

Joint syllabus for:

**P.S. 501 INTRODUCTION TO METHODS OF POLICY ANALYSIS, and
PADM 580 INFORMATION SYSTEMS AND STATS FOR ADMINISTRATORS**

Contact Information:

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The best ways to reach me are via e-mail and by visiting me on campus on Mondays and Wednesdays.

Structure of the Course:

Read this syllabus carefully. You are responsible for every word of it on the exams.

The purpose of this course is to provide students with basic skills in the methods of policy analysis. It is oriented to practical problems in (1) the analysis of social and political behavior, and (2) the interaction these social and political systems with pertinent biological and physical systems. While other courses deal with substantive areas of knowledge (e.g., "American foreign policy", "environmental policy", or "administrative law"), this one deals with the acquisition of abilities and the mastery of techniques. We will be particularly interested in statistical tests and the computer software that is used in examining them.

Term Paper: Some students will complete a computer simulation term paper project by the end of spring break. It will transform the Club of Rome model of the global environment from a Fortran into an Excel program. Then, another group of students will add in a global warming component, to update that model. For the rest of the students, at the end of the semester there will be a term paper, using data sets designed for the course, to test hypotheses.

Meeting Times: I plan to meet with the class at the regularly scheduled Monday night each week of the semester, but to put enough of the content on line so that any student can attend only one half of the class sessions and still be keeping in reasonably good touch with the material. This is the first semester that we are switching this course to an on-line mode, so it may be more traditional than we aspire to for next year; it's a learning process as we adjust to the new situation and try to get as much material as possible on-line without destroying the ability to get inspired by being together. This learning begins with this syllabus, which is unusually detailed, will be posted on line at my website, and should be studied carefully and repeatedly during the semester by you individually.

INTERDISCIPLINARY FOCUS:

Public policy and public administration need to draw upon knowledge from many different disciplines in order to serve public needs. My own background, as the

instructor in the course, is hopefully conducive to that purpose. Also, as the only person who has taught this course both to our MPA students (back in the first decade of the program) and to the MPP students (in the past few years), I will be reflecting on my years of teaching experience. Nonetheless, the material we are covering is fairly universal in its applicability, beyond any particular persons or programs. In fact, the skills taught in this course are broadly relevant, not only in policy analysis at the university, but also in political science, sociology, economics, public administration, and business administration, as well as in government, in business, and in quasi-public institutional leadership at hospitals, schools, and public interest organizations. Consequently, the lectures will emphasize applications in a broad variety of settings.

GRADES:

There will be three exams during the semester, plus a term paper. These four items will count about equally in the grading for the course. For the exams, you are responsible for reading and knowing all the information in this syllabus, all the readings including textbook exercises for each chapter (including key terms, study questions, and SPSS problems), class handouts and study guides, and all "classroom activity." For our purposes, knowing classroom activity can be attained by coming to class, or (for up to half the weeks) learning the information from electronic versions (described in the next paragraph). In addition, there will be grades given throughout the term for special assignments in data collection and analysis. These, along with "class participation" and attendance, will count for twenty percent of the grade. "Class participation" includes not only making good comments in class, but also contributing constructively to team projects involving the computer assignments. "Attendance" consists of doing the minimum of showing up half the time, since the course is designed to allow you to skip out approximately every other week if you have to. However, I will meet with the class every week, and hope that most of you will be there most of the time.

Because of the nature of this course, in which understanding of one week's material depends on knowledge gained in prior weeks, those taking the course live who miss a class will be expected to examine very carefully electronic version ("e-version") of what they missed. If this is a .pdf file, it will be available at Ctools or via an email attachment sent to the class. (In other cases, it may be necessary to view the pertinent videotape before returning to the next week's live class.)

Any late assignment without a signed letter from an M.D. or equivalent authority will result in a two-notch reduction in grade for that exam (e.g., from B- to straight C). Also, UM-D makes reasonable accommodations for persons with documented disabilities. Students should register with the Disability Resource Services Office within the first few weeks of the semester to be eligible for services that semester.

