UNIVERSITY OF CENTRAL FLORIDA
COLLEGE OF SCIENCES
DEPARTMENT OF POLITICAL SCIENCE

POS 6747.0001 Advanced Topics of Quantitative Political Analysis

Spring 2020 (Tuesday, 6:00-8:50 PM, HPH310)

INSTRUCTOR	Dr. Kyungkook Kang (pronounce Key-young-cook or aka K3)
OFFICE	302J Phillips Hall
OFFICE HOURS	TuTh 4:30PM-6:00PM & Th10:30AM-1:30PM (or by appointment) Please tell me a day before visit to help you avoid waiting in line or being crammed into a room.
MAIN OFFICE PHONE	407-823-5082
INSTRUCTOR E-MAIL	Kyungkook.Kang@ucf.edu
CORRESPONDENCE	The best way of all correspondence with me will be via Canvas of Webcourses@UCF instead of regular email account, which can lead to delayed feedback. Please use Inbox, which is the global communication function in Canvas. I will normally respond within two business days. If you send a message to my UCF email address, I will make my reply only to the emails sent from your UCF Knights Email account (No Gmail, Hotmail, Yahoo Mail, etc. please).
TEXTBOOKS (RECOMMENDED)	Peter Kennedy. 2003. *A Guide to Econometrics.* 6th Edition. MIT Press. Kohler and Kreuter. 2012. *Data Analysis Using Stata.* Taylor & Francis

COURSE DESCRIPTION

This class is required for graduate students who want to develop their empirical skills to the necessary level required for high quality academic research as well as private/public sector employment using data analysis. Based on solid understanding on standard methods covered in previous class, this second quantitative course will further discuss a variety of more advanced skills including (a) multinomial response models, (b) instrumental variable analysis using two-stage approaches, (c) panel data regression, (d) event history (or survival) analysis, and (e) multilevel (or mixed, hierarchical) modeling. However, due to time and technical constraints, we will not discuss time-series analysis such as Box-Jenkins methods for ARIMA process or vertor-autoregression (VAR) model with the impulse-response function. Time-series analysis is discussed in a separate graduate course offered by Dr. Drew Lanier.

The course provide a through and practical overview of advanced regression analysis, with an emphasis on applications in political science research including in exploring data, building and fitting models, investigating model assumptions, interpreting results from statistical models, and report findings.

We will use Stata statistical package to estimate the various models and methodologies covered in lectures.

.COURSE GOAL

Goals	Learning Strategies
Specification of dissertation research designs	Focus on research question development, research designs and lacunae in the existing empirical literature, and data availability / quality. Operationalization of weekly readings in-class. Semester long research project on a subject of your choosing.
Survey of applied methods	Assign applied empirical readings to gain understanding of selection criteria for appropriate techniques. Diagnostics of common empirical problems, interpretation and presentation of results.
Experience working with common political science & economic data sets	Students will learn about some of the most commonly used data sets, their applicability in answering certain types of research questions.
Enhance existing Stata skills	Homework to gain experience and understanding of computational capabilities.
Performing "best practices" in applied regression analysis	Enhancing critical thinking about statistical linear analysis, combined with practical applications of best models.

BACKGROUND PREPARATION AND PREREQUISITES

The class presumes that students have an intermediate knowledge of probability and statistical modeling, which covers multiple linear regression and logistic regression. We will address many different applications, so familiarity with generalized linear regression models would be helpful. You should have familiarity with Stata statistical package.

COURSE DESIGN

The techniques of analytical research methods are imparted principally through taking classes and doing problem sets, rather than independent reading. It is essential for students to regularly attend the class and to carefully review the course materials after the class. We expect that a student who has performed well in the assignments will be well-prepared for her/his own research project.

In addition to our required/recommended texts, a good set of notes would be the proper text to start with. I will electronically distribute a copy of my lecture note before each section begins. You may want to bring your own hard copies or take additional notes with your laptop. The assignments will consist of required questions which test the material of texts and lecture notes.

We will be using STATA, a general-purpose professional statistical software package, for data analysis in this course. I assume that you have no prior experience with this software but a basic knowledge of MS Office is required to facilitate your implementation of tasks.

