

INF 397C - Introduction to Research in Information Studies

Syllabus

Unique Number:	24745
Semester:	Fall, 2003
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Office Hours:	Tuesdays, 1:30 – 2:30 p.m. And by appointment.
Class Time:	Thursdays, 8:30 – 11:30 a.m.
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Date

Synopsis:

Every day you make decisions. You decide to take IH-35, rather than MoPac, to drive to school, because you think it will provide you a quicker, safer, and/or happier trip. You base this decision on some data you have collected from your previous experience, or from information people have told you, or from information gleaned from a map, or from radio and TV reports. Or maybe you just have a feeling.

During that drive to school, and likely before, and certainly after, you will hear or read many, many claims.

- “Crest makes your teeth brighter.”
- “Our candidate will improve Austin traffic.”
- “Taking this course will help you be a better information scientist.”
- “I like you.”
- “This is a better way to design your web site.”

The citizen who understands research design and statistics is better prepared to make decisions and evaluate claims of all sorts.

In one of the required textbooks for this course, the author Vincent Dethier asserts that, “An experiment is [mankind’s] way of asking Nature a question.” As an information scientist, you may wish to ask Nature a question (e.g., “Will this intranet user interface enable all our users to carry out their tasks?”). You will CERTAINLY read of many, many answers other information scientists have inferred from questions they have asked of Nature.

The focus of this course will be on behavioral science – the design of experiments that enable us to acquire new information about human behavior. We will address qualitative research methods, historical research, and other forms of research, to place quantitative research in context. But the focus will be unmistakably on quantitative research. In the arena of experimental design we’ll cover sampling, the control of variables, the choice of within- and between-subject designs, experimental vs. field study, and this will lead us into statistics as we consider hypothesis testing. In the arena of statistics we’ll cover probability, descriptive statistics (measures of central tendency, measures of dispersion, correlation) and inferential statistics including tests of statistical significance.

Unprepared information scientists – indeed, unprepared citizens – are forced to consider the torrent of claims they hear every day, and either accept or reject them based on faith. Prepared scientists/citizens can, instead, consider the methods used to gain the information on which the claims are made, and evaluate for themselves the likely goodness of the claims.

Expect a course with a bias (heh heh) towards quantitative research, but flavored by an awareness that there are various ways to conduct research. Expect two tests where you have a chance to demonstrate that you understand the basics of experimental design and statistics, and know WHY one experiment is better than another, to answer a particular question. Expect some lecture, some discussion, and some hands-on designing of some research. Expect to be surprised how interesting (and painless) this stuff can be, regardless of how math phobic you may be. Expect to know how many socks you need to pull out of your sock drawer, in the dark, to be assured of having a pair of the same color. Expect to come out of the course being able to evaluate whether a piece of research you read about was well conducted and appropriate.

Objectives:

This class is designed to arm you with a scientist’s skepticism, and a scientist’s tools to conduct research and evaluate others’ research. The student who successfully completes this course will understand:

- 1 – descriptive statistics, and how to represent a collection of numbers
- 2 – how to design a good experiment (and evaluate how well someone else has)
- 3 – inferential statistics and hypothesis testing
- 4 – other techniques human beings use to gain new information, such as qualitative methods.

Instructional Techniques:

The course will entail various instructional techniques:

- 1 – lecture

- 2 – demonstration
- 3 – group exercise
- 4 – self-instruction, and question-answering by the professor
- 5 – attention to the real world.

Expectations:

- Calculator. You'll need one, but just the simplest of ones.
- Math skills. You'll need them, but just the simplest ones.

Policies:

Grades:

Your grade will be based on four things:

1. your general contribution in class (10%),
2. a project, the creation of a Methods section that captures a good experimental design to answer a particular question (30%),
3. a mid-term exam (30%),
4. a final exam (30%).

Cheating:

Don't. Dire consequences.

Late Assignments:

Your grade will be docked one grade per day late, for your written assignment. As for make-up exams, I will truly hate to have to create a second exam, and will likely be unable to control a natural human tendency to strike back at the person who caused me this burden, likely by making the make-up test harder!

Etc.:

- Make sure you sign in on the attendance sheet every day.
- If you have a question, please ask. I will be very receptive to emails at any time, and phone calls before 10:00 p.m.