I have been asked by the Provost to include the following statement (which should go without saying): The University of Michigan values academic honesty and integrity. Each student has a responsibility to understand, accept, and comply with the University's standards of academic conduct as set forth in the Code of Academic Conduct, as well as policies established by the schools and colleges. Cheating, collusion, misconduct, fabrication, and plagiarism are considered serious offenses. Violations will not be tolerated and may result in penalties up to and including expulsion from the University.

ON E-MAIL ETIQUETTE:

While e-mail has become a very important means of communication between students and faculty, it is important to observe appropriate norms of behavior. Because of the threat from viruses and similar plagues, I do not open emails that do not have your name as the sender, or emails that do not have a subject heading that indicates a topic related to you and the course. I also do not open e-mail attachments. This means your e-mail must actually be readable by me when I click on it; in other words, when I open an e-mail and there is no text because all the text has been placed in an attachment, I do not open the attachment. Also, term papers and other assignments should be submitted in paper form, not as e-mail. Please respect these norms of mine if you wish to contact me, and I look forward to hearing from you. Thank you.

No computer or cell phone use permitted during class.

TEXTS:

Students should acquire the following from the bookstore:

Chava Nachmias and David Nachmias, *Research Methods in the Social Sciences*, Worth Publishers, 7th ed.;
Herbert Weisberg, Jon Krosnick, and Bruce Bowen, *An Introduction to Survey Research, Polling, and Data Analysis* (Beverly Hills, Calif.: Sage Publications, 1996);
Stanley Milgram, *Obedience to Authority* (recommended only).

and www.dollarbillcopying.com has the following:

a course-pac of miscellaneous readings.

DEADLINES:

The deadlines set in the course outline below are generally dated the weekend before class. This indicates the readings and workbook assignments that should be completed in preparation for the class the next day.

COURSE OUTLINE:

Week Number One, class is Jan. 11, do reading by Jan. 16

The Nature and Purpose of Social Science and Policy Analysis--

Facts and Empirical Inquiry. "Concepts," "operationalization," "variables," "hypotheses," "theory," "intersubjective verification," and "the failure to disconfirm," provide enough jargon to allow us to talk to each other for the rest of the course.

A **concept** can be defined (Kerlinger 1967: 31) as "a word that expresses an abstraction formed by generalization from particulars." The word *chair* is a concept. Kerlinger gives the five examples of *weight, mass, energy, force, and achievement*. A **variable** is "a symbol to which numerals or values have been assigned." (Kerlinger 1967: 32) The definition of a concept can be found in a dictionary. The measurement of a concept, done through a process called operationalization, converts the concept into a variable. **Operationalization** is the specification of the procedures

needed to measure a concept. A **hypothesis** is the statement of an association that is conjectured to occur between two variables (or between two concepts). Hypotheses are the core element of science. Testing hypotheses allows us to see if the links we expect between two concepts really are there.

Independent and Dependent Variables: An **independent variable** is treated as the predictor or cause of the hypothesized relationship between the two variables, and the **dependent variable** is treated as the hypothesized outcome or effect.

Probabilistic vs. Deterministic Hypotheses and Laws: Some relationships are deterministic. For instance, Boyle's law (discovered in 1662) is that at a given temperature, for a gas in a balloon, volume is inversely proportional to pressure. Another gas law is that at a constant pressure, the volume of the gas will be proportional to temperature. These are deterministic relationships. If the gas is at 100 degrees Kelvin, the volume will be 1/2 of what it will be at 200 degrees Kelvin. The closest we have to such a law in political science is the confirmed hypothesis that there has never been an inter-state war between two Liberal states or two democracies. Most social science "couplings" or associations between two variables are probabilistic, not deterministic. For instance, in recent decades in the U.S., women tend to vote relatively Democratic compared to men, who tend to vote relatively more Republican. Physical associations can also be probabilistic. For instance, if you increase the pressure on a gas, some of the molecules, but not all, will increase their velocity and hence the temperature associated with them. This probabilistic pattern, at the level of individual gas molecules, aggregates at the level of the entire body of gas into the deterministic law that volume is proportional to temperature.

