Instructor

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Email

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Office Location

Psychology 110

Office Hours

By appointment

Course Overview

The goal of this course is for students to gain an in-depth understanding of cognitive processing from both a behavior and neuroscientific perspective. The course will cover key theories of the cognitive processes that underlie attention, encoding, retrieval, executive functioning and social/emotional processing. The course will also include an in-depth analysis of cognitive - nuero development from prenatal to neonatal stages.

In addition to the text and lecture students will read and critically analyze original, peer reviewed papers. This allows for an in-depth discussion of particular topics within the broad domains that will be covered.

Course Objectives

(1) Students will have a sophisticated understanding of cognitive processing and their brain substrates

(2) Students will develop an informed perspective on the role and contributions of neuro-imaging approaches to the study of cognition.

(3) Students will know the fundamental phases of brain development

(4) Students will evaluate how their own area of research is informed by cognitive neuroscience.

(5) Students will critically evaluate research independently and through discussions in groups

(6) Students will present a concise and clear summary of the cognitive-neuro processes that are relevant to their own field of study

Required Text

The Student's Guide to Cognitive Neuroscience, *Jamie Ward*

Resources

- Blackboard
- PDF files of articles

Course Content

Week	Subject	Readings
1-3	The Brain Neuro Imagining methods	Chapter 2, 3 & 4 Quiroga, R. Q., Reddy, L., Kreiman, C. & Fried, I. (2005). Invariant visual representation by single neurons in the human brain. Nature, 435, 1102-1107. Haynes, J. & Rees, G. (2006). Decoding mental states from brain activity in humans. Neuroimaging, 7, 523-534.
4-6	Brain development	Chapter 16 Johnson, M.H. (2005). The biology of change. M.H. Johnson (Ed.), Developmental cognitive neuroscience (pp. 1-18). Blackwell: MA. Greenough, W.T., Black, J.E. & Wallace, C.S. (1987). Experience and brain development. Child Development, 58, 539-559.
7-9	Memory	Chapter 9 Fabiani, M., Stadler, M.A. & Wessels, P.M. (2000). True but not false memories produce a sensory signature in human lateralized brain potentials. Journal of Cognitive Nueroscience, 126, 941-949. Habib, R & Nyberg, L. (2007). Neural correlates of availability and accessibility in memory. Cerebral Cortex, 18, 1720-1726.

10-12	Executive functioning	Chapter 14 Rodríguez-Pujadas, A., Sanjuán, A, Fuentes, P., Ventura-Campos, N., Barrós-Loscertales & Avila, C. (2014). Differential neural control in early bilinguals and monolinguals during response inhibition. Brain & Language, 132, 43-51. Chavalier, N, Huber, K.L, Wiebe, S.A & Andrews Espy, K. (2013). Qualitative change in executive control during childhood and adulthood. Cognition, 128, 1-12.
13-15	Social and emotional processing	Chapter 15 Lamm, C & Majdandzic, J. (2015). The role of shared neural activations, mirror neurons and morality in empathy- A critical comment. Neuroscience Research, 90, 15-24. White, K.R., Crites S. L., Taylor, J.H & Corral, G. (2009). Wait, what? Assessing stereotype incongruities using the N400 ERP component. SCAN, 4, 191-198.

Assessment (40%)

Quizzes: 2 quizzes will be given within each of the 5 topic units. These will cover content from the chapters, class and articles. Questions will be primarily short answer.

Paper discussions (20%)

(a) Students will email me 2 discussion level questions to share with the class. Questions must be discussion level, and not simply clarifications. Questions must be something that can be answered, analyzed, conjectured by the peers in the classroom. These will be scored on a range from 1 – 5. Together these questions account for 10% of the grade.

(b) Students will work in groups the day the article is discussed and write a group response to one question from each student. These will be turned in by the end of class. These will account for 10% of the overall grade.

Term Paper (20%)

Students will write a review of cognitive-nuero-scientific research in their domain of research interests. This paper must include synthesis and analysis. Length should range between 15-20 pages, double spaced, APA style.

Criteria for grading will be:

1) Synthesis: Are connections made between different studies? Are studies discussed thematically? Does the student discern his/her own themes?

2) Analysis: Does the student provide critiques that are relevant to the scientific understanding of the work? Does the student specify remaining gaps in the literature and suggest concrete future directions?

3) Is the paper well written- organized? Clear language? Typo's??

ZERO TOLERANCE FOR TYPOS

Presentation (20%)

Students will give a 15 minute presentation of their term paper. There will be 5 minutes for question and answer.

These will be graded based on:

(1) Organization of presentation

(2) A few key points are made clear and emphasized

(3) Key findings are presented thematically

(4) Slides that are visual and not cluttered

(5) Presentation style- speaking off brief points on slides, eye contact, voice projection

Course Calendar

	Tuesday	Thursday
	8/25 The brain lecture & discussion	8/27 The brain lecture & discussion
	9/1 Methods lecture & discussion	9/3 Quiz 1 Discuss Quiroga et al
	9/8 Methods lecture & discussion	9/10 Quiz 2 Discuss Haynes & Rees
	9/15 Brain development lecture & discussion	9/17 Brain development lecture & discussion
	9/22 Brain development lecture & discussion	9/24 Quiz 3 Discuss Johnson chapter
	9/29 Brain development lecture & discussion	10/1 Quiz 4 Discuss Greenough et al
	10/6 Memory	10/8 Memory
	10/13 Memory	10/15 Quiz 5 Discuss Fabiana et al
	10/20 Memory	10/22 Quiz 6 Discuss Habib & Nyberg
	10/27 Executive functioning	10/29 Executive functioning
	11/3 Executive functioning	11/5 Quiz 7 Discuss Rodríguez et al

	11/10 Executive functioning	11/12 Quiz 8 Discuss Chevaliera et al
	11/17 Emotional processing	11/19 Emostional processing
	11/24 Quiz 8 Discuss Lamm, C & Majdandzic	
	12/1 Social processing	12/3 Quiz 9 Discuss White et al
		12/10 10:00- 12:45 PRESENTATIONS