This is a seminar for graduate students interested in the practice of and problems in conducting research in political behavior, policy analysis and evaluation for the academic disciplines of public administration and politics. It is expected that both the instructor and the students will gain new knowledge from working together in this course. The course will feature formation of hypotheses, and data processing to test the hypotheses using actual data. It does have a policy research and formation orientation using quantitative methods. In that regard, the course assumes you have no knowledge of statistics, or you have had a course so long ago that you don’t recall the details of it. The course is designed to cover an introduction to statistics for graduate students and to cover the application of computer software to the solution of some analytical problems at the same time. Students are expected to develop rigorous research papers, high quality writing and to use theory and operational definitions of theoretical constructs to test hypotheses with the statistics covered in this course.

There are two objectives in this course. The first is to give a consumer’s knowledge of statistics and the reasoning behind the use of it. The second objective is to give you the skills and experience with simple statistical methods and report preparation software to do analysis of small data sets obtained over the internet on personal computers or in limited cases data that you have. Your grade in the course is based on your abilities to show me you have accomplished these two objectives. You can show me your accomplishments in the homework and the reports you prepare for the course. The course activities will consist of homework using problems in the software package called STATA, and homework from the text by Williams. I will also require written interpretations of statistical tests that you perform, and the application of statistical tests and the use of computer output in writing short, highly focused analyses from data sets supplied by me and Lawrence Hamilton and in some cases your own. The latter, however, is not encouraged.

You will be expected to learn the following computer software: STATA and Micro-soft Word for windows, or its equivalent. The network system in the lab has professional versions of both STATA and MSWord. Using these software packages you will do the homework assignments and the reports in the course. You should get some DOS formatted disks in size 1.4 megabytes for this class. You will be given the opportunity to download data from an internet site, and to copy data bases of use in this class. There is a full version of STATA available for your own use if there are at least ten students who wish to purchase that software. The price per person is a student price.

Activities in the course that you will be expected to complete on time include: assigned homework, data processing and statistical analyses, reading literature and writing about social science issues using computerized data and statistical methods. I will provide procedural overviews of statistical computations, computer operations, statistical reasoning, and the applications of these concepts to the policy research process. You will be expected to do the work I assign as noted on a tri-weekly basis. You will obtain accounts on an internet server which contains an archive of data bases in SPSS format. Those data will be converted to use in STATA using STATransfer. I must make sure you have an email account that I can send messages to. I’ve found that students often can improve their work by contacting me over the internet. I hope to use that device to provide email feedback and discussions.
The course is extensive in that there is a lot to cover in a short period of time. It is my hope, however, that you will learn the material and apply it in your work in class, on your thesis, other courses, or in other research activities you might have outside the University. As you can see the course is designed to give you some real world experiences with the use of quantitative data analysis and report preparation.

In all your work you will be evaluated according to graduate student standards. That means your writing is expected to be clear and understandable, and the format of your homework must be clear and easily understood by me. If you are absent from class without a formal, written excuse from a physician or similar person of authority, you will be penalized in your final grade. It is very important that you ask me questions about procedures so that other students can learn from your questions. Your final grade will be a function of my judgements of your work and the efforts you put into this class. I try as hard as I can to get everybody through this class.

As the leader of the course, I reserve the right to alter the focus, the activities, and the measurement of performance during the semester with due notice to the students at any time in the semester. This decision, if it occurs, will be made on my perception of the rate at which we progress through the topics of the course. The topics of the course will have specified homework assignments that must be completed on a computer and they will include the use of STATA and Word software.

Here are the texts for the course:


Notice these optional texts. I am recommending them to you if you are having difficulty reasoning and calculating with statistics.


SCHEDULE OF ACTIVITIES IN THE COURSE

Weeks 1 through 4:
Topics:
Frequency Distributions
Measures of Central Tendency
Measures of Dispersion
Introduction to Probability
The Binomial Distribution
Internet work:

Get an account at CSU, L.A.
Use the web to explore the data there
Types of data bases for analysis
   Time series
   Spatial data sources
Conversion procedures

**STATA** procedures:
   a. logging on
   b. getting a file
   c. building your own file
   d. keeping a record of your file operations
   e. describing, summarizing and displaying data
   f. beginning graphics

For these first four weeks read:

   Hamilton, chapters 1 - 4
   Cole, chapters 1-4
   Williams, Parts 1-3—six chapters
   Read all of Hacker; use the procedures in Hacker on all work in this class.

