UNIVERSITY OF CENTRAL FLORIDA
COLLEGE OF SCIENCES
DEPARTMENT OF POLITICAL SCIENCE
(AUGUST 10, 2016)

POS 7745.0001 – ADVANCED QUANTITATIVE METHODS IN POLITICAL RESEARCH
(CREDIT: 3 UNITS)
Thursday 2:00PM - 4:50AM HPH 409

Instructor	Dr. Kyungkook Kang (pronounce Key-young-cook or K3)
Office	302J Phillips Hall
Office hours	Tuesday and Thursday 10:30 AM – 12:30 PM, or by appointment All office hours are first come, first served
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).
Required Textbooks	Damodar Gujarati & Dawn Porter. 2008. Basic Econometrics. 5th Edition. McGraw-Hill/Irwin (Other additions will also suffice). Philip Pollock, The Essentials of Political Analysis, 4th Edition Philip Pollock, A Stata Companion to Political Analysis, 2nd Edition
Recommended Textbook	Peter Kennedy. 2008. A Guide to Econometrics. 6th Edition. MIT Press (Other additions will also suffice). .

IMPORTANT!!! - NEW POLICY REGARDING YOUR FINANCIAL AID

As of the fall 2016, 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.

COURSE DESCRIPTION

This course is designed to provide an introduction to quantitative research methodology for graduate students. Particularly, we will discuss a comprehensive introduction to econometrics and its application to political science research.

Econometrics is the widely accepted toolkit among social scientists to empirically investigate theory and behavior. Even though the topic of econometric methodology is vast and controversial, we will mainly examine multivariate linear regression techniques that form the core of the discipline of empirical researches in political science. This method allows researchers to model and analyze the causal relationship between a dependent variable and one or more independent variables.

To implement computational regression analysis, you will be actively involved with computer exercises using the STATA econometrics program available in the computer lab. Throughout the course I will use STATA to demonstrate a series of econometrics exercises with various estimation and test procedures.

A willingness to work hard on possibly unfamiliar material. This course is targeted to students with moderate experience in elementary statistics. The essential background in statistics will be reviewed in class, but I assume you have reasonable math skills required for GRE quantitative reasoning section. A good understanding of statistics is very helpful meaning that you will benefit more from the class if you have taken at least one undergraduate or master class in quantitative methodology (such as for example UCF's POS3703/POS6736).

COURSE GOALS

In this course, our main goal is to not only become savvy consumers of quantitative research in political science but also to conduct our own research using empirical data and computer software. We will explore the mechanics of analytical research design and methodology to effectively present and interpret our findings in falsifiable ways.

Particularly, we will discuss how to construct multivariate regression models, to estimate the parameters of those models, and to interpret the statistical results we obtain. Based on solid understanding on standard methods, we will also focus on research design development, operationalization and data applicability in answering certain types of research question.

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COURSE DESIGN

The techniques of analytical research methods are imparted principally through taking classes and doing problem sets, rather than independent reading. Therefore, we believe that a student who has performed well in the classes will be well-prepared for the exam. The exams and assignments will consist of required questions which test the material of texts and lecture notes. I will electronically distribute the electronic copy of my lecture material before each section begins.

Our classes combines an examination of fundamental concepts and techniques of political science research with hands-on practical work applying those concepts and techniques. It is therefore essential for students to regularly attend the class and to read and carefully consider the

required materials before the class. To complete the take-home assignments, you must use the HPH 310 & HPH 409 computer labs OR purchase the software and install it on your own PC or laptop. We will be using STATA in this course. I assume that you have no prior experience with this software.

You can purchase Stata at:

http://www.stata.com/order/new/edu/gradplans/student-pricing/
The recommended version is Stata/IC 14 (Intercooled, the base model).
** Caution!! Do not purchase Small Stata because it cannot handle the large datasets we will use in class.

ATTENDANCE

Attendance is required. 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.

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. All make-ups are given on the last week of the semester. No extra credit expected. 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.

REQUIREMENTS

Your course grade will be based on three components:

- ✓ **Attendance & Participation**. **10 percent.** 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.

The Webcourses 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, problem sets, 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!

