2002-2003 ITV Courses

FALL I:

Professor Charles Franklin "Maximum Likelihood Estimation",
Wednesday 1:30-3:30 CST / 2:30-4:30 EST
e-mail: mailto:"franklin@polisci.wisc.edu"

FALL II:

Professor Charles Franklin "Maximum Likelihood Estimation",
Wednesday 1:30-3:30 CST / 2:30-4:30 EST
e-mail: mailto:"franklin@polisci.wisc.edu"

SPRING I:

Professor Samantha Luks "Measurement",
Wednesday 1:30-3:30 CST / 2:30-4:30 EST
e-mail: mailto:"luks@umn.edu"

Professor Janet Box-Steffensmeier "Duration Models",
Friday 11:00-1:00 CST / 12:00-2:00 EST
e-mail: mailto:"jboxstef+@osu.edu"

SPRING II:

Professor Phil Shively "Crosslevel Inference",
Friday 11:00-1:00 CST / 12:00-2:00 EST
e-mail: mailto:"shively@polisci.umn.edu"

Professor Ted Hopf, "An Introduction to Qualitative Methods"
Wednesday 1:30-3:30 CST / 2:30-4:30 EST

2002-2003 Class Schedule

Fall 2002, Module I:

Wednesday class, 1:30-3:30 CST / 2:30-4:30 EST
September 4, 11, 18, 25 & October 2, 9, 16

Friday class, 11:00-1:00 CST / 12:00-2:00 EST
September 6, 13, 20, 27 & October 4, 11, 18

Fall 2002, Module II:

Wednesday 1:30-3:30 CST / 2:30-4:30 EST
October 23, 30, November 6, 13, 20, & December 4, 11

Friday class, 11:00-1:00 CST / 12:00-2:00 EST
October 25, November 1, 8, 15, 22, & December 6, 13

Spring 2003, Module III:

Wednesday 1:30-3:30 CST / 2:30-4:30 EST
January 29, February 5, 12, 19, 26, & March 5, 12

Friday class, 11:00-1:00 CST / 12:00-2:00 EST
January 31, February 7, 14, 21, 28, & March 7, 14

Spring 2003, Module IV:

Wednesday 1:30-3:30 CST / 2:30-4:30 EST
April 2, 9, 16, 23, 30 & May 7, 14

Friday class, 11:00-1:00 CST / 12:00-2:00 EST
April 11, 18, 25 & May 2, 9, 16

2002-2003 ITV Courses

Module III: Measurement Models

Instructor: Samantha Luks, University of Minnesota

Short Bio

Course webpage: http://www.polisci.umn.edu/courses/spring2003/8160/001/

email:luks@umn.edu

Dates	Times	Description
Wednesdays January 29 February 5, 12, 19, 26 March 5, 12	1:30 - 3:30, CST 2:30 - 4:30., EST	This course covers both conceptual and statistical models of measurement used in political science. Topics covered include reliability and validity, exploratory factor analysis, confirmatory factor analysis, and structural equations with latent variables. For this seminar, you should purchase: Kenneth A. Bollen, Structural Equations With Latent Variables, Wiley, 1989; and Edward Carmines & Richard Zeller, Reliability and Validity Assessment. You may also want to purchase the following Sage monographs: Kim and Mueller's Introduction to Factor Analysis (#13), and Kim and Mueller's Factor Analysis (#14).

		Your course grade will be based on homework assignments, a take-home exam, and a critical review of an article. Required books: Bollen, *Structural Equations with Latent Variables* , Wiley (ISBN: 0 471 01171 1) Carmines & Zeller, *Reliability and Validity Assessment* , Sage (#17) (ISBN: 0 8039 1371 0) Recommended books: Kim & Mueller, *Introduction to Factor Analysis* , Sage(#13) (ISBN: 0803911653) Kim & Mueller, *Factor Analysis* , Sage(#14) (ISBN: 0803911661) Hayduk, *Structural Equation Modeling with LISREL* , Johns Hopkins University Press (ISBN: 0801834783)

