

MGT 730A: Design and Analysis of Experiments

Wednesday 6:15 - 8:45 PM, Spring, 2009
Babbio 202

Instructor

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Course Description

This class is an introduction to experimental design and analysis. I received my Ph.D. in cognitive psychology from the University of Texas at Austin, where my main training involved designing and analyzing experiments to examine various aspects of human cognition, such as memory, categorization, and concept representation. Recently, usability and consulting companies are interested in applying the tools cognitive psychologists use to understand human behaviors. In this course, you will learn about how to obtain data that lead to useful findings. Because you need to think about analyses to design good experiments, you will learn about how to analyze data. The overall goal of the course is to teach you how to think critically about research findings. After the completion of this course, you should be able to generate questions, form hypotheses, and design and analyze experiments to test your hypotheses.

Course Materials

We will use articles as reading materials to cover the state-of-the-art research methods. These articles will be available online (<http://cog.mgmt.stevens-tech.edu/~yasu/courses/730A/> and <http://personal.stevens.edu/~ysakamot/730A/>). The following book may be helpful if you like to have a textbook:

Experimental Design with Applications in Management, Engineering, and the Sciences. Berger, Paul D., and Robert E. Maurer.

Grading

Here is the breakdown for the grading purposes:

Assignments: 50%
Midterm Paper: 10%
Final Paper: 40%

Ethical Conduct

The following statement is printed in the Stevens Graduate Catalog and applies to all students taking Stevens courses, on and off campus.

"Cheating during in-class tests or take-home examinations or homework is, of course, illegal and immoral. A Graduate Academic Evaluation Board exists to investigate academic improprieties, conduct hearings, and determine any necessary actions. The term 'academic impropriety' is meant to include, but is not limited to, cheating on homework, during in-class or take home examinations and plagiarism."

Reference: The Graduate Student Handbook, Academic Year 2003-2004 Stevens Institute of Technology, page 10.

Consequences of academic impropriety are severe, ranging from receiving an "F" in a course, to a warning from the Dean of the Graduate School, which becomes a part of the permanent student record, to expulsion.

Consistent with the above statements, all homework exercises, tests and exams that are designated as individual assignments MUST contain the following signed statement before they can be accepted for grading:

I pledge on my honor that I have not given or received any unauthorized assistance on this assignment/examination. I further pledge that I have not copied any material from a book, article, the Internet or any other source except where I have expressly cited the source. Signature _____ Date _____

Please note that assignments in this class may be submitted to www.turnitin.com, a web-based anti-plagiarism system, for an evaluation of their originality.

Course/Teacher Evaluation

Continuous improvement can only occur with feedback based on comprehensive and appropriate surveys. Your feedback is an important contributor to decisions to modify course content/pedagogy which is why we strive for 100% class participation in the survey.

All course teacher evaluations are conducted on-line. You will receive an e-mail one week prior to the end of the course informing you that the survey site (<https://www.stevens.edu/assess>) is open along with instructions for accessing the site. Login using your Campus Pipeline (email) 'CPIPE' username and password. This is the same username and password you use for WebCT. Simply click on the course that you wish to evaluate and enter the information. All responses are strictly anonymous. We especially encourage you to clarify your position on any of the questions and give explicit feedbacks on your overall evaluations in the section at the end of the formal survey which allows for written comments. We ask that you submit your survey prior to the last class.

Course Schedule and Announcements

Course schedule and announcements will be posted online (<http://cog.mgmt.stevens-tech.edu/~yasu/courses/730A/> and <http://personal.stevens.edu/~ysakamot/730A/>). Make sure to regularly consult the web page for an updated schedule and announcements.

Class ID	Date	Topic	Assignments Due
1	January 14	<u>Introduction and Class Overview</u>	None
2	January 21	<u>Scientific Method and Basic Experimental Design</u>	One page reaction paper for <u>The Scientific Method</u> by Aubrey C. Daniels.
3	January 28	<u>Naturalistic vs. Controlled</u>	One page reaction paper for <u>Focus Group Psychology</u> and <u>Experimental Mystery Shopping</u> .

