

## **NSCI-521: Elements of Imaging (Fall 2009)**

### **Syllabus**

September 8 <sup>th</sup>	Chapters 1 & 2: Introduction to fMRI and MRI Hardware Components
September 15 <sup>th</sup>	Principles of Magnetic Resonance Imaging and MR Contrast from John VanMeter (equivalent to Chapters 3, 4, & 5 w/o equations)
September 22 <sup>nd</sup>	Chapter 6: Neuronal Processing and Hemodynamics
September 29 <sup>th</sup>	Chapter 7: BOLD Contrast and Properties of the BOLD Signal
October 6 <sup>th</sup>	Chapter 8 (1 <sup>st</sup> half): Signal and Noise in BOLD fMRI
October 13 <sup>th</sup>	Chapter 9: Experimental Design
October 20 <sup>th</sup>	Chapter 8 (2 <sup>nd</sup> half): Data Analysis – Pre-processing
October 27 <sup>th</sup>	Midterm Exam <i>Lab:</i> Plan Experiments & Develop Stimulus Presentation Scripts
November 3 <sup>rd</sup>	<i>Lab:</i> Collect fMRI Data for Student Experiments
November 10 <sup>th</sup>	Chapter 10: Statistical Analysis of fMRI Data
November 17 <sup>th</sup>	<i>Lab:</i> Pre-processing of Student Data
November 24 <sup>th</sup>	<i>Lab:</i> Statistical Analysis of Student Data
December 1 <sup>st</sup>	Chapter 11: Statistical Analysis of fMRI Data (continued)
December 8 <sup>th</sup>	Chapter 12: Advanced fMRI Methods
December 22 <sup>nd</sup>	Project Reports Due

**Reading:**

All chapters refer to the textbook:

Huettel, S.A., Song, A.W., McCarthy, G (2004). [Functional Magnetic Resonance Imaging, 2<sup>nd</sup> Edition.](#)

Additional reading material will be made available online:

<http://cfmi.georgetown.edu/training.php>

**Class Time:**

To accommodate the IPN seminars, class will be  
*10:15-11:55am on Tuesdays*

Note this 15minutes earlier than the time listed in course catalog.

**Office Hours:**

Email: [jwv5@georgetown.edu](mailto:jwv5@georgetown.edu)

Phone: 202-687-8767

Preclinical Science Building, Suite LM-14 (Lower Level - LL, Main Corridor)

Tuesdays 12:30-1:30pm

Thursdays 12:30-1:30pm

**Project Reports:**

1 Report per Group

Scientific paper format:

Introduction, Methods, Results, Discussion, and References

**Grades:**

Grades will be based on the Midterm Exam and Project Report. Each member of a group is expected to provide input on the experiment and report. Degree of participation in the labs and report writing will be assessed by fellow group members.