Schedule:

Date	Day	Topics	Assignment (due BEFORE class)
Th, 8/28	1	Introduction, Plan, Representing Data - Introduction - Why? - Touching all the bases - Once around the room	

		- Collecting some data	
Th, 9/4	2	Descriptive Statistics - More “Why”? - Some “How”? - Frequency distributions - Representing data - Measures of Central Tendency - Measures of Spread	- Come prepared to share aloud some claim you’ve heard that you might question. - <i>Have read before Day 2:</i> - Huff: All of it. - Hinton: Ch. 1, 2, 3 - S, Z, & Z: Ch. 1, 2, 3 - Come with a guess as to what the most important sentence is in S, Z, & Z, Ch. 2. (In my humble opinion.)

Date	Day	Topics	Assignment (due BEFORE class)
Th, 9/11	3	More Descriptive Statistics - \bar{x} scores - Probability	- Send an email by noon, 9/2/2003, with a table/graph/chart that you’ve read this past week. - <i>Have read before Day 3:</i> - Best (2001)
Th, 9/18	4	Research Methods I - Operationalizing variables - Hypothesis testing - Sampling - Independent and dependent variables - Controls, Confounds, Counterbalancing	- <i>Have read before Day 5:</i> - Dethier: All of it. - Hinton: Ch. 4, 5, 6, 7 - S, Z, & Z: Ch. 7, 8 - Come to class prepared to say what the key typo is in Hinton, Ch. 6!
Th, 9/25	5	Research Methods I (cont’d.) - The ethics of studying humans - Within-, Between-subject designs - Reliability and validity - Ceiling and floor effects	
Th, 10/2	6	Catch-up and Review	
Th, 10/9	7	- Mid-term exam - Building a research proposal	- <i>Have read before Day 7:</i> - S, Z, & Z: Ch. 14
Th, 10/16	8	Research Methods II - The qualitative/quantitative distinction	<i>Have read before Day 8:</i> - S, Z, & Z: Ch. 4, 5, 6, 10, 11 - Cronin (1992)
Th, 10/23	9	Research Methods II (cont’d.) - Guest Lecture: Qualitative Methods	<i>Have read before Day 9:</i> - Gorman, G. E., <i>et al.</i> (1997) (both articles)
Th, 10/30	10	Inferential Statistics - standard error of the mean	<i>Have read before Day 10:</i> - Hinton: Ch. 8, 9

		- confidence intervals - t tests - statistical significance	- S, Z, & Z: Ch. 12, 13
Th, 11/6	11	Inferential Statistics (cont'd.) - Chi-square - Correlation - Conduct an experiment and a t-test	<i>Have read before Day 11:</i> - Hinton: Ch. 20

Date	Day	Topics	Assignment (due BEFORE class)
Th, 11/13	12	Inferential Statistics (cont'd.) - ANOVA	- <i>Have read before Day 12:</i> - Hinton, Ch. 10 - 15
Th, 11/20	13	Research Methods III - Which methods when? - Interpreting results - Bad science	- Methods section project report - <i>Have read before Day 13:</i> - MacCoun (1998)
Th, 12/4	14	Final exam	

“Methods Section” project:

Come up with a research question that intrigues you both. Assume you have one semester and \$25,000 to answer the question, empirically.

Write the "Methods" section of the research report. Specify what your research question is. Demonstrate that you know what independent and dependent variables are. Demonstrate that you know how to affect controls and counterbalancing, and to avoid confounds. Specify what statistics you'll perform on your data. Design an experiment that, if you really did have that time and that money, and did carry it out, you would likely have gotten an answer, from "Nature."

S, Z, & Z (2003) offers a good model, starting on page 474.

Anticipating some questions:

1- Length? I don't know. Maybe three to six pages. The example on pages 474 of S, Z, & Z is about four pages long, double-spaced.

2- Question? Pick something that interests you. No, it doesn't have to be one that we've talked about in class. If you wish, you can send me your research question, and I'll tell you if I think it sounds like a good one.

3- Objective? Think of this as your first (?) experimental write-up. You get to have fun imagining

the research, without actually carrying out the work. Design an EXPERIMENT. Show me that you know what independent variables and dependent variables are. Show me that you know how to sample and assign test participants, to avoid confounds. Show me you know how to control extraneous variables. Go for it. Design a study of which you'd like to see the results.