Dept. of Finance, Economics and Quantitative Methods
EC 490: NEUROECONOMICS
Spring 2009

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This course introduces the growing new interdisciplinary research matrix of neuroeconomics, the study of reward valuation in and by the brain. The 'home perspective' for the course is that of economics. We will discuss aspects of the relationship between emotional response and economic behavior, and the relevance of research with non-human primates to economics. Students will learn the basic theory of neural reward processing, along with basic principles of interpretation of results from neuroimaging experiments. The main part of the course will be taken up with review of selected leading research problems from the field's first decade. The implications of neuroeconomics for economics and business studies more broadly will be considered.

Texts

The main course textbook is P. Glimcher, C. Camerer, E. Fehr and R. Poldrack, eds., *Neuroeconomics: Decision Making and the Brain*. Academic Press.

There are two supplementary books we will read during the warm-up phase:

Jason Zweig, *Your Money and Your Brain*. Simon and Shuster.

Michael O'Shea, *The Brain: A Very Short Introduction*. Oxford University Press.

There will be two further required article readings to be distributed.

Prerequisite

EC 320, Behavioral Economics; or permission of the instructor.

Assignments and grade components

In-class test: 30%
Application assignment (preparation of hypothetical presentation): 35% (*)
Final examination: 35%

* Instructions will be posted on the website

How to see Dr. Ross: Send an e-mail to the address above requesting an appointment, and indicating times you are **not** available. You will receive a reply within 24 hours. Telephoning to notify of class absences is not necessary.

Detailed syllabus

Jan. 8: Introduction
Jan. 13: Investment behavior and cognitive / perceptual error. Zweig chs. 1-6.
Jan. 15: Investment behavior and emotional response. Zweig chs. 7-10.
Jan. 20: The brain: basic information processing. O'Shea, chs. 1-3.
Jan. 22: The brain: general background. O'Shea, chs. 4-8.
Jan. 27: The brain: basic neuroanatomy. No assigned reading.
Jan. 29: Phelps, 'The study of emotion in neuroeconomics': main text ch. 16
Feb. 3: Phelps contd.
Feb. 5: Santos & Chen, 'The evolution of rational and irrational economic behavior'; main text ch. 7
Feb. 10: Santos & Chen contd.
Feb. 12: Sanfey & Dorris, 'Games in humans and non-human primates': main text ch. 6
Feb. 17: Fehr, 'Social preferences and the brain': main text ch. 15
Feb. 19: Fehr contd.
Feb. 24: Brosnan, 'Responses to inequity in non-human primates': main text ch. 19
Feb. 26: In-class test
March 3: Corrado et al, 'The trouble with choice': main text ch. 30
March 5: Corrado et al contd.
March 17: Knutson et al, 'Representation of subjective value in the striatum': main text ch. 25
March 19: Schultz, 'Midbrain dopamine neurons': main text ch. 21; Montague & Berns, 'Neural economics and the biological substrates of valuation': hand-out.
March 24: Niv & Montague, 'Theoretical and empirical studies of learning': main text ch. 22.
March 26: Ross, 'Economic models of addiction': hand-out
March 31: **Assignment preparation week: no class**
April 2: **Assignment preparation week: no class**
April 7: Ross contd.
April 9: Lee & Wang, 'The trouble with choice': main text ch. 31
April 14: Lee & Wang contd.
April 16: Glimcher, 'Choice: towards a standard back-pocket model': main text ch. 32
April 21: Glimcher contd.
April 23: Course conclusion and briefing for final exam. No assigned reading.
April 30: Final examination, 4:15 – 6:45