

CourseOPRE 7309: BEHAVIORAL OPERATIONS
MANAGEMENTProfessorElena Katok
Spring 2017MeetingsThursdays 4-6:45, JSOM 2.803

Professor's Contact Information

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Information	there, do not leave voice mail—send email.

General Course Information

There are no formal pre-requisites. I recommend that you have had a course in Game Theory Co-requisites, & other and Inventory Management restrictions This course covers a spectrum of topics in behavioral operations management and provides an introduction and overview of the area. Some of the topics covered include introduction to using laboratory experiments in operations, individual decisions, supply chain contracts, and behavioral marked design. The main goal of the course is to expose students to behavioral research and gain deeper understanding of the limitations of the standard operations Course Description management paradigm. The course will use a seminar format. Each session there will be assigned readings that we will discuss and critique. The main deliverable in the course will be a proposal for a laboratory study, including hypotheses, treatments and factors. Those who wish to pursue this research further will have an opportunity to conduct their studies with human

After completing this course:

subjects.

- Students should be able to design a laboratory experiment with human subjects.
- Students should be able name several ways in which the expected utility theory does not match human behavior.
- Students should be able to design and analyze an instrument to measure risk aversion.
- Students should be able to explain how human decision-makers deviate from normative solution when they solve the newsvendor problem.
- Students should be able to explain simple bargaining games, such as the ultimatum and dictator games, as well as alternating offers game, and summarize the main results from the literature on those games.
 - Students should be able to summarize behavioral results about supply chain contracts.
 - Students should be able to summarize the literature on trust in supply chains.
 - Students should be able to understand the state of the art in behavioral market design and auction literature.

Texts & Materials 1. *The Handbook of Behavioral Operations Management*, Karen Donohue, Elena Katok, and Stephen Leider, editors, Wiley (soon to be in print, but selected chapters will be available for our use).

Learning Outcomes

Pre-requisites,

2. Using Laboratory Experiments to Build Better Operations Management Models by Elena Katok, *Foundations & Trends* 5:1 (2011) (available on eLearning in PDF)

Approximate Course Schedule (may be adjusted)

- 1. Week 1: Introduction and some methodological issues (1/12)
 - a. The Handbook of BOM Chapter 1
 - b. Katok Chapters 1-3
 - c. Roth, A.E. (1994) Let's Keep the Con Out of Experimental Econ.: A Methodological Note *Empirical Economics* 19 (Special Issue on Experimental Economics), 279-289.
 - d. Su (2008), "Bounded Rationality in Newsvendor Models", *Manufacturing & Service Operations Management* 10(4), pp. 566-589.
- 2. Week 2: Coordination Games (1/19)
 - a. John B. Van Huyck, Raymond C. Battalio, Richard O. Beil (1990) Tacit Coordination Games, Strategic Uncertainty, and Coordination Failure, *The American Economic Review*, 80(1), 234-248
 - b. John B. Van Huyck, Raymond C. Battalio, Richard O. Beil (1991) Uncertainty, Equilibrium Selection, and Coordination Failure in Average Opinion Games, *The Quarterly Journal of Economics*, 106(3), 885-910
 - c. John B. Van Huyck, Raymond C. Battalio (1993) Asset Markets as an Equilibrium Selection Mechanism: Coordination Failure, Game Form Auctions, and Tacit Coordination, *Games and Economic Behavior*, 5, 485-505.
 - d. * Gérard P. Cachon and Colin F. Camerer (1996) Loss-Avoidance and Forward Induction in Experimental Coordination Games, *The Quarterly Journal of Economics*, 106(3), 885-910.
- 3. Week 3: Expected Utility Theory: Individual Decisions (1/26)
 - a. The Handbook of BOM Chapter 5
 - b. * Machina (1997), "Choice Under Uncertainty: problems solved and unsolved", *Journal of Economic Perspectives*, 1(1), 121-154.
 - c. Kahneman and Tversky (1979) Prospect Theory: An Analysis of Decision under Risk, *Econometrica*, Vol. 47, No. 2. (Mar., 1979), pp. 263-292.
 - d. Tversky and Kahneman, "Judgement under Uncertainty: Heuristics and Biases", *Science*, 185, pp. 1124-1131.
 - e. Roth (1996). "Individual Rationality as a Useful Approximation: Comments on Tversky's 'Rational Theory and Constructive Choice', *The Rational Foundations of Economic Behavior*, K. Arrow, E. Colombatto, M Perlman, and C. Schmidt, editors, Macmillan, 198-202.
- 4. Week 4: Risk Aversion (2/2)
 - a. *Holt, C. and S. Laury (2002). Risk Aversion and Incentive Effects. *The American Economic Review* 92 (5), 1644-1655.
 - b. *Holt, C. and S. Laury (2002). Risk Aversion and Incentive Effects. *The American Economic Review* 92 (5), 1644-1655.
 - c. Rabin, M. (2000) Risk Aversion and Expected Utility Theory: A Calibration Theorem, *Econometrica*, 68, 5, 1281-1292.