I will assign homework from Williams in the second meeting of the class to be turned in to me by the fourth meeting of the class. This is worth 100 points.

The following are the measurable outcomes I expect you to be able to demonstrate to me in papers, homework and by questions in the classroom.

1. Describe the differences between three measures of central tendency
2. Describe the differences between three measures of variability
3. Use the normal curve with the z score formula to make decisions about a score.
4. Using **STATA** construct a frequency distribution, percentage distribution and a graph from data that I supply in the classroom
5. Using **STATA** demonstrate to the instructor that you can decide on what type of measurements are in a data base, what statistical commands to use to analyze the data in the base, and what program commands to use to change the data or add to the data base.
8. In **STATA** use summary statistics for the variables in a data set I have assigned which show measurement type and categorical type variables. Carrying out some of these assignments will be worth 100 points. I will announce those I want you to carryout.
9. Write a short statement (2 pages) about a topic of interest to you for a final paper in this class. In this paper indicate where the data might come from, what data is important, what type of hypotheses you might formulate and what theoretical orientation you have for doing this research. Make sure you visit the CSU, LA archive called SSDBA. This is worth 100 points.

**Weeks 5 through 8:**

**In STATA**

We will cover the use of ANOVA, “t” tests to examine differences

Later we will cover correlation and linear regression to examine similarities.

We will cover the use of inferential statistics.
Types of data and the use of differing statistics to cover: You will be expected to know these terms and to use them.

- inferential statistics
- testing hypotheses
- estimating population proportions
- testing for differences
- testing for similarities; the use of correlation and regression

Read
- Hamilton, chapters 5, 6, and 7.
- Cole, chapters 5, 6, and 7
- Williams, Parts Four and Five

I will assign homework at the beginning of the fourth week of class and it must be turned in to me by the seventh week of the class. This is worth 100 points.

At the end of this period you will be expected to do the following:

1. Describe the differences between estimates and parameters
2. Calculate and use, in hypothesis testing, the standard error
3. Calculate an appropriate sample size for a given problem
4. Describe the differences between levels of measurement
5. Describe the elements necessary in causal explanations
6. Write testable hypotheses for a specified data-base
7. Carry out the appropriate tests for variables in a specified data base
8. Describe the differences between three different research designs
9. Describe the differences between reliability and validity
10. Correctly interpret the outcomes of an inferential test using hypotheses
11. Collapse a variable in a STATA data-base for purposes of analysis and interpret the procedures
12. Use Oneway, “t”, and some of the display commands in STATA that show the distributions of various functions
13. Describe the procedures for using a one tailed compared to a two-tailed test
14. Construct a confidence interval for a given problem
15. Describe the differences between a type one error and a type two error.
16. In STATA use regression to examine a relationship in a data set. Interpret the results of the analysis. Graph the estimated function in the analysis and explain what is going on in the graph and the regression results.

I will assign homework to be done from some of these tasks and it will be worth 100 points.

Turn in a short literature review of your expected paper in this class. It will be worth 100 points. It is to be no more than eight pages.

**Weeks 9 through 15**

Topics
- contingency table analysis
- statistical controls
- multiple regression
- time series analysis and forecasting
- factor analysis
- curvilinear and logit techniques
Read:
    Hamilton, Chapters 7 (a repeat), 8, 9, 10, 11 and 12 and 13 for those who are interested in more advanced programming in **STATA**.
    Cole, chapters 8,9,10,11,12
    Williams, Part Six

I will assign homework at the eighth week of the class and it is to be turned in to me by the 12 week of the class. It is worth 100 points.

