

Cognition and Decision Making

01: 185: 301

Logistics

- Lecture: WED, 8:10AM-11:10AM, CAC, ACADEMIC BUILDING ROOM 4450
- Recitation: FRI, 9:50AM-11:10AM, CAC, MURRAY HALL ROOM 213
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Core Curriculum

Successfully completing this course helps meet one of the Core Curriculum requirements. “Quantitative and Formal Reasoning” goal (QQ)—you will formulate, evaluate, and communicate conclusions and inferences from quantitative information.

Course Description

The subjects of reasoning and decision-making provide a means of exploring a number of issues central to the field of cognitive science. Reasoning is the ability to go beyond the information given

in a situation to figure out what is going on. Decision making is the ability to select a course of action from among a set of possibilities. Understanding how people act helps us to understand fundamental problems in cognitive science such as whether people tend to act rationally. In addition, understanding how people think and decide in general can make us as individuals better reasoners and decision makers. This course will address a range of topics, including judgment and decision making, individual choice, behavioral game theory, cooperation and altruism, among others. This course counts for 4 credits.

Course Objectives

Upon successful completion of the course, students will:

- Appreciate the interdisciplinary nature of decision science, the diversity of viewpoints, the controversies and the areas of nascent consensus.
- Know specific concepts, theories, and experimental results covered in the course.
- Be able to read and discuss research papers from multiple disciplines.
- Be able to critically evaluate scientific research.

Readings

There will be reading consisting of articles as well as chapters from edited books. The required readings will be available on Sakai for you to download. **Do not skip or skim the required readings.** Your exams will be based on these readings and material addressed in class. The Schedule on the last page indicates which readings are due for each class period. The readings should be done **before class.**

Evaluation

There will be a total of 1000 points possible in this course.

- Attendance/Participation (10%) (100 points): Come to class and recitation prepared and ready to participate. Each class and each recitation is worth 5 points toward your final grade. In order to minimize disruptions in class and recitation, please note that a sign will be posted on the door 10 minutes after start time for lectures and recitations stating the following: "Class/Recitation has begun. You will not receive credit for attendance today. Please do not enter the room. Thank you." **You can miss three lectures for any reason without penalty. You can miss three recitations for any reason without penalty.**

- Laboratory Assignments (30%) (300 points): There will be four laboratory assignments worth 100 points each for a total maximum of 300 points. **You can miss one lab assignment for any reason without penalty.** Note: If you complete them all, your lowest score will be dropped. The data from your experimental session will be posted on Sakai, and there will be several questions about the design and results. Your answers are to be submitted on Sakai by the next class at 8am (in .pdf). See the class schedule for the class sessions that will have an experiment — noted [EXP] on schedule — and the due date for the lab assignments.
- Two Exams (60%) (600 points total): Each exam will count for 300 points. The midterm will cover material in the first half of the course and is in class on **Oct 25**. The second exam will cover material in the second half of the course and will be a take home exam due via Sakai Monday **Dec 18 by 10am**. The take home exam is to be your own work and you will sign an honor's pledge when submitting your exam on Sakai. Please upload a .pdf with your last name in the file name. The format of each exam will be 8 short answer questions. They will be based on your discussion questions that you will go over in recitation.
- Extra Credit Options (1%) (9 points total): (1) A number of researchers in Linguistics conduct experiments that are relevant to the material covered in this class. You have the opportunity to participate in at most 3 experiments for 3 points each added to your final grade. Information for accessing the subject pool is available on Sakai under Resources. I will be notified about your participation automatically. If you sign up for, but fail to show up for two or more experiments, you may be barred from further participation, so please note the time and location of your experiments, and take your schedule and transportation time into account. Please note that you need to select this course as the one you want the extra credit to count toward. NOTE: *You cannot double count points so be sure to choose the course you'd like to receive the extra credit points toward.* (2) If this option does not interest you, please contact me as soon as possible — and no later than Wednesday Dec 6 — for another alternative for extra credit.

Our Class Laboratory: CAC, Academic Building, Rm 1210 and 1220

The schedule lists class times when you will participate in computerized experiments — noted [EXP] on schedule: 9/27, 11/1, and 11/15. On these 3 days, please meet at our classroom lab on CAC in the Academic Building Room 1210 and 1220 by 8:10 am. Late arrivers will not be able to

participate.

Get Involved with Cognitive Science Club!

Find information on the exciting events being organized by the Cognitive Science Club:

<http://ruccs.rutgers.edu/cogsci-club>

Rutgers Policy on Academic Integrity and Code of Student Conduct

Rutgers has a clear policy on Academic Integrity with very low tolerance for any form of cheating or plagiarism. This policy will be adhered to strictly. Please be sure to acquaint yourself with this policy: <http://academicintegrity.rutgers.edu/academic-integrity-at-rutgers>. Violations include cheating, fabrication, plagiarism, denying information to or misleading others, or facilitating these violations. A useful interactive tutorial on plagiarism can be found here: <http://library.camden.rutgers.edu/EducationalModule/Plagiarism>

Students with Disabilities

The University is committed to providing students with documented disabilities equal access to all University programs and facilities. If you think you have a disability requiring accommodations, you must register with Office of Disability Services (ODS): <https://ods.rutgers.edu>. If you have received an Accommodation Letter for this course from ODS, please provide me with that information privately so that we can review those accommodations.

No Computers or Phones

Please turn off all computers and cell phones in the classroom. In order to make taking notes easier, I will post my lecture notes online prior to lecture. Note: you will receive an email from Sakai once I post them. Please read the following article in the Chronicle “Why I am asking you to not use laptops” <http://chronicle.com/blogs/linguafranca/author/acurzan>

Name & Contact Info of 2 Students

Use the space below to exchange names, email addresses and/or phone numbers of 2 students to contact and that can contact you with questions about the course.