- d. *Rabin and Thaler, (2001) Anomalies: Risk Aversion, *Journal of Economic Perspectives*, 15, 1, 219-232.
- e. Engelbrecht-Wiggans and Katok (2009) A Direct Test of Risk Aversion and Regret in First Price Sealed-Bid Auctions, Decision Analysis 6(2), pp. 75-86.
- 5. Week 5-6: The Newsvendor Problem experiments (2/9 and 2/16)
 - a. The Handbook of BOM Chapter 11
 - b. Schweitzer and Cachon (2000), "Decision Bias in the Newsvendor Problem with a Known Demand Distribution: Experimental Evidence", *Management Science*, 46 (3), 404-420.
 - c. Bolton and Katok (2008) Learning-by-Doing in the Newsvendor Problem: A Laboratory Investigation of the Role of Experience and Feedback *Manufacturing and Service Operations Management*, 2008, 10(3), pp. 519-538.
 - d. Bolton, Ockenfels and Thonemann (2012) Managers and Students as Newsvendors: *Management Science* 58(7).
 - e. * Bostian, Holt, and Smith (2008), "The Newsvendor "Pull-to-Center Effect": Adaptive Learning in a Laboratory Experiment", *Manufacturing & Service Operations Management* 10(4).
 - f. Ho, Lim and Cui (2010), "Reference Dependence in Multilocation Newsvendor Models: A Structural Analysis," *Management Science* 56(11) pp. 1891-1910.
 - g. Michael Becker-Peth, Elena Katok and Ulrich Thonemann (2013), Designing Contracts for Irrational but Predictable Newsvendors, *Management Science* 59(2).
 - *h.* * Lee and Siemsen, Task Decomposition and Newsvendor Decision Making, *Working paper*.
 - i. Ockenfels and Selten (2012), Impulse Balance in the Newsvendor Game, University of Cologne Working Paper.
 - j. * Croson and Ren (2013), "Overconfidence in Newsvendor Orders: An Experimental Study." *Management Science*, in press.
- 6. Weeks 8-9: Bargaining (2/23 and 3/2)
 - a. The Handbook of BOM Chapter 7
 - b. Güth, Schmittberger, and Schwarze (1982) An experimental analysis of ultimatum bargaining *Journal of Economic Behavior & Organization* 3(4) 367-388
 - c. Forsythe, Horowitz, Savin and Sefton (1994) Fairness in Simple Bargaining Experiments, *Games and Economic Behavior* 6(3) 347-369
 - d. Bolton and Zwick (1995) Anonymity versus Punishment in Ultimatum Bargaining Games and Economic Behavior 10(1) 95-121
 - e. Gary E Bolton, Elena Katok and Rami Zwick, Dictator game giving: Rules of fairness versus acts of kindness, International Journal of Game Theory, 27, 1998, pp. 269-299.
 - f. DeBruyn, Arnaud and Bolton, Estimating the influence of fairness on bargaining behavior, *Management Science*, 2008, 54, 1774-1791.
 - g. * Roth, A, Prashnikar, V. Okuno-Fujiwars, M. and Zamir, S. (1991) Bargaining and Market Behavior in Jerusalem, Ljublijana, Pittsburgh, and Tokyo: An Experimental Study. *The American Economic Review* 81(5), 1068-1095.
 - h. Bolton and Ockenfels (2000), "ERC a theory of equity, reciprocity and competition," *American Economic Review*, vol. 90, pp. 166-193, 2000.