To complete the take-home assignments using STATA, you have three options:

(1) Use PCs in the HPH 310 & HPH 409 computer labs OR purchase the software and install it on your own PC or laptop.
(2) Access UCF apps (http://apps.ucf.edu/) and use Stata from your device with a good internet connection (usually it will take 2~3 weeks after the start of the semester to update our class roster on the system)
(3) Purchase Stata at reduced student pricing from the website (www.stata.com) and install it on your own PC or laptop. The recommended version is Stata/IC 15 (Intercooled, the base version for mid-sized datasets).

The webcourses@UCF site of Canvas has a discussion board. This board provides an opportunity to post questions regarding the course material and/or computing. In addition to precepts and office hours, please use this board on the course website when asking questions about lectures and other course materials. This will allow students to see other students' questions and learn from them. I will regularly check the board and answer questions posted, although everyone else is also encouraged to contribute to the discussion. A student's respectful and constructive participation on the forum will count toward his/her class participation grade. Do not email your questions directly to me unless they are of personal nature — I will not answer them!

ATTENDANCE

Class attendance is not optional--if you need to miss class, please be prepared to explain why. Regular attendance is crucial to being successful in this course. The material covered in this course is inherently cumulative. If you do not keep up, you will quickly find yourself too far behind to catch up.

You should arrive to class on time: it will start promptly at its assigned time. Do not leave early. Late arrivals and early departures may count as absences (or at the course instructor's discretion, partial attendance may result in). For further information please refer to UCF Academic Regulations and Procedures (http://catalog.ucf.edu/policies/academic-regulations).

MAKE-UP EXAM & ASSIGNMENT POLICY

Make-up exams and assignments will be granted only in the case of an emergency (only for documented reasons) and/or a university documented absence. I always investigate the claims and make sure the documents are authentic. If such documentation is provided, it is up to the instructor's discretion to grant a make-up exam or to excuse the student from taking the exam without penalty. If exam or assignment dates conflict with a religious holiday, please notify the instructor about this at the beginning of the class. I will seek to accommodate you. For further information please refer to UCF Academic Regulations and Procedures (http://catalog.ucf.edu/policies/academic-regulations).
No extra credit expected individually. If I decide a substantial portion of the class would benefit from an additional opportunity, it will be offered to everyone. But I will not select some individuals out for special treatment.

NEW IMPORTANT POLICY REGARDING YOUR FINANCIAL AID

All faculty members are required to document students' academic activity at the beginning of each course. In order to receive the earliest financial aid disbursement, you MUST complete the non-credit assignment of syllabus quiz (can be found in Quizzes on Webcourse@UCF) during the first week of class. Failure to do so may result in a delay in the disbursement of your financial aid.

REQUIREMENTS

Your course grade will be based on three components:

(1) **Attendance & Participation**. **10 %.** Attendance is required. This course will move fast; you will become confused if you do not attend regularly. Late arrivals and early departures may count as absences. The frequency and quality of individual attendance will be carefully recorded and reflected in the final grades.

(2) **Two Take-Home Homework Assignments. 40 % (20+20).** You will be given two regular assignments during the term. Each student is to attempt all problems individually before the assigned date: you will not be allowed to collaborate with anybody. Usually you will be given **about 10 days** to finish your work. Electronic copies of your answers should be submitted via Webcourse@UCF.

(3) **Research Proposal Presentation and Final Research Paper 50 % (10+40).**
During the first month of the semester, you will be asked to make a short presentation of your research proposal. A sign-up sheet with due dates/times will be posted on the webcourse. Your presentation will consist of:

(a) A summary of your topic

(b) A description of why your topic is worthy of study

(c) One example of existing research related to your topic – either a book or an article.
- Describe the research focus of the study, why it is significant, its general method and most important findings.
- Identify the principal dependent variable and independent variables involved in the study and describe how they were measured.
- Assess the findings. Did the study, on its own terms, succeed? The specification of dependent and independent variables and the form of expected relationship between them.

(d) The specification of your hypothesis.
- Describe your dependent and independent variables and the form of the expected relationship between them.

