

Neuroimaging Methods - RADI 6017 – Fall 2010

Course Director: Shalini Narayana, narayana@uthscsa.edu

Textbook: Brain Mapping: The Methods. Second edition. Toga and Mazziotta.

Class meets on Wednesdays from 2 pm – 5 pm in the RIC seminar room (Rm 2.534).

1. Aug 25th: Chapters 1, 2: Introduction to Cartography of the Brain (pp. 3-25), Time and Space (pp 33-44).
2. Sept 1st: Chapter 7: Dynamic Measurements of Local Cerebral Blood Flow (pp. 159-170), Quantitative Autoradiographic Methods (additional reading material)
3. Sept 8th: Chapter 18: Imaging Brain Function with Positron Emission Tomography (pp. 485-508); Chapter 19: SPECT (pp 513-533)
4. Sept 15th: Chapter 16: Anatomical MRI
5. Sept 22nd: Chapters 13, 16: Functional MRI, Nanoanatomical MRI
6. Sept 29th: Chapters 12, 14-15: High Field MR, MR Spectroscopy, DTI,
7. Oct 6th: Chapters 3, 5: Optical Imaging of Neural Structure and Physiology (pp. 49-73), Optical Imaging Based on Intrinsic Signals (pp. 97-137).
8. Oct 13th: Chapter 8: Electrophysiological Imaging of Brain Function (pp. 175-186); Chapter 10: MEG (pp 227-250)
9. Oct 20th: Chapter 11: TMS; Chapter 25: Concurrent TMS/PET, TMS/MRI, (pp 691-703, additional reading materials)
10. Oct 27th: Chapter 9: Electrophysiological Methods for Mapping Brain Motor and Sensory Circuits (pp. 190-223)
11. Nov 3rd: Midterm.
12. Nov 10th: Chapter 17: CT Angiography and perfusion imaging (pp 427-484)
13. Nov 17th: Chapter 4: Voltage and Calcium Imaging of brain activity (pp. 77-94) and Chapter 6: Near-Infrared Spectroscopy and Imaging (pp 141-156).
14. Nov 22nd: Chapters 20, 21: Postmortem anatomy and quantitative analysis of cyto and receptor architecture of the human brain (pp 537-599).
15. Dec 1st: Chapters 29, 30: Emerging concepts (pp 799-830).
16. Dec 8th: Chapters 31: Speculation about the future (pp 831-856) and Review
17. Dec 15th: Final Exam: Presentations

Grades are based on class participation and two tests (each component contributes to 1/3 of the grade).

Midterm is a multiple-choice test

Final Exam is a paper/presentation on an imaging method that is of interest to the student.