The subject of this course is quantitative methods in public affairs. It includes learning the concepts of probability, statistics, and application of those concepts. Students will come to understand the ways in which one can carry out critical assessment or evaluation of proposed/published arguments, interpretations, beliefs, solutions, policies, programs, or theories. This course provides students skills to perform applied statistical analyses and to generate an argument with solid reasoning backed up with quantitative evidences. In practice, the scientific base reasoning can help many public administrator and policy makers to convince the stakeholders about his or her policy recommendations.

Textbooks

Required


Recommended

library
*Or any introductory Critical Thinking book

Other required readings are available at the course dropbox.

Software

R (Gui JGR-Deducer and RCommander)
http://rforge.net/JGR/files/

University Policies

Academic Honesty Policy (http://www.uh.edu/provost/policies/uhhonesty_policy.html)

Academic Accommodations for Students with Disability
(http://www.uh.edu/provost/fac/Policy_disab.html)
*If you need special accommodation to meet any of the requirements of this course, please contact me by the second class session.

Grades and Grading Policy

Final Grades will be comprised of the following components:
1. Midterm Exam: 30% of the total grade
2. Assignments: 30% of the total grade
3. Term Paper: 30% of the total grade
4. Quizzes: 10% of the total grade

Attendance

If you miss three class sessions without my approval, I will take out all of your participation points. Also please avoid being late for class since it is very disturbing to the other students. A student being late for class frequently will lose his or her participation points.

Quiz

The Moore et al textbook website provides online quizzes. I will assign the textbook online quizzes for “Quizzes” grade.

Quiz Website:
http://bcs.whfreeman.com/psbe3e/#613741__616655__

When you register for the quizzes site, you are asked to identify your Professor’s email address. Use toshi@uh.edu.
**Pop-up Quiz**
There are few pop-up quizzes given randomly at the beginning of class session. The purpose of the quizzes is to encourage students to read the course materials.

**Examinations**
There will be one exam during the course of the semester. Exam questions will be based on information covered in the assigned reading materials as well as material presented during class lecture.

Students must provide sufficient justification for missing an exam (it must be a documented emergency) to be entitled to qualify for a makeup exam. It is the responsibility of the student to contact the instructor (by voice mail if necessary) on or before the date of the missed exam in order to arrange for a make-up.

It is possible that the midterm exam consists with two parts: in-class portion (Testing lab) and take home portion. **If the take-home portion is provided, the question document will be posted by the midnight of September 29th.** The submission due date of your take-home exam answers is October 7th before the class time (5:30PM).

**Exam Date (Midterm in-class portion)**

*Where: Classroom*

*Date: September 29th (5:30PM to 7:00PM)*

**Assignments**
There will be several assignments over the course of the semester. For data analyses, students are using assigned statistical tool(s) and to provide a written report of their findings. Both assignment documents and data sets are available from our class Blackboard. If the data exceed the upload capacity of blackboard, I will send you via email.

**With no exceptions,** assignments must be turned in at the beginning of class on the day they are due. Late homework will not be graded. Those students who miss class on the days in which homework is assigned will not be given an extension to complete that assignment.

**Term Paper**
Each student picks a dataset relating his or her area of interests. There are various datasets available at iPoll (Roper Center), ICPSR (Inter-University Consortium for Political and Social Research), CPS (Current Population Survey), NHIS (National Health Interview Survey), and others. Of course, you can use the dataset collected by your organization. Throughout the course, I assign an analysis report on your data set as a part
of weekly assignments. At the end of the semester, you can put together your data analysis reports to complete your term paper.

*The style of reference:*
Use your preferred reference style such as MLA, Chicago, etc.

You will make presentation on your paper in class on December 2\textsuperscript{nd}.
The due date for your term paper submission is December 9\textsuperscript{th}.

**Schedule of Lectures and the Corresponding Readings**

**Introduction (Lecture series 0)**

**Critical Thinking and Social Inquiry**

Readings:


**Social Inquiry**


Freakonomics, Introduction, Chapter 1 through 3.

**Lecture Series 1: Statistics for Public Manager and Policy Analysts**

Levitt and Dubner. *Freakonomics*, Chapter 4.