Levels of Analysis: A very bad flaw in the textbook is that in some places it seems to assume that all information (measurement of variables) should be done at the individual level of analysis (also known as level of aggregation). This would, for example, consist of interviewing someone and getting information on their attitudes on various policy issues. In a data matrix (also called in Excel a "spreadsheet"), the data would consist of a row for each individual, and a column for each attitude (column one might have their attitude on government health care plans, column two might have their attitude on global warming, and so on). In fact, many variables are best collected at higher levels of aggregation, such as the sovereign state. For instance, a data matrix or spreadsheet might contain a row for each country and a column for each variable. The first column might have the country's GNP, the second column how much the country spends on the military, and so on. We will be dealing with data sets of both sorts in this class. Levels of aggregation or measurement include the global system, the pair of countries (e.g., both are democracies, only one is a democracy, or neither is a democracy), and the individual.

A hypothesis about the causes of war (the dependent variable) might be that war between two countries will be less likely if the global system is unipolar, war will be less likely if both are democracies. This explanation includes variables from two levels of analysis, neither of which is at the individual level. Important social sciences such as macro-economics and international relations generally deal with data from the level of aggregation of the sovereign state. Other important data (such as panel studies of families in poverty) are collected at the individual level. Hence, public administration and public policy require theories and data (often integrated) from several different levels.

Theories and models: Dynamic systems and computer models. Examples: Mortgage repayment dynamics; a simple Keynesian model of a national economy; the Club of Rome model of the global environment. See computer simulation project, on page 1 above.

A **theory** is a set of statements, including hypotheses, organized in a deductive structure such that the hypotheses are derived from underlying axioms, postulates, or assumptions. A purely *scientific*

theory, such as Newton's theory of gravitational attraction, or Darwin's theory of evolution, or the political survival theory of Bueno de Mesquita, has only components that we have already listed.

The main reason for a theory is to explain why something is likely to happen. In public policy, the something could be some desired outcome, such as peace or prosperity. That outcome can be called the dependent variable (or outcome variable). A cause of an outcome is something that theoretically would make it more likely to happen. One hopes to find some policy instrument that causes a favorable outcome. That policy is the independent variable, and can also be called a predictor variable.

A theory, by explaining why something happens, allows us to predict when it will happen.

A *normative theory* adds values that *ought* to be pursued. Jefferson's normative theory, called Liberalism, has been expressed succinctly as "We hold these truths to be self-evident, that all men are created equal, that they are endowed by their Creator with certain inalienable rights, that among these are Life, Liberty, and the pursuit of Happiness. That to secure these rights, Governments are instituted among Men, deriving their just powers from the consent of the governed." I do not see how to justify any public policy without some normative theory. Examples of such theories include Idealist-Liberal theories of world politics, Realist theories of World Politics, and Jefferson's Liberal theory of domestic politics (largely derived from John Locke's *Second Treatise of Government*). Staying exclusively scientific might seem desirable. But it cannot be done in fields such as public administration and public policy, insofar as there are topics such as evaluation research, in which some program or policy or institution is evaluated, and that evaluation has to be from the point of view of some norm or end goal (which *ought* to be pursued). For instance, when I co-authored the accreditation study of the University of Michigan-Dearborn, we had to define our educational goals, on the basis of which the evaluation could be done. Such goals serve as the starting point of normative evaluation, somewhat as the postulates (e.g., given two distinct points, there is one and only one straight line containing them) are the starting point of geometry. There are also ethical rules in research (e.g., ch. 4 of Frankfort-Nachmias and Nachmias). In practice, these are established by legislatures and administrators, but presumably they, also, can only be justified by some underlying goals, as defined by principles of ethics that I have called normative theory.