(e) The operationalization of the variables
-What are your principal variables and how do you propose to measure them?
-Data gathering: Where will you get your data?

Research paper should be more elaborate, and involve the completion of the empirical research detailed in the research proposal. Students should be prepared to defend their choice of research

questions and methods, and devote the necessary time and hard work to create a high quality product (about 25~30 pages). The research paper should contain the following components: (1) title page, (2) abstract, (3) introduction (e.g., problem identification, research question, and significance), (4) background section and/or literature review, (5) research design/overview of analytic approach or method, (6) analysis or test, (7) findings and/or conclusion, (8) any necessary ancillary material (e.g., appendix, tables, and figures), and (9) a bibliography or works cited page. Electronic copies are due over email by [Due Date: TBD]. Late papers will not be accepted.

UCF DISABILITY STATEMENT

The University of Central Florida is committed to providing reasonable accommodations for all persons with disabilities. This syllabus is available in alternate formats upon request. Students with disabilities who need accommodations in this course must contact the professor at the beginning of the semester to discuss needed accommodations. No accommodations will be provided until the student has met with the professor to request accommodations. Students who need accommodations must be registered with Student Disability Services, Student Resource Center, Room 132, phone (407) 823-2371, TTY/TDD only phone (407) 823-2116, before requesting accommodations from the professor.

UCF RULES OF ACADEMIC CONDUCT

As reflected in the UCF creed, integrity and scholarship are core values that should guide our conduct and decisions as members of the UCF community. Plagiarism and cheating are very serious academic offenses. Please refer to the University's Rules of Conduct (available at: http://www.osc.sdes.ucf.edu) for more information on these issues. Failure to comply with university rules may subject violator(s) to appropriate action by university authorities and/or appropriate civil authorities. The penalty for students who plagiarize or cheat on an exam or an assignment will include a grade of F on that exam or assignment.

PROFESSIONALISM POLICY

Per university policy and classroom etiquette; mobile phones, iPads, etc. must be silenced during all classroom and lab lectures. Those not heeding this rule will be asked to leave the classroom/lab immediately so as to not disrupt the learning environment. Please arrive on time for all class meetings. Students who habitually disturb the class by talking, arriving late, etc., and have been warned may suffer a reduction in their final class grade (NO POINTS IN ATTENDANCE, SERIOUSLY!).

UNIVERSITY WRITING CENTER

The University Writing Center (UWC) is a free resource for UCF undergraduates and graduates. At the UWC, a trained writing consultant will work individually with you on anything you're writing (in or out of class), at any point in the writing process from brainstorming to editing. Appointments are recommended, but not required. For more information or to make an appointment, visit the UWC website at http://www.uwc.ucf.edu, stop by MOD 608, or call 407.823.2197.

GRADING

I usually apply a 'curve' grading scheme to convert your exam score into the following numeric and letter scale, so each exam grade reflects your performance relative to your fellow students. In this way all exams should be equivalently graded. Graded tests and materials in this course will be returned individually only by request. You can access your scores at any time using the Grade Book function of Webcourses. Please note that scores returned mid-semester are unofficial grades. Your course grade will be determined by the following numeric scale:

Course Points Average	Letter Grade
90-100	A
85-89.99	A-
80-84.99	B+
75-79.99	B
70-74.99	B-
65-69.99	C+
60-64.99	C
55-59.99	C -

50-54.99	D+
45-49.99	D
40-44.99	D-
0-39.99	F

COURSE SCHEDULE AND READING ASSIGNMENTS.

On the following page a tentative course schedule is provided. I plan to cover most of the text. In addition, I will present a fair amount of material in lectures that is not in the book.

Chapters in Kennedy consist of three sections: (A) Discussion; (B) General Notes; and (C) Technical Notes

1. **Introduction and Background**

   Required:
   - Kennedy: Chapter 1 & 2 (A B C); see section on measurement bias including figure 9.2

   Recommended:
   - King, Gary. 1986. "How Not to Lie with Statistics: Avoiding Common Mistakes in Quantitative Political Science." *American Journal of Political Science* 30: 666-687.
   - Christopher H. Achen. 1977. "Measuring Representation: Perils of the Correlation Coefficient." *American Journal of Political Science* 21: 805-815.