		<u>Observations</u>	
4	February 4	<u>Advanced Experimental Design</u>	<p>One page reaction paper for Virtual Teams versus Face-to-Face Teams: An Exploratory Study of a Web-based Conference System.</p> <p>Also take a look at The Impact of Team Empowerment on Virtual Team Performance: The Moderating Role of Face-to-Face Interaction, and Virtual versus Face-to-Face Reference: Comparing Users' Perspectives on Visits to Physical and Virtual Reference Desks in Public and Academic Libraries.</p> <p>Other readings: New Product Development Decision-Making Effectiveness: Comparing Individuals, Face-To-Face Teams, and Virtual Teams and An Experimental Analysis of Face to Face versus Computer Mediated Communication Channels.</p> <p><u>Note (ppt)</u></p>
5	February 11	<u>Advanced Experimental Design</u>	<p>One page reaction paper for Video Helps Remote Work: Speakers Who Need to Negotiate Common Ground Benefit from Seeing Each Other.</p> <p>Also take a look at Why Distance Matters: Effects on Cooperation, Persuasion and Deception, Familiarity can increase stereotyping.</p> <p>Other readings: e-Perceptions: Personality impressions based on personal websites, Distance Matters, Accurate social perception at zero acquaintance: The affordances of a Gibsonian approach, A room with a cue: Personality judgments based on offices and bedrooms, The personal living space cue inventory, and Material attributes of personal living spaces</p> <p><u>Note (ppt)</u>.</p>
6	February 18	No class (Monday class schedule)	None
7	February 25	<u>Questionnaire and Survey</u>	<p>One page reaction paper for Self-reports: How the questions shape the answers.</p> <p>Optional readings if you are interested: Asking questions about behavior: Cognition, communication, and questionnaire construction, and Self-reports in consumer research: The challenge of comparing cohorts and cultures.</p>
8	March 4	<u>Probability and Distribution</u> , Introduction to R	<p>One page reaction paper for If it's hard to read, it's hard to do: Processing fluency affects effort prediction and motivation.</p> <p>Optional readings if you are interested: Synchrony and cooperation, Introspecting about reasons can reduce post-choice satisfaction and The misunderstood limits of folk science: an illusion of explanatory depth.</p> <p>Statistics manual: Introduction to analysis of experiments R homepage: R - A free statistical computing environment Stories about R: Why use R? Follow up R manual 1: An introduction to R R manual 2: Using R for introductory statistics</p>
9	March 11	No class - Spring recess	None
10	March 18	<u>Central Limit Theorem and Confidence Intervals</u>	<p>Design</p> <p>R examples and Example data</p>
			Draft paper: intro and design

11	March 25	<u>Hypothesis Testing</u>	Take a look at this article: <u>Measuring the crowd within: Probabilistic representations within individuals</u>
12	April 1	<u>T-test</u>	Edit paper (midterm paper) Optional reading: <u>Electronic mail as a medium for rich communication: An empirical investigation using Hermeneutic interpretation</u> and <u>Markman, A. B., & Brendl, C. M. (2005). Goals, policies, preferences, and actions. In F. R. Kardes, P. M. Herr, & J. Nantel (Eds.) Applying social cognition to consumer-focused strategy. (pp. 183-200). Mahwah, NJ: Lawrence Erlbaum Associates.</u>
13	April 8	<u>Correlation and Regression</u>	Edit paper: add result and discussion Optional reading: <u>The evaluability hypothesis: An explanation for preference reversals between joint and separate evaluations of alternatives</u> , <u>The devaluation effect: Activating a need devalues unrelated objects</u>
14	April 15	<u>Factor Analysis and Research Planning</u>	Edit paper Optional reading: <u>Exploratory factor analysis, theory generation, and scientific method</u> and <u>Techniques for determining importance: Balancing scientific method and subjectivity.</u>
15	April 22	Project	Edit paper Optional reading: <u>Research misconduct and the scientific progress: Continuing quality improvement</u> and <u>Editorial: Errors in the variables, unobserved heterogeneity, and other ways of hiding statistical error.</u>
16	April 29	Project <u>Note (ppt)</u>	Final paper due May 13