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Date	Topic	Readings Due	Assignment Due
Sept 6	Introduction		read syllabus
13	What is Rationality?	Over (2004) pp.1-8 only	
20	Market Experiment	Bergstrom and Miller (1999)	
27	[EXP] Experimental Design	Friedman & Cassar (2004)	LAB 1 Markets due IN CLASS
Oct			
4	Expected Utility Theory	Baron (2004), pp. 19-28 only	LAB 2 Coordination due
11	Prospect Theory	Tversky & Kahneman (1981)	
18	Mental Accounting	Thaler (1999)	
25	EXAM 1	in class	
Nov			
1	[EXP] Altruism & Cooperation		
8	Behavioral Game Theory	Camerer (2003)	LAB 3 Cooperation due
15	[EXP] Public Goods		
22	FRIDAY CLASSES meet	no class	
29	Intertemporal Choice	Berns, <i>et al.</i> (2007)	LAB 4 Public Goods due
Dec			
6	Neuro or Heuristics and Biases	TBA	
13	Policy Issues	Thaler & Sunstein (2008)	
18	EXAM 2	due as .pdf via Sakai by 10am	

Bibliography

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- Baron, J. (2004). Normative models of judgment and decision making. In D.J. Koehler and N. Harvey (Eds.), *Blackwell Handbook of Judgment & Decision Making*.
- Bergstrom, T. C. and Miller, J. H. (1999). Experiments with economic principles. McGraw Hill. Chapter 1, Supply and Demand.
- Berns, G.S., Laibson, D. & Loewenstein, G. (2007). Intertemporal choice – toward an integrative framework. *TRENDS in Cognitive Sciences*, 11(11): 482–488.
- Optional: 2/8; Bless, H., Betsch, T., & Franzen, A. (1998) Framing the framing effect: The impact of context cues on solutions to the 'Asian disease' problem. *European Journal of Social Psychology*, 28: 287–291.
- Brosnan, S. & deWaal, F. (2003). Monkeys reject unequal pay. *Nature*, 425, 297–299.
- Camerer, C. (2003). Behavioural studies of strategic thinking in games. *TRENDS in Cognitive Sciences*, 7(5): 225–231.
- DeMartino, B., Kumaran, D., Seymour, B., & Dolan, R.J. (2006). Frames, biases, and rational decision making in the human brain. *Science*, 313(5787): 684–687.
- Optional 2/24; Frederick, S., Loewenstein, G. & O'Donoghue, T. (2002). Time discounting and time preference: a critical review. *J. Econ. Lit.* 40: 351-401.
- Friedman, D. & Cassar, A. (2004). *Economics Lab. Chapters 2-4*.
- Optional reading for 3/23: Gigerenzer, G. & Brighton, H. (2009). Homo Heuristicus: Why biased minds make better inferences. *Topics in Cognitive Science*, 1: 107-143.
- Gilbert, D. & Wilson, T. (2007). Propection: Experiencing the Future. *Science*, 317(5843), 1351–1354.
- Harrison, G., Lau, M.I. & Williams, M. B. (2002). Estimating individual discount rates in Denmark: a field experiment. *American Economic Review*, 92(5): 1606–1617.
- Hastie, R. & Dawes, R. (2010). *Rational choice in an uncertain world*. Sage Publications.

- Optional: 4/13; Henrich, J., *et al.* (2001). In Search of Homo Economicus: Behavioral Experiments in 15 Small-Scale Societies, *American Economic Review*, PAP, 91(2): 73–78.
- Mazar, N., Amir, O., & Ariely, D. (2008). The dishonesty of honest people: A theory of self-concept maintenance. *Journal of Marketing Research*, 45: 633–644.
- Over, D. (2004). Rationality and the normative/descriptive distinction. In D.J. Koehler and N. Harvey (Eds.), *Blackwell Handbook of Judgment & Decision Making*.
- Proctor, D. *et al.* (2013). Chimpanzees play the ultimatum game. *PNAS*.
- Rigdon, M.L., Ishii, K., Watabe, M., & Kitayama, S. (2009). Minimal social cues in the dictator game. *Journal of Economic Psychology*, 30(3): 358–367.
- Saxe, R. & Kanwisher, N. (2003). People thinking about thinking people: The role of the temporoparietal junction in ‘theory of mind’. *NeuroImage*, 19(4): 1835–42.
- Slovic, P. & Peters, E. (2006). Risk perception and affect. *Current Directions in Psychological Science*, 15: 322–325.
- Thaler, R.H. (1999). Mental accounting matters. *Journal of Behavioral Decision Making*, 12: 183–206.
- Thaler, R.H. & Sunstein, C. (2008). *Nudge: Improving decisions about health, wealth and happiness*. Yale University Press, Chapters 3–5.
- Optional reading for 3/23: Tversky, A. & Kahneman, D. (1974). Judgment under uncertainty: heuristics and biases. *Science*, 185(4157): 1124–1131.
- Tversky, A. & Kahneman, D. (1981). The Framing of Decisions and the Psychology of Choice. *Science*, 211(4481): 453–458.
- Tversky, A. & Kahneman, D. (1983). Extensional Versus Intuitive Reasoning: The Conjunction Fallacy in Probability Judgment. *Psychological Review*, 90(4): 293–315.
- Wilkinson, N. (2012). *Social Preferences (Chapter 8). An Introduction to Behavioral Economics*. Palgrave MacMillan.