- i. Fehr and Schmidt (1999), "A Theory of Fairness, Competition, and Cooperation", *The Quarterly Journal of Economics* 114(3), 817-868.
- j. Gary E Bolton and Emin Karagözoğlu (2013) On the Interaction of Hard and Soft Bargaining Leverage: A test of Schelling's hypothesis and a modified Zeuthen-Harsanyi model, UT Dallas Working Paper
- 7. Weeks 10: Supply Chain Contracts--Introduction (3/9)
 - a. The Handbook of BOM Chapter 13
 - b. * Loch and Wu (2008),
 - c. *Ho, T. and Zhang, "Designing Pricing Contracts for Boundedly Rational Customers: Does the Framing of the Fixed Fee Matter?" *Management Science*, 54 (4), 2008, 686-700.
 - d. Lim, N. and Ho, T. (2007) "Designing Price Contracts for Boundedly Rational Customers: Does the Number of Blocks Matter?" *Marketing Science 26(3), 312-326.*
 - e. Elena Katok and Valery Pavlov Fairness in Supply Chain Contracts: A Laboratory Study, *Journal of Operations Management* 31, 2013, pp. 129-137.
- 8. Weeks 11: Pricing—strategic consumers (3/23)
 - a. Mirko Kremer, Benny Mantin and Anton Ovchinnikov (2013), Strategic Consumers, Myopic Retailers
 - b. The Handbook of BOM Chapter 17
- 9. Weeks 12-13: Fairness in Supply Chain Contracts (3/30 and 4/6)
 - a. The Handbook of BOM Chapter 6
 - b. * Cui, Raju and Zhang (2007) Fairness and Channel Coordination, *Management Science* 53(8) pp. 1303-1314.
 - c. Elena Katok, Tava Olsen and Valery Pavlov (2014), Wholesale Pricing Under Mild and Privately Known Concerns for Fairness, *Production and Operations Management*.
 - d. Elena Katok and Valery Pavlov Fairness in Supply Chain Contracts: A Laboratory Study, *Journal of Operations Management* 31, 2013, pp. 129-137.
 - e. Ernan Haruvy, Elena Katok and Valery Pavlov (2013) Can Coordinating Contracts Improve Channel Efficiency? *UT Dallas Working Paper*.
 - f. Elena Katok and Diana Wu, Contracting in Supply Chains: A Laboratory Investigation, *Management Science* 55(12), December 2009, pp. 1953-1968.
 - g. Andrew Davis (2013) An Experimental Investigation of Pull Contracts in Supply Chains, Cornell Working paper.
 - h. Andrew M. Davis, Elena Katok and Santamaria, N., (2013), Push, Pull, or Both? A Behavioral Study of Inventory Risk on Channel Efficiency, *UT Dallas Working Paper*.
 - i. *Leider, S. and Lovejoy, W. (2013) Bargaining in Supply Chains. University of Michigan Working Paper.
- 10. Week 14: Trust in Supply Channels (4/13)
 - a. The Handbook of BOM Chapter 14

- b. Ozer, Zheng and Chen (2011) Trust in Forecast Information Sharing, Stanford *Management Science* 57(6) 1111-1137.
- c. Ozer, Zheng and Ren (2013) Trust, Trustworthiness, and Information Sharing in Supply Chains Bridging China and the U.S., Working paper.
- d. * Croson, R. and Buchan, N. (1999) Gender and Culture: International Experimental Evidence from Trust Games. *AEA Papers and Proceedings* 89(2), 386-391.
- 11. Weeks 14: Auction and Market Design (4/20)
 - a. The Handbook of BOM Chapter 15
 - B. Richard Engelbrecht-Wiggans and Elena Katok, Regret and Feedback Information in First-Price Sealed-Bid Auctions, *Management Science*, 54(4), April 2008, pp. 808-819.
 - c. * Lucking-Reiley, David H. "Using Field Experiments to Test Equivalence Between Auction Formats: Magic on the Internet." *American Economic Review*, December 1999, 89(5), pp. 1063-1080.
- 12. Weeks 15-16: Auction and Market Design (4/27)
 - a. Student pilots
 - b. Student Presentations