2. **Review of Ordinary Least squares (OLS), Interactive terms, Marginal effects analysis**

   Required:
   - Kennedy: Chapter 3 (A B C)
   - Read and Understand: Assumptions about error terms: heteroskedasticity and autocorrelation: Kennedy: Chapter 8 (A B C)
   - Read and Understand: Assumption about independence of observations: Kennedy: Chapter 12 (A B C)

   Recommended:
   - Friedrich, Robert J. 1982. "In Defense of Multiplicative Terms in Multiple Regression Equations." *American Journal of Political Science* 26: 797-833.
   - Brambor et al. 2005. "Understanding Interaction Models: Improving Empirical Analyses." *Political Analysis* 13: 1-20. (http://homepages.nyu.edu/%7Emrg217/pa.pdf)
   - Fiorina, Morris P.1981. "Some Problems in Studying the Effects of Resource Allocation in Congressional Elections." *American Journal of Political Science* 25: 543-567.

   Reference:
   - Baum Chap 4 pp.107-111 On Marginal Effects., Diagnostics, Chap 5.
   - Garson, G. David (n.d.). *Statnotes: Topics in Multivariate Analysis.* http://www2.chass.ncsu.edu/garson/pa765/statnote.htm.

- Kam and Franzese. 2006. *Modeling and Interpreting Interactive Hypothesis in Regression Analysis.* Ann Arbor: University of Michigan Press.

3. Generalized Least Squares (GLS) and Feasible GLS

Required:

- Kennedy: Chapter 8 (A B C)
- Jackson. J. (2005). *Oxford Handbook of Political Methodology*. Endogeneity Chapter. pp 404-431.

Recommended:

- Wood, B.D. 1992. "Modeling Federal Implementation as a System: The Clean Air Case." *American Journal of Political Science.* 36 (1) pp. 40-67.
- Downe, George W. and David M. Rocke. 1979. "Interpreting Heteroscedasticity." *American Journal of Political Science* 23: 816-828.
- Chatterjee, Sangit and Frederick Wiseman. 1983. "Use of Regression Diagnostics in Political Science Research." *American Journal of Political Science* 27: 601-613.
- Russet, Bruce. 1982. "Defense Expenditures and National Well Being." *American Political Science Review* 76: 767-77.

Reference:

- Baum, Ch 6 pp. 142-159 and Ch 8.

4. Review of Maximum Likelihood Estimation (MLE)

Required:

- Kennedy: Chapter 2 (B: Maximum Likelihood, C: Maximum Likelihood)

Reference:

- Eliason, S.R. (1993). *Maximum Likelihood Estimation: Logic and Practice*. Newbery Park, CA: Sage Publications.
- King, Gary. (1998). *Unifying Political Methodology: The Likelihood Theory of Statistical Inference.* Ann Arbor, Michigan: University of Michigan Press. Chap 1-4

5. Ordinal and Multinomial Response Model

Required:

- Kennedy: Chapter 16 (A B C) & 17 (A B C)

Recommended:

- Hagle, Timothy M. and Glenn E. Mitchell II. 1992. "Goodness-of-Fit Measures for Probit and Logit." *American Journal of Political Science* 36: 762-784.
- Doyle, Michael W. and Nicholas Sambanis. 2000. "International Peacebuilding: A Theoretical and Quantitative Analysis." *The American Political Science Review* 94: 779-801.
- Fearon, James D. and David D. Laitin. 2003. "Ethnicity, Insurgency, and Civil War." *American Political Science Review* 97 (1): 75–90.
- D. Scott Bennett; Timothy Nordstrom. 2000. Foreign Policy Substitutability and Internal Economic Problems in Enduring Rivalries. *The Journal of Conflict Resolution*, Vol. 44, No. 1, Substitutability in Foreign Policy: Applications and Advances. pp. 33-61.
- Edward D. Mansfield and Jon C. Pevehouse. 2000. Trade Blocs, Trade Flows, and International Conflict. *International Organization*. 54 (4).
- Bernard and Leblang. 1999. Democratic Institutions and Exchange-rate Commitments. *International Organization*. 53 (1). pp. 71–97
- Henry E. Brady. 2000. Contributions of Survey Research to Political Science. *PS: Political Science and Politics*, Vol. 33, No. 1. pp. 47-57.