A **paradigm** is a set of questions and expected answers. Theories can be grouped into paradigms. According to Thomas Kuhn (*The Structure of Scientific Revolutions*), revolutionary science is the replacement of one paradigm with another (such as the replacement of the Ptolemaic-Aristotelian paradigm with the paradigm of Galileo and Newton). Science seems to advance by the ordinary testing of hypotheses and also by the occasional revolution in paradigms.

In my parlance in the course, a **model** is a representation of part of the world that encompasses some theory and makes that theory more specific, dynamic, and precise by the construction of a computer code that tells how events will unfold through time. In other words, we will be dealing with **dynamic, computational models** (as opposed to static models, like a ship, or analogue dynamic models, such as an electrified toy model railroad). For instance, the *World Dynamics* model of our biosphere (Forrester 1973) is the computer program that undergirds the ecological theory of the best-selling book, *The Limits to Growth* (Meadows et al., 1972; Meadows et al., 1992). That theory is part of a new paradigm called environmentalism, which in a narrow sense is based on scientific components only (as in the *World Dynamics* model), but for most people goes on to have a normative shell (encouraging conservation, re-use, recycling, respect for species diversity, and so on).

Science consists of a (growing) set of hypotheses and theories, as well as procedures we can call operationalizations. It is customary to divide science into the **physical sciences** such as physics and chemistry, the **biological sciences** such as biochemistry and medicine, and the **social sciences** such as economics and political science. Some additional ways science works and all fits together are examined in my course PPOL 504, Rational Choice, and in the forthcoming book by Wayman, Williamson, and Bueno de Mesquita, *Prediction*.

Our first class session is January 11th. There are no classes on campus scheduled for Jan. 18th, which is Martin Luther King Day, a national holiday strongly related to public policy and the social sciences.

Supplemental readings and textbook to be completed by **JANUARY 16TH**:

Supplemental readings:

Always be sure to read the on-line or emailed file for weekly lectures.

For instance, this week, read the electronic file for Lecture 1 (in

Ctools).

Weisberg, Krosnick, and Bowen, chs. 2 and 8 (The Survey Process and the Process of Data Analysis)

Course-pac, Reading No. 1 -- an example of a policy-relevant theory, from game theory,
Read Wayman, "A Cooperative Solution to Prisoner's Dilemma."

Course-pac, Reading No. 2 -- operationalization of concepts: Dearborn panel questionnaire
(party i.d., post-materialism, political trust and efficacy, political information)

(Course-pac, Reading No. 3 -- Illuminating the Shadow of the Future: Scientific Prediction and the Human Condition. Prospectus with Abstracts)

(Course-pac, Reading No. 4 -- concept formation:
"Explaining the Onset of Mass Killing, 1949-87," accepted, *Journal of Peace Research*, tentatively scheduled for Vol. 47 (No. 1), January 2010. (Co-author with Atsushi Tago.)

Recommended, on concept formation:

"Rethinking Partisanship: Some Thoughts on a Unified Theory," in John Bartle and Paolo Bellucci, eds., *Political Parties and Partisanship: Social Identity and Individual Attitudes*. (Co-author with Bernard Grofman and Matthew Barreto.) Abingdon, Oxon, UK: Routledge, November 2008, pp. 60-74.

Textbook: Frankfort-Nachmias and Nachmias, preface and chs. 1-2 (pp. xix-44), ch. 7

In class, Jan. 11th:

Introduction to course; introduction to the scientific method and social science; to be more specific:

concepts -- examples: 'development,' 'democracy,' 'genocide,' 'political participation,' 'party identification,' and 'mobilization of a policy maker.'

theory -- Normative theory is designed to recommend regimes and/or policies, criticize regimes and/or policies, or suggest appropriate patterns of citizen behavior. E.g. Plato's cave, the Republic. Empirical theory is designed to explain and predict behavior. Anthony Downs' empirical theory of democracy. hypotheses -- Ex.: Stanley Milgram's *Obedience to Authority* and competing hypotheses predicting different patterns of human behavior.

basic terms, illustrated with panel study questionnaire:
independent and dependent variables; nominal, categorical, and interval measurement; Likert indices.

review of exercises;

bivariate relations and causality.

