

IMAGING THE HUMAN MIND, 200.312

Fall Semester 2008

<http://www.psy.jhu.edu/~courtney/200.312/>

- Sept. 4 History. Why study/do functional neuroimaging? What are we measuring?
Cognitive neuroimaging experimental design goals and pitfalls.
 Huettel, Chaps. 1, 9, 11, 13
How to evaluate a published neuroimaging study.
 Huettel Chapters 1, 13
- Sept. 11 Quick overview of statistics and neuroanatomy,
Defining “signal” and “noise”
Cognitive subtraction, additive factors, parametric designs
 Huettel Chap. 12 and Box 6.2 on page 149
 Brain Mapping: The Methods, Chap. 22
- Sept. 18 Relationship of neuroimaging to single cells, neuropsychology and TMS
 Huettel Chaps. 8, 1, 15
 Recommended: Chap. 11 and 25, Brain Mapping: The Methods
ERPs, MEG, electrophysiological recordings
 Huettel, Chapter 15, pgs. 443-462
 Brain Mapping: The Methods, 2nd edition, Chapters 8 and 10, on reserve
- Sept. 25 **Choice of topic for experiment design term project due**
Neural activity, metabolism, blood flow and blood oxygenation
 Heuttel, Chapter 6
Optical imaging, Positron emission tomography
 Brain Mapping: The Methods, 2nd ed., Chap. 5 and 18 on reserve
Spatial and Temporal resolution, comparison of imaging methods
- Oct. 2 Review and examples
Quiz 1
- Oct. 9 **Literature review for project due**
Magnetic resonance imaging
 Heuttel, Chapters 2, 3, 4
MR Contrast Mechanisms, Blood Oxygen Level Dependent Functional MRI
 Heuttel, Chapters 5 and 7
 Recommended: Brain Mapping: The Methods, Chaps. 12 and 13

- Oct. 16 **List of 3 papers for potential group discussion due.**
 More MRI
 Voxel-based morphometry, diffusion tensor imaging, perfusion imaging
 Getting past the hemodynamic response constraint with MRI
- Oct. 23 Review and examples
Quiz 2
- Oct. 30 **PDF of paper for group discussion due, draft of cognitive task design due**
 Cognitive neuroimaging experimental design goals and pitfalls, revisited
 Huettel, Chaps. 1, 9, 11, 13
 Advanced data analysis methods, interpretation of results
 Chapters 11, 12 revisited
 Recommended: Chap. 22, Brain Mapping: The Methods
- Nov. 6 Discussion of neuroimaging papers
- Nov. 13 Discussion of neuroimaging papers
- Nov. 20 Student presentations of experimental designs
- Nov. 27 Thanksgiving
- Dec. 4 Student presentations of experimental designs
- Dec. 15 Term project due at noon, 227 Ames Hall or Dr. Courtney's mailbox 232A Ames**