Module III: Event History

Instructor: Jan Box-Steffensmeier, The Ohio State University

email: mailto:%20jboxstef+@osu.edu

Webpage: http://polisci.osu.edu/faculty/jbox/jboxstef.htm

Dates	Times	Description
Fridays January 31 February 7, 14, 21, 28 March 7, 14	11:00 - 1:00, CST 12:00 - 2:00, EST	Social science theories are increasingly focused on change processes and temporal data are becoming widely available. Yet the vast majority of empirical research focuses on static relationships, i.e., at one point in time, typically cross-sectional studies. Even when time series or panel data are analyzed, the temporal structure is often ignored and the data are treated as though they are cross-sections with some additional methodological complications involving autocorrelations. Event history methods are ideal for studying temporal change. They address not only whether an event occurred, but when the event occurred. For many research questions in social science, the timing or history of social change is at least as interesting as understanding the culminating event. Research designs incorporating "history" into the analysis promises greater analytical leverage than designs ignoring history, such as cross-sectional

		designs. Event history analysis is clearly longitudinal and involves the statistical examination of longitudinal data collected on a set of observations. While a wide variety of statistical models may be constructed for event history data, at the most basic level, all event history models have some common features. The dependent variable measures the duration of time that units spend in a state before experiencing some event. Generally, a researcher knows when the observations enter the process, i.e., when the history begins, and when, and whether or not, the process ends (with the occurrence or nonoccurrence of some event). Analysts are typically interested in the relationship between the length of the observed duration and independent variables, or covariates, of theoretical interest. A statistical model can then be constructed to link the dependent variable to the covariates. Inferences can be made regarding the influence of the covariates on the length of the duration and the occurrence (or nonoccurrence) of some event. As scholars are beginning to recognize, these methods have many advantages and allow new questions to be addressed. Event history data are becoming more and more available in all areas of empirically oriented political science. Applications include the duration of peace, the duration of unemployment, the length of time a cabinet is in place, when a challenger enters a congressional race, the duration of congressional careers, when a policy is likely to be adopted by the states, or how long it takes to complete a dissertation. The course will thoroughly describe different models for different kinds of duration data, document the assumptions underlying these different models, and consider goodness-of-fit indices and diagnostic techniques, i.e., residual and specification analysis. Required books: Blossfeld, Hans-Peter & Gotw Rohwer. 2nd edition. *Techniques of Event History Analysis* . Lawrence Erlbaum Publishers. (ISBN: 0 8058 4091 5) Recommended books: Hougaard, Philip. *Analysis of Multivariate Survival Data* . Springer-Verlag. (ISBN: 0 387 988734 2) Stata, S+ or R will be terrific for the course.

Module IV: Cross-level Inference

Instructor: W. Phillips Shively, University of Minnesota

Short Bio

email: SHIVELY@polisci.umn.edu

Click here for the syllabus.

Dates	Times	Description
Fridays April 11, 18, 25 May 2, 9, 16	11:00 - 1:00, CST 12:00 - 2:00, EST	The course will introduce the identification problem inherent in data gathered at one level of aggregation to infer processes at another level of aggregation. The main emphasis will be on inference from geographically aggregated data to processes at the individual level. We will present the fundamentals of the problem, review various techniques that have been proposed to address it, and discuss the main issues that arise in estimation. Required books: Achen and Shively, CROSS-LEVEL INFERENCE (U. of Chicago Press) King, A SOLUTION TO THE ECOLOGICAL INFERENCE PROBLEM (Princeton Press).

Module IV: An Introduction to Qualitative Methods

Instructor: Ted Hopf, The Ohio State University

Picture

email: hopf.2@osu.edu

Dates	Times	Description
Wednesdays April 2, 9, 16, 23, 30 May 7, 14	1:30 - 3:30, CST 2:30 - 4:30, EST	This course is an introduction to thinking about research techniques, methodology, and epistemology. It raises issues and questions that should be thought about before one chooses to execute a research design on some social phenomenon. The course has three main parts. The first part asks questions about the foundations of mainstream social and political science. The second part introduces several qualitative approaches to the social world. These include interpretivism, constructivism, ethnography, narrativity, hermeneutics, critical theory, and discursive analysis.

		This is a tasting menu of methods; no single approach will receive more than glancing treatment. But it should suffice to inform the third, and last, part of the course. In those weeks, the comparative case-study method is mastered and each student will be expected to apply both that method, and a combination of that method and some other qualitative method(s) to a research design derived from a list of texts.