- ✓ **Three Take-Home Assignments. 60 percent.** You will be given three regular assignments during the term. The homework assignments will include a number of theoretical questions as well as statistical computing exercises using STATA. Each student is to attempt all problems individually before the assigned date. The penalty for submitting a lab assignment late is 10 points (one letter grade approximately) for each calendar day of lateness. I encourage you to work together on all homework assignments, but your final product must be your own.

- ✓ **One Take-Home Exam. 30 percent.** You will be given one comprehensive take-home exam covering all topics that were discussed in class. Notice that for the take-home exam, you will be given **24 hours** to finish using your textbook, classroom notes, or other online resources. However, you will not be allowed to collaborate with anybody. It will contain a number of theoretical questions as well as analytical exercises. No late submission will be accepted and will receive "zero" points.

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, iPods, 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

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	A-
80-84	B+
75-79	B
70-74	B-
65-69	C+
60-64	C
55-59	C -
50-54	D+
45-49	D
40-44	D-
0-39	F

IMPORTANT DATES TO REMEMBER

Drop/Swap Deadline: Thursday, August 25, 2016 11:59 PM
Thanksgiving Break: Thursday, November 24, 2016
Withdrawal Deadline: Monday, October 31, 2016 11:59 PM
Classes End: Thursday, December 1, 2016
Grade Due in myUCF (Faculty): Thursday, December 15, 2016 12:00 PM
Grade Available on myUCF: Saturday, December 17, 2016 9:00 AM

TENTATIVE COURSE SCHEDULE

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.

Session and Date	Topic	Pollock	Gujarati
1st (Aug 25)	Introduction	Ch1 – Ch7	Ch1
2nd (Sep 1)	Empirical Research Background	Ch1 – Ch7	Ch1
3th / 4th (Sep 8 / Sep 15)	Mechanics of Simple Linear Regression 1. *Definition of "Linear" & "Regression"* 2. *Concept of Controlling Variables* 3. *Deriving Regression Coefficients* 4. *Concept of Ordinary Least Squares (OLS)*	Ch7– Ch8	Ch2 – Ch4
5th (Sep 22)	Variance of β and Hypothesis Testing 1. *A Review of Statistical Concepts* 2. *Testing Hypotheses about Population Parameters* 3. *Sampling Distributions of the OLS Estimators*	Ch6 – Ch7	Ch5 – Ch6
6th (Sep 29)	General Linear Regression 1. *Multiple Regression Analysis: Estimation & Inference* 2. *Model Performance*	Ch8	Ch7 – Ch 8
Additional Reading	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.		
7th (Oct 6)	Dummy Variables, Interaction Terms 1. *Multiple Regression Analysis with Qualitative Information* 2. *Allowing for Different Slopes*	Ch8	Ch9
Additional Reading	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.		

8th / 9th / 10th (Oct 13 / Oct 20 / Oct 27)	Violating the Assumptions of OLS 1. *Multicollinearity* 2. *Heteroskedasticity* 3. *Autocorrelation* 4. *Omitted Variable Bias*	Ch8	Ch10 – Ch13
Additional Reading	Fiorina, Morris P. "Some Problems in Studying the Effects of Resource Allocation in Congressional Elections." *American Journal of Political Science* 25: 543-567. 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. 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. Pollins, Brian.M. 1989. "Does Trade Still Follow the Flag?" *American Political Science Review* 83: 465-480. Russet, Bruce. 1982. "Defense Expenditures and National Well Being." *American Political Science Review* 76: 767-77.		
11th / 12th (Nov 3 / Nov 10)	Qualitative/Binary Response Regression 1. *Specifying Logit and Probit Models for Binary Response* 2. *Limited Dependent Variable Models*	Ch9	Ch14 – Ch15
Additional Reading	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." *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.		
13th / 14th (Nov 17 /Dec 1)	Panel Data Regression 1. *Pooling Independent Cross Sections across Time* 2. *Fixed & Random Effects Estimation*		Ch16
Additional Reading	Alt, James E. Alt and David Dreyer Lassen. 2006. "Transparency, Political Polarization, and Political Budget Cycles in OECD Countries." *American Journal of Political Science* 50 (3): 530:550.		

<u>* 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 Canvas. Students are responsible for any changes in syllabus/schedule which are announced in class.</u>**