Week Number Two, do reading by Jan. 19th, week of Martin Luther King Day, so we will not meet, but your assignment will be via the study guide for that week, called "Lecture 2", which will be an on-line "lecture".

Recommended reading: Stanley Milgram, *Obedience to Authority*.

Research and Scientific Method in a Public Policy and Public Administration Context --

Some tools for evaluative reasoning about social problems will be discussed. **JANUARY 23RD.**

Readings: Electronic file for "Lecture 2" (see Ctools)

Textbook: Frankfort-Nachmias and Nachmias, ch. 4 (pp. 67-86)

Workbook: Look over the "Lecture 2" study guide, and think about relevant variables in an area of public policy as listed on the outline of policy areas.

In Class: No class session on Jan. 18th, as campus is closed for the Holiday.

Week Numbers Three, class meets Jan. 25th; do readings by then.

Course-pac, Reading No. 2 -- operationalization of concepts: Dearborn panel questionnaire
(party i.d., post-materialism, political trust and efficacy, political information)

Frank W. Wayman and Ronald R. Stockton, "Structure and Stability of Political Attitudes," (Read electronically)
Public Opinion Quarterly, Vol. 47 (Fall, 1983): 329-346

Week Numbers Four and Five, class meets Feb. 1st and Feb. 8th,

Research Design--

Any scientific research project should begin with an overall plan. What are the questions to be investigated? How can these questions best be answered? What evidence should be gathered? Where and when? What sorts of findings would support the hypotheses? What would require rejection of the hypotheses?

JANUARY 23RD AND 30TH.

Readings: Stockton and Wayman, *A Time of Turmoil*, Appendix A (handout); Wayman, "Staying the Course" (course pack) -- panel

Weisberg, Krosnick, and Bowen, ch. 13;

Hall and Wayman, "Buying Time," E-version, library. -- correlational design with 2SLS;

Wayman, "Alliances and War: A Time Series Analysis," course pack -- time series design;

Read through electronic resources: Douglas Hibbs, "Political parties and macroeconomic policy," *American Political Science Review* 71: 1467-87.

Textbook: Frankfort-Nachmias and Nachmias, chs. 3, 5, and 6 (pp. 45-66, 87-112, and 113-136)

In Class:

Causation

Research Design

True Experimental Design: frustration and aggression vs. modelling and aggression, TV and violence; Iyengar and Kinder on media, agendas, and priming.

Non-Equivalent Control Group Design: Milgram's *Obedience to Authority*;

Readings: Stanley Milgram, *Obedience to Authority*

Interrupted Time-Series Design: Wayman's study of whether military alliances spread war or deter war; Hibbs on American and British elections, and the impact of the new government on inflation and unemployment.

Correlational Design -- 3rd Variable Controls. Predicting the vote for president from a voter's position on the issues, party ID, and assessments of candidates' character.

Readings: Handouts from Francis Hoole's book on development

Discussion of Exercises

Discussion of research article -- Hall and Wayman, "Buying Time"

Week Number Six, class meets Feb. 15th,

The FIRST EXAM will cover all the above material, on FEB. 15TH.

Class on Feb. 15th will resume after the exam, and continue to 9 PM, covering:

Data Analysis. Once hypotheses have been constructed, they must be tested by looking at the evidence. We will learn some basic statistical procedures for analyzing data in the policy sciences. For the term papers, actual data analysis will be conducted using SPSS, a computer software package of statistical programs which make our lives easier.

Intro. to Statistics and Univariate Statistics-- FEBRUARY 8TH.