2001-2002 ITV Courses

Module 1: Statistical Computing

Instructor: Wendy K. Tam Cho, University of Illinois

email: wendy@cho.pol.uiuc.edu

Web Page: http://cho.pol.uiuc.edu/~wendy/

Click here for a picture of Professor Tam Cho

Click here for the syllabus

Dates	Times	Description
Fridays October 26th November 2nd, 9th, 16th December 7th, 14th	11 a.m. to 1 p.m., CST 12 p.m. to 2 p.m., EST	This course will focus on aspects of statistical computing. Modern statistical packages provide many tools for analyzing data. This course takes a behind-the-scenes look at some of these tools in an effort to move away from a simple point-and-click environment to a better understanding of some of these powerful tools. In addition, we will examine how advances in computing have led to advances in statistical analysis through tools such as simulation. A variety of statistical methods will be discussed in the context of specific data analysis problems. Topics to be covered may include introductions to statistical packages such as S-Plus and r, Distributions and Random Data, Numerical Methods, Monte Carlo Experiments, and optimization (via e.g., maximum likelihood). Class assignments will all be computing projects.

Modules 2 & 3: Bayesian Methods for Political Science Data Analysis

Instructor: Charles Franklin, University of Wisconsin

email: franklin@polisci.wisc.edu

Web Page:

Click here for a picture of Professor Franklin

Click Here for a Past Bayesian Methods Syllabus		
Dates	Times	Description
Tuesdays January 22nd and 29th February 5th, 12th, 19th, 26th March 5th, 26th April 2nd, 9th, 16th, 23rd, 30th May 7th	3 p.m. to 5 p.m. CST 4 p.m. to 6 p.m. EST	This course introduces Bayesian methods for data analysis in political science. Bayesian methods provide a flexible and powerful approach to complex statistical models and have a theoretical elegance and clarity that is impressive. Bayesian models inherently recognize and incorporate subjective judgements of the researcher, which is the source of both their great power and of the controversy surrounding their use. We will discuss some of the epistemological issues raised by Bayesian methods as well as their application. There are several sets of tools needed to do applied Bayesian modeling. First we need to review some probability theory and learn some integral calculus to allow us to deal with continuous distributions. Second, we will develop the fundamental notion of Bayes' theorem as a foundation for statistical inference. We'll also see how likelihood is incorporated within the Bayesian framework. Finally, we'll explore the world of applied Bayesian modeling. This will include learning some new software tools using WinBugs and S-Plus. The main focus of the course will be application of Bayesian models to cutting-edge issues in political science. This will include a number of applied readings. We'll take time to discuss these applications in class in order to develop a feel for what research that takes a Bayesian approach "feels like." The goal of the class is to develop the necessary theoretical understanding to correctly apply Bayesian methods using modern software. A second goal is to reach a level of understanding that will support further reading and learning on your own. The syllabus points the way to further reading throughout in the "Advanced Topics" sections.

Module 4: Time Series, Part One (Fundamentals)

Instructor: Professor John Freeman, University of Minnesota

email: freeman@polisci.umn.edu

Web Page: http://www.polisci.umn.edu/faculty/freeman/

Click here for a picture of Professor Freeman

Click here for the current syllabus

Dates	Times	Description
Fridays January 25th February 1st, 8th, 15th, 22nd March 1st, 8th	11 a.m. to 1 p.m., CST 12 p.m. to 2 p.m., EST	This course covers basic ideas related to time series analysis with special attention to applications in political science. Topics include research design, difference equations, and stationary ARMA processes. In addition, several weeks are devoted to public policy analysis and measurement issues, more specifically, to the use of ARMA models to assess intervention effects and to the consequences of temporal aggregation.

Module 5: Time Series, Part Two (Intermediate)

Instructor: Professor Jan Box-Steffensmeier, The Ohio State University

email: jboxtef+@osu.edu

Web Page: http://polisci.osu.edu/faculty/jbox/jboxstef.htm

Click here for a picture of Professor Box-Steffensmeier

Click here for the current syllabus

View the Intermediate Time Series Syllabus		
Dates	Times	Description
Fridays March 29th April 5th, 12th, 19th May 3rd, 10th, 17th	11 a.m. to 1 p.m., CST 12 p.m. to 2 p.m., EST	This course builds upon the basics of time series analysis presented in "Time Series, Part One: Fundamentals" with the goal of making students familiar with recent developments in time series and with the application of these methods in political science. We will examinea number of important topics in time series analysis including granger causality and VAR, time series models for heteroscedasticity (ARCH), unit roots, near and fractional integration, cointegration, and modeling times with changes in regime.