At the end of this period you will be expected to do the following:

1. Complete a full report using statistical techniques for the analysis and inferences regarding a policy issue that will have technical portion and an executive summary on a policy issue you have chosen. This is worth 300 points.
2. Use of contingency table analysis using two and three way modes of analysis
3. Use non parametric statistics such as Chi², Cramer’s v, Gamma and similar measures of relationships in categorical data
4. Describe the use of risk ratios and their application in cross tabulated analysis
5. Describe the logic of control table analysis
6. Use three-way analysis on data supplied for purposes of interpretation in multivariate analysis
7. Use and interpret bi-variate and multi-variate regression methods.
8. Interpret a factor structure on data supplied by the system

You will be asked to turn in a short paper on some of this material in items 1-8. It will be worth 100 points.

**FURTHER DESCRIPTIONS OF THE COURSE PROCEDURES**

Here are some further descriptions of the course and my expectations of what will transpire. I hope all of you pass this class, but that can only happen if you confront the concepts, the data and the tasks described above. You will not pass this class if you are frequently absent, do not do the work, do not read the material, and do not practice on the computers. What follows, unfortunately, is not intended to turn you off to me or to the course, but it is conditioned by my 29 years of teaching in the California State College System of Education. I have had to establish these constraints because of the prior performance of students in the system. As a professional teacher I feel I have no alternative; grading is a competitive process and therefore I must be responsible for ensuring the equitable treatment of all students in that process. It is unfair to give grades to students who do not try to do the work, while those who try hard may not do it well. I have a moral obligation to ensure that credit is given to those who work hard to accomplish the goals of this course even if it has been difficult for them.

I will assign three papers of no more than six to eight pages during the course of the semester. These are cumulative, so you should count on choosing a topic early that you will work on for the length of the class. Each of the three papers should accumulate to the final paper in the class. As mentioned above the final research paper will be worth 300 points towards your final grade. It is due on the final day of the course during finals week. The sum of these grading activities is worth 1000 points.

**Thus a perfect score in the class is 1000 points.**

These reports must show your skills in using **STATA**, organized data-bases I will provide, the Meriam Library and your knowledge of statistical reasoning. I will grade all of four papers on their overall appearance, the quality of the writing and the substantive content using the logic and statistics from this course. You will receive lower grades the longer the papers are not turned in on time.
Moreover, I have a tendency to lose papers if they are not turned in with the others from the class and that may mean you will have to redo the paper. Make sure you keep copies of them for your use. If you do not turn the papers in on the date they are due, you will receive a 20 point cut on each day it is not turned in until the remainder is zero. At that point there is no need to turn in the paper since you will receive zero.

Grades will be based on the accumulation of points. And the schedule looks like this:

- a = 90% or higher of the total available points
- b = 78% to 89% of the total available points
- c = 55% to 77% of the total available points
- d = 45% to 54% of the total available points
- f = 44% or less of the total available points

Messy work will be graded lower. Also, if I am not able to understand the procedures you use and the answers you provide, I will mark the work down. Please do not do the following: be absent unless required by some condition you will mention to me, use the internet when I am lecturing and turn in papers that are not date stamped. Do not put them under my door. Put them in my mail box.

I will allow 200 points for extra work only after I have examined the grade status of those students who have some likelihood of not passing. The objective is to help those who are having a difficult time, but who are willing to do extra work to get through the class. Your final grade will be computed by assigning a letter grade with plus or minus attached if necessary, the latter based on my judgment of your performance.

**SUGGESTIONS FOR STUDYING**

The following material recommends how you should study in this class. First you should always read the chapters in the texts two to three times. Secondly, you should read the chapters that are being covered during each of the weeks prior to coming to class. You should practice the use of **STATA** on the computers, either at your home or in the Lab. You should always bring a calculator to class; I will be asking unannounced questions of you in the class. You ability to answer those questions will be part of your grade in the class. It is defined as a subjective domain in grading by me. Finally, I urge you to take notes and ask questions when I lecture as the material is used in my evaluations of your work. The suggestions I have for the work to be done is part of the method I use to evaluate your work. I prefer to see your work show my efforts to focus your attention on the materials in the class. If you feel you want to use the internet to do web searching while I’m lecturing I would urge you to drop the class as soon as I find out about it.