini-overview of some core questions about language and the brain. Can brain data tell us anything interesting about language? Intro to the Piazza.com webpage and discussion forum.

Week 2

Tuesday January 20

What are the key points to extract from a paper, and to put into a presentation?

How to search the literature using PubMed and Google Scholar. Introduction to the Top Hat software for live in-class feedback and question answering. Volunteering for presentation topics.

Reading for the next two lectures:
Chapter 5: "Brain Imaging" in Baars, B. J., & Gage, N. M. (2013). Fundamentals of Cognitive Neuroscience: A Beginner's Guide. Academic Press.

Thursday January 22
Raj lecture: Intro to language and brain, part 1.

Week 3

Tuesday January 27
Raj lecture: Intro to language and brain, part 2.

Overall structure and function of the brain's language system

Thursday January 29

McGettigan, C., & Scott, S. K. (2012). Cortical asymmetries in speech perception: what's wrong, what's right and what's left?. Trends in cognitive sciences, 16(5), 269-276.

Week 4

Tuesday February 3
Lecture by Prof. Raizada

Thursday February 5

Presentation by Karol Krzywon
Friederici, A. D. (2012). The cortical language circuit: from auditory perception to sentence comprehension. Trends in cognitive sciences, 16(5), 262-268.

Embodiment

Week 5

Tuesday February 10

Presentation by Emily Butcher
Morgan-Short, et al. (2012). Explicit and implicit second language training differentially affect the achievement of native-like brain activation patterns.

Thursday February 12

Presentation by Jayde Homer
Carreiras, M., et al. (2014). The what, when, where, and how of visual word recognition.

Week 6

Tuesday February 17

No Class

Development and plasticity

Thursday February 19

Presentation by Elizabeth Hensley
Patel, A.D. (2005). The relationship of music to the melody of speech and to syntactic processing disorders in aphasia.

Week 7

Tuesday February 24

Presentation by Christopher Anzalone
Charidimou, A., et al. (2014). Why is it difficult to predict language impairment and outcome in patients with aphasia after stroke?

Genetics, language and the brain

Thursday February 26

Presentation by Lindsey Feigenbaum
Kuhl, P. K. (2010). Brain mechanisms in early language acquisition. Neuron, 67(5), 713-727.

Week 8

Tuesday March 3

Presentation by Sara Kowalski
Berwick, R. C., Friederici, A. D., Chomsky, N., & Bolhuis, J. J. (2013). Evolution, brain, and the nature of language. Trends in cognitive sciences, 17(2), 89-98.

Thursday March 5

Presentation by MaryKatherine Chester
Zatorre, R. J. (2013). Predispositions and plasticity in music and speech learning: neural correlates and implications. Science, 342(6158), 585-589.

Spring Break

Tuesday March 10 Spring Break

Thursday March 12 Spring Break

Misc topics: bilingualism, voice processing, sign language

Week 9

Tuesday March 17

Presentation by Michaela Reichert
Bialystok, E., Craik, F. I., & Luk, G. (2012). Bilingualism: consequences for mind and brain. Trends in cognitive sciences, 16(4), 240-250.

Thursday March 19

Presentation by Ellen Swanson
Yovel, G., & Belin, P. (2013). A unified coding strategy for processing faces and voices. Trends in cognitive sciences, 17(6), 263-271.

Week 10

Tuesday March 24

Other imaging modalities: EEG, MEG, ECoG

Thursday March 26

TBA

Week 11

Tuesday March 31
Presentation by Yuhang Xu

Lau, E. F., Phillips, C., & Poeppel, D. (2008). A cortical network for semantics:(de) constructing the N400. Nature Reviews Neuroscience, 9(12), 920-933.

Thursday April 2

Presentation by Danika Teverovsky
Price, C. J., & Devlin, J. T. (2011). The interactive account of ventral occipitotemporal contributions to reading. Trends in cognitive sciences, 15(6), 246-253.

Presentation by Sara Lickers
Dehaene, S., & Cohen, L. (2011). The unique role of the visual word form area in reading. Trends in cognitive sciences, 15(6), 254-262.

Reading and dyslexia

Week 12

Tuesday April 7

Presentation by Ryan Dickey
Hulme, C., & Snowling, M. J. (2014). The interface between spoken and written language: developmental disorders. Philosophical Transactions of the Royal Society B: Biological Sciences, 369(1634), 20120395.

Thursday April 9

Presentation by Julia Yurkovic
Corina, D. P., Lawyer, L. A., & Cates, D. (2012). Cross-linguistic differences in the neural representation of human language: evidence from users of signed languages.

Presentation by Destiny Maitland
Carbonell, K.M., et al. (2014). Speech is not special…again.

Week 13

Tuesday April 14

Presentation by Kelsey Lisbon
Autism reading 2: Kujala, T., et al. (2013). The neural basis of aberrant speech and audition in autism spectrum disorders.

Presentation by Wesley Orth

Autism reading 1: Mody, M., et al. (2013). Speech and language in autism spectrum disorder: a view through the lens of behavior and brain imaging.

Thursday April 16

Presentation by Michaela Cronin
Norton, E. S., Beach, S. D., & Gabrieli, J. D. (2015). Neurobiology of dyslexia. Current opinion in neurobiology, 30, 73-78.

Week 14

Tuesday April 21

Presentation by Becky Chu
Schizophrenia reading: Kuperberg, G.R., et al. (2010). What can event-related potentials tell us about language, and perhaps even thought, in schizophrenia?

Thursday April 23

Lecture by Raj

Week 15

Tuesday April 28

General class discussion and wrap-up, in preparation for take-home final exam.