Module 6: Time Series, Part Three (Advanced)

Instructor: Professor Jon Pevehouse, University of Wisconsin-Madison

email: pevehous@polisci.wisc.edu

Web Page: http://www.polisci.wisc.edu/users/pevehous/

Click here for a picture of Professor Pevehouse

Dates	Times	Description
Dates TBA	Times TBA	Description Forthcoming...

2000-2001 Courses

Scaling and Dimensional Analysis in Political Science

Autumn 2000

Instructor: Professor Herb Weisberg, Ohio State University

email: weisberg.1@osu.edu

Web Page: http://polisci.osu.edu/faculty/hweisberg/index.htm

Click here for a picture of Professor Weisberg

View the Scaling and Dimensional Analysis Syllabus
Course Description: Dimensional perspectives are common in thinking about politics. This course covers the methodology of dimensional analysis -- the scaling techniques and their philosophical implications. The dimensional approach is based in geometry, so visual displays will be emphasized. Theoretical perspectives on methods, scaling, and dimensions will also be presented. The methods presented are a variety of techniques for scaling, broadly defined, including unfolding analysis, proximity scaling, Guttman scaling, cluster analysis, factor analysis, and multidimensional scaling. These methods provide means for: .data reduction (reducing a large number of variables into a smaller set of composites), .examining dimensionality (representing the data in terms of the smallest possible number of unobserved underlying factors), and .measurement (scoring cases on the underlying dimensions and using those scores in further analysis). The Course:

The course will be presented as a "module" is part of an on-going program of graduate Instruction in Advanced Quantitative Analysis by the Departments of Political Science on four CIC campuses (Illinois, Michigan, Ohio State, and Wisconsin) using interactive video and WebCT.

Approach:

The basic theory of each technique covered will be presented in class. Computer output for the techniques will be distributed and will be explained in detail, after which students will be expected to run the programs themselves and interpret the output. Readings will include both methodological presentations and substantive examples.

Mathematical Level:

Most techniques covered in this course require only simple algebraic manipulations and geometric insights. Familiarity with matrix algebra will be useful for factor analysis.

Event History Analysis

Winter 2000

Instructor: Professor Jan Box-Steffensmeier, Ohio State University

email: jboxstef+@osu.edu

Web Page: http://polisci.osu.edu/faculty/jbox/jboxstef.htm

Click here for a picture of Professor Box-Steffensmeier

View the Event History Syllabus

Course Description:

Social science theories are increasingly focused on change processes and temporal data are becoming widely available. Yet the vast majority of empirical research focuses on static relationships, i.e., at one point in time, typically cross-sectional studies. Even when time series or panel data are analyzed, the temporal structure is often ignored and the data are treated as though they are cross-sections with some additional methodological complications involving autocorrelations. Event history methods are ideal for studying temporal change. They address not only whether an event occurred, but when the event occurred. For many research questions in social science, the timing or history of social change is at least as interesting as understanding the culminating event. Research designs incorporating "history" into the analysis promises greater analytical leverage than designs ignoring history, such as cross-sectional designs. Event history analysis is clearly longitudinal and involves the statistical examination of longitudinal data collected on a set of observations. While a wide variety of statistical models may be constructed for event history data, at the most basic level, all event history models have some common features.

The dependent variable measures the duration of time that units spend in astate before experiencing some event. Generally, a researcher knows when the observations enter the process, i.e., when the history begins, and when, and whether or not, the process ends (with the occurrence or nonoccurrence of some event). Analysts are typically interested in the relationship between the length of the observed duration and independent variables, or covariates, of theoretical interest. A statistical model can then be

constructed to link the dependent variable to the covariates. Inferences can be made regarding the influence of the covariates on the length of the duration and the occurrence (or nonoccurrence) of some event.

