THE HENRY M. JACKSON
SCHOOL OF INTERNATIONAL STUDIES

Instructor: Prof. Clair Yang
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Class time: Monday and Wednesday, 1:30-2:20 pm, LAW 116
Final exam: Monday, June 10, 2:30 – 4:20 pm, LAW 116
Office hour: Tuesday 2:00 pm – 4:00 pm

Course Syllabus for JSIS 595 / LAW B 554

Research Tutorial: Quantitative Methods

Spring 2019

Course Description and Objectives:

This course teaches about the application of quantitative methods in international studies and social studies in general. The focus of the course, however, is not on the mathematical foundations of these analytical models, but rather on the application of these methods.

The course is designed with several goals in mind: 1) To provide students with a basic understanding of popular data analytical models, their usage, limitation, and relative suitability in different settings; 2) to practice evaluation and interpretation of quantitative studies; 3) to introduce students to commonly used statistical software, such as Excel and Stata.

The choice of which techniques to cover in the limited time available was difficult. The ones settled on in this course mostly reflect the popularity of the techniques in academic research as well as in practice. This course is not designed nor should it be considered as equivalent to a course in statistics or econometrics, even though a course in econometrics (especially applied econometrics) would likely cover similar topics.

The evaluation of the course will depend on a mid-term exam, a final exam, two in-class quizzes, one 5-page literature report, homework assignments, and class participation.

Logistics

Please remember to bring your laptop for every class.

Grading:

- 30% Midterm exam (materials covering the first half of the quarter)
- 40% Final exam (materials covering the whole quarter)
- 10% A literature report
- 10% Two in-class quizzes
- 10% Homework and class participation

Late policy: Students should hand in printed homework assignments before the beginning of next week's class. NO EMAILS and NO LATE TURN-IN PLEASE. Late assignments will not receive any credit, unless documentation is given excusing an absence for medical, religious or personal reasons, or for official university business. Every effort should be made to notify the instructor as soon as possible (preferably in advance) of the
reason for the absence.

In-class participation: there will be substantial in-class discussion. Students are expected to attend each class and participate in the discussions, except for reasons listed above.

Quiz: there will be two quizzes in class. Students who miss the class will not be able to make up for the quizzes, except for reasons listed above.

Software:

Registered students are required to purchase Stata to be used in this class. A 6-month Stata/IC student license costs $45, and can be purchased at the following website:
https://www.stata.com/order/new/edu/gradplans/student-pricing/
Please try having the software installed before the beginning of the class. If you have any problems, please bring it to the first class.

Textbook:

The textbook used for this course is Levin, Fox, and Forde (2006), *Elementary statistics in social research*, Pearson Education - ISBN #978-0-205-84548-4. The book provides good explanations of the mathematical foundations for the analytical models and can be used as a source of reference. The lectures, on the other hand, emphasizes the applications of these models in research and might only follow the textbook loosely. Only materials covered in class will appear on the exams.

Literature report:

There will be a 5-page literature report due in Week 9. For the report, I will pick 3 journal articles which use different methods to study the same question. Students are expected to read, to summarize, and to critically evaluate the 3 articles, with a focus on their empirical frameworks and identification strategies.

Course Schedule

This schedule is subject to change. Updated versions will be posted on Canvas or announced in class.

Monday	Wednesday
Week 1: 4/1 **Introduction** • Course overview, data basics • Reading: Levin et al. (2014), Chapter 1, Page 9-25	4/3 **Graphic Presentation of data** • Graphic presentation, pie chart, bar chart, histogram, scatterplot, time trend • Reading: Levin et al. (2014), Chapter 2, page 61-71
Week 2: 4/8 **Numeric Presentation of Data** • Mean, average, variance, standard deviation, correlation • Reading: Levin et al. (2014), Chapter 2, page 35-36, Chapter 3, page 81-95, Chapter 4, page 105-113 • Homework 1	4/10 **No Class**