Hoover, Kenneth R. *The Elements of Social Scientific Thinking.* St Martin Press. *Chapter 1, 2, and 3.*

Longman. *Chapter 1, Research in Public and Nonprofit Programs*


**Data Analysis**

*Introduction to R using JGR/Deducer and Rcmdr (with RStudio)*

Yuasa documents for R/JGR instruction ((Dropbox R instruction folder)

Pollock, R chapter 1


**Recommended:**


*Read only Policy Problem Questions, Research Questions, and Statistical Questions sections in the following chapters: chapter 1,2, 3, 5, 6, 7, 8, 9, and 10.*

**Lecture Series 2: Looking at Data**

**Required Readings**


**Graph basics**

Recommended readings

**Data Analysis**

**Required readings**
Pollock, R chapter 2 and 3
Yuasa documents for R/JGR instruction folder (Dropbox R instruction folder)

**Assignment 1** (download assignment documents and datasets from Assignment folder in Dropbox)

**Lecture Series 3: Describing Data and Looking at Data—Relationship and Causality**

**Required readings**
Levitt and Dubner. Freakonomics, Chapter 5 and 6.
Silver. Introduction


**Recommended readings**


*For preparing to write your term paper and presentation*


Hoover, Kenneth R. *The Elements of Social Scientific Thinking*. St Martin Press. *Chapter 3*

**Data Analysis**

Pollock, R chapter 8

Yuasa documents for R/JGR instruction ((Dropbox R instruction folder)

**Assignment 2** *(download assignment documents and datasets from Assignment folder in Dropbox)*
Lecture Series 4: Producing Data: Design of Experiments, Sampling Design, Toward Statistical Inference, Ethics

M, M, D & S Chapter 3: Producing Data

Introductory presentation of the topics
Moore, David S. 2003. Statistics: Concepts and Controversies. New York: W.H.Freeman. Chapter 2 Samples, Good and Bad; Chapter 3 What Do Samples Tell Us?; Chapter 4 Sample Surveys in the Real World; Chapter 5 Experiment, Good and Bad; Chapter 6 Experiments in the Real World

Planning Research and Research Design


Measurement


http://www.urban.org/publications/204812.html

Survey

Chapter 1 Sampling methods


Non-randomized study


Dealing with endogeneity problem:


Case studies


The data analysis assignment and Journal articles of this section’s reading are downloadable from this course Blackboard.

Data Analysis

Yuasa documents for R/JGR instruction ((Dropbox R instruction folder)

Assignment 3 (download assignment documents and datasets from Assignment folder in Dropbox)

Lecture Series 5: Probability and Distributions

Silver. Chapter 1 through 4


The data analysis assignment and Journal articles of this section’s reading are downloadable from this course Blackboard.

Data Analysis

Yuasa documents for R/JGR instruction ((Dropbox R instruction folder)

Assignment 4 (download assignment documents and datasets from Assignment folder in Dropbox)

Lecture Series 6: Statistical Inference


The data analysis assignment and Journal articles of this section’s reading are downloadable from this course Blackboard.

Data Analysis

Yuasa documents for R/JGR instruction ((Dropbox R instruction folder)

Power Test
Download G*Power http://www.psycho.uni-duesseldorf.de/abteilungen/aap/gpower3/

Assignment 5 (download assignment documents and datasets from Assignment folder in Blackboard)

Lecture Series 7: Topics in One-Way/Two-Way Analysis of Variance and Nonparametric Tests


Data Analysis

Pollock R book. Chapter 4 to 7

Yuasa documents for R/JGR instruction ((Dropbox R instruction folder)

Lecture Series 8: Topics in Inference for Regression and Multiple Regression

Silver. Chapter 5 (overfitting), 6 (outliers)


Using Dummy Variable


Assessing Interaction effect


Diagnosing Problems

The data analysis assignment and Journal articles of this section’s reading are downloadable from this course Blackboard.

Data Analysis

Yuasa documents for R/JGR instruction ((Dropbox R instruction folder)

Pollock R book. Chapter 8 (revisit this chapter for inference)
Chapter 9 (Regression with dummy variables and interaction effects)

Assignment 6 (download assignment documents and datasets from Assignment folder in Blackboard)

Lecture Series 9: Logistic/Probit Regression

M, M, D & S Chapter 17


Diagnostic for Generalized Linear Models

Case studies


Fairlie, Robert W., and Rebecca A. London. 1997 “The Effect of Incremental

The data analysis assignment and Journal articles of this section’s reading are downloadable from this course Blackboard.

Data Analysis

Yuasa documents for R/JGR instruction ((Dropbox R instruction folder)

Pollock R book. Chapter 10

*Assignment 7* (download assignment documents and datasets from Assignment folder in Blackboard)

December 2nd (Last day for this class)

Student paper presentation