As scholars are beginning to recognize, these methods have many advantages and allow new questions to be addressed. Event history data are becoming more and more available in all areas of empirically oriented political science. Applications include the duration of peace, the duration of unemployment, the length of time a cabinet is in place, when a challenger enters a congressional race, the duration of congressional careers, when a policy is likely to be adopted by the states, or how long it takes to complete a dissertation. The course will thoroughly describe different models for different kinds of duration data, document the assumptions underlying these different models, and consider goodness-of-fit indices and diagnostic techniques, i.e., residual and specification analysis.

Maximum Likelihood Estimation for Generalized Linear Models

Autumn 1999

Instructor: Professor Charles Franklin, University of Wisconsin-Madison

email: mailto:%20"franklin@polisci.wisc.edu"

Web Page:

Click here for a picture of Professor Franklin

View the Maximum Likelihood Syllabus (Adobe PDF file)

Course Description:

This course is about a number of newand very useful statistical models which can better or more appropriately address the substantive questions you encounter as a social scientist. Among the topics we cover are logit and probit models for both binary and ordinal dependent variables, event count models (such aswars in a decade, or coups in a year, or Supreme Court appointments in a presidential term, or incumbents defeated in an election), discrete choice models for multiple
alternatives (such as voting for Clinton or Bush or Perot, or vote choices among multiple parties as in any system with more than two parties), models for non-random selection (as when you observe the preferences of voters but not non-voters). The applications are almost endless.

Each of these models has two things in common: you can't estimate them correctly using OLS regression but you can using maximum likelihood. Thus our course teaches you what maximum likelihood estimation is all about (just as you learned about least squares estimation in your re- gression class) and how each of these substantively important models can be estimated using it. Maximum likelihood, then, is just a technique of estimation which allows us to develop a wide variety of substantively useful models which are otherwise unavailable. The great advantage of maximum likelihood is that it provides a single, uni ed, approach to estimation which spans this great variety of statistical models.

While the title of the course emphasizes the method of maximum likelihood estimation, I want to stress that the course is focused on substantive models which should be highly useful in your work. Maximum likelihood is as crucial a part of this process as is least squares for a regression course. I will teach you a lot about the method of maximum likelihood. But just as you didn't take your regression course to learn about least squares, so you won't be taking this course to learn about maximum likelihood. The payo

comes in the substantive work you can do with the new models you will learn but which you cannot do with any regression model.

The background required for the course is a good introduction to statistical inference and at least one good regression course (something covering multiple regression using matrix algebra). Some familiarity with matrix algebra is assumed, though we won't use a lot of it. Likewise, a speaking acquaintance with calculus is very helpful.

Grading will be based on students' written and computer assignments. Computer exercises will be set up to use the Stata statistical package. There is also a required term paper. The paper is half the grade and the exercises are weighted equally for the other half.

Fall 2002 - Spring 2003 Modules

Module 1 & 2: "Maximum Likelihood Estimation"

Instructor: Professor Charles Franklin
email: franklin@polisci.wisc.edu

Wednesday class, 1:30-3:30 CST / 2:30-4:30 EST: September 4, 11, 18, 25, October 2, 9, 16 , October 23, 30, November 6, 13, 20, December 4, 11

Module 3: "Measurement"

Instructor: Professor Samantha Luks
email: luks@polisci.umn.edu

Wednesday class, 1:30-3:30 CST / 2:30-4:30 EST: January 29, February 5, 12, 19, 26, March 5, 12

Module 4: "Duration Models"

Instructor: Professor Janet Box-Steffensmeier
email: jboxtef+@osu.edu

Friday class, 11-1:00 CST / 12-2:00 EST: January 31, February 7, 14, 21, 28, March 7, 14

Module 5: "Crosslevel Inference"

Instructor: Professor Wendy Cho Tam & Professor Phil Shively
email: wendycho@uiuc.edu

Wednesday class, 1:30-3:30 CST / 2:30-4:30 EST: April 2, 9, 16, 23, 30, May 7, 14

Module 6: "Panel Data / Time-Series Cross Sections"

Instructor: Professor Brian Gaines
email: bjgaines@uiuc.edu

Friday class, 11-1:00 CST / 12-2:00 EST: April 11, 18, 25, May 2, 9, 16