Readings: Weisberg, Krosnick, and Bowen, chs. 9 and 10

Textbook: Frankfort-Nachmias and Nachmias, ch. 7 -- measurement (pp. 137-160), ch. 8 -- sampling (pp. 149-170), ch. 14 -- data preparation and analysis (pp. 303-318), and ch. 15 -- the univariate distribution (pp. 319-350)

In Class: Mean, Standard Deviation, Standard Error of the Mean,
Standard Error of the Difference between two means.

Contingency Tables--

Examining relationships among categorical variables. FEBRUARY 15TH.
(Categorical variables are variables with a small number of
categories, such as social class, which has three categories:
working class, middle class, and upper class).

Readings: Weisberg, Krosnick, and Bowen, ch. 11 and 12

Textbook: Frankfort-Nachmias and Nachmias, ch. 16, pp. 351-384,
part of ch. 19, pp. 451-453

In Class: Correlation Coefficients and Chi Square

Week Number Seven, class meets Feb. 22nd,

Correlation and Regression-- Fitting a line through a set of
points, and measuring the goodness of fit. **FEBRUARY 22ND.**

Readings: Weisberg, Krosnick, and Bowen, ch. 14
Policy analysis readings to be assigned
Krain, "International Intervention and the Severity of
Genocides and Geno-Politicides," *International Studies
Quarterly*, 49 (No. 3, Sept.): 363-389
Readings from U. of Michigan affirmative action case
(handouts)

Textbook: Frankfort-Nachmias and Nachmias, ch. 16 and 17 (pp.
351-412)

In Class: Correlation Coefficients and Regression

[SPRING BREAK IS FEBRUARY 27TH TO MARCH 6 TH]

Week Number Eight, class meets Mar. 8th,

Inferential Statistics.

Textbook: Frankfort-Nachmias and Nachmias, ch. 19 (pp. 435-456)

Dimensional Analysis, Indices, and Scales. These terms refer to methods of
improving measurement and clarifying the meaning of concepts. The following
techniques will be illuminated through examples of their use: index
construction (Likert "scaling"), Guttman scaling, and factor analysis. **MARCH
7TH.**

Readings: Weisberg, Krosnick, and Bowen, pp. 174-81.

Textbook: Frankfort-Nachmias and Nachmias, ch. 18 (pp. 413-434)

In Class: How to do Guttman scaling:
Racial and Law and Order Factors from the Dearborn panel
(readings handout)

Week Number Nine, class meets Mar. 15th,

Causal Analysis-- By combining theory with regression analysis, one can move from knowledge of correlations to knowledge of causal patterns. Multiple regression and path analysis, and two-stage least squares examples will be given. **MARCH 12TH.**

Readings: Weisberg, Krosnick, and Bowen, ch. 13, and pp. 270-77.
Excerpts from Wayman and Grofman on change in party i.d., Racial Fears and Realignment in 20th Century America

In Class: Explanations of U.S. Presidential election voting, and cross-national explanations of human well-being as a function of economic development.

Using the Computer: SPSS-- MARCH 19TH

Readings: Handout of commands

Workbook: Buchanan, ch. 13 (pp. 195-204)

Assignment: Do Statistical runs for your term paper.

In Class: U. of M. Computing Environment; SPSS commands

Your Term Paper

Week Number Ten, class meets Mar. 22nd,

The SECOND EXAM, covering everything since the first exam, will be MON., MARCH 22ND. Class will continue after the exam until 9 PM.

Reliability and Validity-- A reliable measure produces the same results under the same circumstances. A valid measure measures what it is supposed to measure. For example, IQ tests are a reliable measure: they will produce about the same results for the same individual time after time. **MARCH 28TH.**

Readings: Weisberg, Krosnick, and Bowen, pp. 76-78;

Wayman and Singer, "Evolution and Directions for Improvement in the Correlates of War Project Methodologies" (course-pac); Lee Cronbach, *Essentials of Psychological Testing*, pp. 122-125 -- handout

In Class: The four types of validity -- the LSAT and predictive validity, practice LSATs and concurrent validity, final exams and

content validity, and anxiety tests and construct validity

Internal and External Validity -- in experimental designs

Weeks Number Eleven, Twelve, and Thirteen, class meets Mar. 29th, April 5th, and April 12th. Modes of Observation.