Discussion Leaders: Students will take turns serving as discussion leaders for a subset of papers. The job of the discussion leader is to summarize the research contribution of the paper and how it relates to the existing literature. In some cases, this may require reading other papers that are cited within the paper to form an understanding of the broader literature. The presentation should also include a critical assessment of the paper and a discussion of possible follow-on research questions that could be explored. The presenter should end with a list of discussion questions for the group. You will have some say about which papers you will be responsible for. Presentations should run roughly 45 minutes.

Research Paper and Presentation: The final project for the course will be (at least) a written proposal, outlining a research question and an associated research plan that could result in a significant contribution to the behavioral supply chain and OM literature, publishable in a top tier journal. This paper should include (1) an introduction section which motivates the problem in terms of both its practical and theoretical importance, (2) a literature review that clearly positions the proposal research (i.e., identifies how it contributes to different research streams), (3) a problem description section including an initial model formulation and/or description of the proposed study, (4) an outline of tasks required to complete the analysis, and (5) a conclusion section. The final paper will be due the first day of the finals week. The text of the paper should be no more than 20 pages (12 point font, double spaced), not including the reference list and appendices. Students will present these papers during the last week of class. Each student's presentation should be supported by a series of professional-quality PowerPoint slides and should be no more than 20 minutes long. Each student should turn in a brief description of their desired topic area by Sep. 15, and an interim report on their project's status by October 30 (one page maximum for each). If you wish to collaborate, I will approve 2-person teams.

Course Policies

Grading (credit) Criteria	Homework Assignments:40%Class Participation:15%Discussion Leader Tasks:20%Research Paper:25%
Class Attendance	I do not take attendance. Attending class is your responsibility. If you miss class, you are responsible for making up missed material. There will not be a way to make up in-class simulations.
Classroom Citizenship	Please put your phones on vibrate and refrain from answering them except in an emergency. Please leave the classroom if you have to answer the phone. Do not text in class. Do not use email in class. Do not browse the web in class. Use your laptop to take notes and participate in assignments only.
Academic Integrity	The faculty expects from its students a high level of responsibility and academic honesty. Because the value of an academic degree depends upon the absolute integrity of the work done by the student for that degree, it is imperative that a student demonstrates a high standard of individual honor in his or her scholastic work. Scholastic dishonesty includes, but is not limited to, statements, acts or omissions related to applications for enrollment or the award of a degree, and/or the submission as one's own work or material that is not one's own. As a general rule, scholastic dishonesty involves one of the following acts: cheating, plagiarism, collusion and/or falsifying academic records. Students suspected of academic dishonesty are subject to disciplinary proceedings. Plagiarism, especially from the web, from portions of papers for other classes, and from any other source is unacceptable and will be dealt with under the university's policy on plagiarism (see general catalog for details). This course will use the resources of turnitin.com, which searches the web for possible plagiarism and is over 90% effective. Recommended action for violations of academic integrity will be a zero on the assignment. On an exam this is likely to result in failing the course.
Email Use	The University of Texas at Dallas recognizes the value and efficiency of communication between faculty/staff and students through electronic mail. At the same time, email raises some issues concerning security and the identity of each individual in an email exchange. The university encourages all official student email correspondence be sent only to a student's U.T. Dallas email address and that faculty and staff consider email from students official only if it originates from a UTD student account. This allows the university to maintain a high degree of confidence in the identity of all individual corresponding and the security of the transmitted information. UTD furnishes each student with a free email account that is to be used in all communication with university personnel. The Department of Information Resources at U.T. Dallas provides a method for students to have their U.T. Dallas mail forwarded to other accounts.
UT Dallas Syllabus Policies and Procedures	The information contained in the following link constitutes the University's policies and procedures segment of the course syllabus. Please go to <u>http://go.utdallas.edu/syllabus-policies</u> for these policies.

The descriptions and timelines contained in this syllabus are subject to change at the discretion of the Professor.