Reference:

- Long, Scott. 1997. *Regression Models for Categorical and Limited Dependent Variables*. Sage.

6. Instrumental Variables and Simultaneous Equations

Required:

- Kennedy: Chapter 11 (A B C).

Recommended:

- Miguel Edward, Shanker Satyanath, and Ernest Sergenti. 2004. Economic Shocks and Civil Conflict: An Instrumental Variables Approach. *Journal of Political Economy* 112 (4), 725-753.
- Abdollahian, Mark, and Kyungkook Kang. 2008. In Search of Structure: the Nonlinear Dynamics of Power Transitions. *International Interactions.* 34 (4).

7. Fixed Effect, Random Effect, and Multilevel Mixed-Effects Model for Panel Data

Required:

- Kennedy: Chapter 18 (A B C)

Recommended:

- James E. Alt and David Dreyer Lassen. 2006. "Transparency, Political Polarization, and Political Budget Cycles in OECD Countries" *American Journal of Political Science*, Vol. 50, No. 3, (July): 530:550.
- Beck, Nathaniel, & Katz, Jonathan N. 1995. "What to do (and not to do) with time-series crosssectional data." *American Political Science Review* 89(3): 634-647.
- Achen, Christopher. 2000. "Why Lagged Dependent Variables Can Suppress the Explanatory Power of Other Independent Variables." Presented at the Annual Meeting of the Political Methodology Section of the American Political Science Association, UCLA.
- Yaffee, R. (2003). A Primer for Panel Data Analysis. *Connect: Information Technology at NYU*. Fall.
- Scheve and Slaughter. (2004). Economic Insecurity and the Globalization of Production. *American Journal of Political Science.* Vol. 48, No. 4. Pp. 662–674

Reference:

- Baum. (2004). *Modern Econometrics Using Stata.* Chaps. 1, 3, 8-9.
- Roodman, D. (2006). *How to Do xtabond2: An Introduction to "Difference" and "System" GMM in Stata.* Center for Global Development. Working Paper Number 103. December.
- Gellman, Andrew and Jennifer Hill. 2007. Data Analysis using Regression and Multilevel/Hierarchical Models, Cambridge University Press.

8. Event History and Survival Analysis

Required:

- Box-Steffensmeier, Janet M. and Brad Jones. 1997. "Time is of the Essence: Event History Models in Political Science." *American Journal of Political Science* 41(October): 1414-1461.

Recommended:

- Bennett, D. Scott and Allan C. Stam. 1996. "The Duration of Interstate Wars, 1816-1985." *American Political Science Review* 90(June): 239-257.
- Box-Steffensmeier, Janet M. 1996. "A Dynamic Analysis of the Role of War Chests in Campaign Strategy." *American Journal of Political Science*. 91: 324--338.
- Box-Steffensmeier, Janet M., Dan Reiter, and Christopher J.W. Zorn. 2003. "Nonproportional Hazards and Event History Analysis in International Relations." *Journal of Conflict Resolution.*

- Lektzian, David and Mark Souva. 2001. "Institutions and International Cooperation: A Duration Analysis of the Effects of Sanctions." *Journal of Conflict Resolution* 45 (1): 61-79.

Reference:

- Box-Steffensmeier, Janet M., and Bradford S. Jones. 2004. *Event History Modeling: A Guide for Social Scientists.* New York: Cambridge University Press.

***** NOTE: THE CONTENT OF SYLLABUS AND COURSE SCHEDULE ARE SUBJECT TO CHANGE AND UPDATE AT THE INSTRUCTOR'S DISCRETION IF NECESSARY.**

CHANGES TO THE SYLLABUS, IF ANY, WILL BE ANNOUNCED IN CLASS AND THE UPDATED SYLLABUS WILL BE POSTED ON WEBCOURSE@UCF.

STUDENTS ARE RESPONSIBLE FOR ANY CHANGES IN SYLLABUS/SCHEDULE WHICH ARE ANNOUNCED IN CLASS.