Modes of Observation--

These are the different techniques used to gather data. **DO READINGS BEFORE CLASS ON MARCH 29TH AND APRIL 5TH.**

Survey Research. Administering questionnaires to people is time consuming, costly, and tedious, but those who love it (whether or not they are living off a large grant from the National Science Foundation) claim that it reveals important aspects of the world we live in. Proctor and Gamble, which is always using it to find what products people will buy, agrees. So do many students of organizational behavior, of American electoral politics, and of other important fields of social science.

Readings: Weisberg, Krosnick, and Bowen, chs. 1-7.

Textbook: Frankfort-Nachmias and Nachmias, ch. 10 (pp. 205-228)

Designing a Survey

Writing Questions

Interviewing

Interviewer Training

Aggregate Data Analysis and other modes of observation (content analysis, evaluation research, etc.)-- DO READINGS BY APRIL 11TH.

Readings: Weisberg, Krosnick, and Bowen, ch. 1

Francis Hoole, excerpts from *Evaluation Research and Development Activities* (Beverly Hills: Sage, 1978) course pack.

Excerpts from UM-Dearborn evaluation, by Higgs and Wayman, handout

Wayman, "Voices Prophesying War," course pack.

Textbook: Ch. 9, pp. 187-204, and chs. 11-13, pp. 229-302

In Class: Other Modes of Research; Uses of Social Science

In Class: Elite Interviewing; Library and data bank resources; evaluation of the effectiveness of government programs.

Week Number Fourteen, class meets April 19th,

Writing and Disseminating Research Findings; Simulation and other Modes of Analysis. DO READINGS BY APRIL 19TH.

Readings: Weisberg, Krosnick, and Bowen, chs. 15-17

Simulation Reading No. 1 (course pack), Jay Forrester, *World Dynamics*. Wright-Allen Press, 1971, chs. 2-3.

Simulation Reading No. 2 (course pack), Joshua Epstein, *War with Iraq: What Price Victory?* Washington, D.C.: Brookings, 1991.

Textbook: Appendix A (SPSS) and Appendix B (Writing Research Reports)

Assignment: Write your term paper.

In Class: Simulation and Other Modes of Research; Uses of Social Science.

Textbook: Ch. 9, pp. 187-204, and chs. 11-13, pp. 229-302

Term papers are due Mon., April 19th, at 6 PM. IMPORTANT: you must hand in two copies of your term paper, WITH YOUR SPSS PRINTOUT ATTACHED TO ONE OF THE TERM PAPER COPIES.

Last Class is April 19th; study day is April 24th.

The THIRD EXAM will be Mon., April 26th, at 6:30 PM.

REFERENCES:

Forrester, Jay W. (1973) *World Dynamics*. Cambridge, Mass.: Wright-Allen Press.

Hall, Richard Lee, and Frank W. Wayman (1990) "Buying Time: Moneyed Interests and the Mobilization of Bias in Congressional Committees." *American Political Science Review* 1990.

Kerlinger, Fred N. (1967) *Foundations of Behavioral Research*. N.Y.: Holt, Rinehart, and Winston.

Kuhn, Thomas S. (1962) *The Structure of Scientific Revolutions*. Chicago: University of Chicago Press.

Gardner, Gerald, and Paul Stern (1996) *Environmental Problems and Human Behavior*, 2nd edition. Boston: Allyn and Bacon.

Meadows, D.H., D.L. Meadows, and J. Randers, and W.W. Behrens (1972) *The Limits to Growth*. N.Y.: Universe Books.

Meadows, D.H., D.L. Meadows, and J. Randers (1992). *Beyond the Limits: Confronting Global Collapse; envisioning a sustainable future*. Post Mills, Vt.: Chelsea Green.