Week 3: 4/15 **Data Collection methods** • Data collection methods: survey, lab experiment, field experiment, census • Potential issues in data collection: representativeness, small sample bias, measurement error, truthfulness • Reading: Levin et al. (2014), Chapter 1, page 1-9, Chapter 6, page 173-179	4/17 **Sampling Distribution and Statistical Inferences** • The central limit theorem, sampling distribution of means, the Normal distribution • Reading: Levin et al. (2014), Chapter 6, page 180-206 • **Quiz 1**
Week 4: 4/22 **Confidence Interval** • t-distribution, confidence interval • Reading: Levin et al. (2014), Chapter 6, page 180-206 • Homework 2	4/24 **Hypothesis Testing** • Null hypothesis, the structure of hypothesis testing, confidence intervals, mean comparison • Reading: Levin et al. (2014), Chapter 7, page 219-243, page 252-258 • **Quiz 2**
Week 5: 4/29 **Intro to Regression** • Univariate regression, coefficient Interpretation, prediction • Reading: Levin et al. (2014), Chapter 11, page 401-412 • Homework 3	5/1 **Stata Workshop I: Intro to Regression** • Group mean comparison • Univariate regression using Stata • Coefficient interpretation • Reporting results in a regression table • Prediction • Hypothesis testing and confidence interval for predictions
Week 6: 5/6 **A Review Session for the Midterm**	5/8 **Midterm Exam**
Week 7: 5/13 **Regression Revisited** • Multivariate regression, Dummy variable and group comparison, Dummy slope, interaction, multicollinearity • Reading: Levin et al. (2014), Chapter 11, page 418-427 • Homework 4	5/15 **Stata Workshop II: Regression Revisited** • Multivariate regression using Stata • Constructing dummy variable • Group comparison, • Regression with interaction terms
Week 8: 5/20 **Causality and Correlation** • Identification issues, omitted variable bias, reverse causality, internal vs. external validity • A brief introduction to natural experiments, difference-in-difference, regression discontinuity • **A literature report**	5/22 **Individual Tutorial:** **Required for JSIS PhD students** **Other students by appointment**

Week 9: 5/27 Memorial Day, no class	5/29 **Panel Regression** • The panel regression model, time-variant and time-invariant factors • Reading: TBA • Homework 5
Week 10: 6/3 **Stata Workshop III: Panel Regression** • Panel regression with Stata • Reporting the results	6/5 **No Class**

Note 2: Lectures are required for all registered students unless otherwise noted. Individual research tutorials are required of JSIS PhD students only.

Popular Database for Quantitative Research

1. World Bank

You can freely access the World Bank datasets at http://databank.worldbank.org/data/home.aspx. The *World Development Indicators* is a popular dataset used for international studies. It is the primary World Bank collection of development indicators, compiled from officially recognized international sources. It presents the most current and accurate global development data available, and includes national, regional and global estimates. It covers 217 countries and starts from the year 1960 to present. It has 1591 variables, including frequently used ones such as GDP, electricity usage, education, gender ratio, etc.

2. ICPSR

ICPSR, the Inter-university Consortium for Political and Social Research, was established in 1962. An integral part of the infrastructure of social science research, ICPSR maintains and provides access to a vast archive of social science data for research and instruction (over 8,000 discrete studies/surveys with more than 65,000 datasets).

In order to access the data sets, you need to (1) create an account at ICPSR (click here: http://csscr.washington.edu/archive/icpsr/ then follow the instructions “visit the UW Library proxy page” and provide the following URL: http://www.icpsr.umich.edu/icpsrweb/landing.jsp” then click “log in/create account”) and (2) check out available data at ICPSR.umich.edu (try the search)

3. OECD Data

The Organization for Economic Co-operation and Development (OECD) provides a forum in which governments can work together to share experiences and seek solutions to common problems. In order to achieve this, the OECD monitors economic trends, analyzes and forecasts economic developments, and researches social changes and evolving patterns in trade, environment, agriculture, technology, taxation, and other areas in OECD countries as well as some non-member economies. It also provides a reliable source of comparable statistics and economic and social data for the public. The data can be accessed here https://data.oecd.org/

4. IMF

The IMF publishes a range of time series data on IMF lending, exchange rates and other economic and financial indicators. Manuals, guides, and other material on statistical practices at the IMF, in member countries, and of the statistical community at large are also available. You can freely access the data at https://www.imf.org/en/Data