SPEA-V 450 – sect. 31365 - Spring 2016 – Research Methods for Applied Research - Syllabus

Class time: MW 2:30 – 3:45 pm;	**Office hours**: Tuesday by appointment
Room: BQ C135	**Secretary**: Jennifer Mitchner
Instructor: Alexander Alexeev	**Office**: SPEA460
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Office: SPEA412	**E-mail**: jmitchne@indiana.edu
E-mail: aalexeev@indiana.edu	**Course TA**: no course TA ☹
e-mail me directly NOT through Oncourse	**Student workload**: up to 12 hrs/wk
Web site: http://oncourse.iu.edu/portal/login	

Course Description and Objectives

V450 covers basics of applied data analysis and use of statistical software. The course provides students of public and environmental affairs, and, in particular, CARI-students with a detailed, intro-intermediate-level perspective on statistical concepts and techniques for analyzing and modeling modern data emphasizing practical and applied modeling aspects. The course content includes estimating the parameters of econometric models, testing hypotheses, making inference and forecasting. Multivariate regression analysis is one of the primary tools for statistical modeling for purposes of policy analysis, program evaluation, simulation of systems, and general forecasting. Additionally, id time allows you will be introduced to other useful techniques as, for example, factor and principle component analyzes, or/and Bayesian network analysis. Research examples will be drawn from the fields of public and environmental policy and political science with a special emphasis on social issues and policy analysis research (e.g. environmental concerns, global climate change, migration, and sustainable development, conflicts, etc.). You will be actively involved with computer exercises in this course using the STATA econometric program, available in every STC Computer Lab and via IUAnyWare to provide experience with various tests and estimation procedures.

Course objectives

The purpose of this course is to introduce students to basic statistical concepts and techniques. At the end of this course, you should be able to:

- read social science and policy analytical materials; draw information from different information sources; manage data sets;
- develop basic econometric models, carry out an adequate statistical analysis for the basic types of data, and interpret and present results:
  - explain how regression techniques can be used for data analysis and applied problem solving;
  - apply regression techniques to policy problems using appropriate commands in STATA, and interpret the results with respect to explanations of such problems and implications for their solution;
  - explain the assumptions required to use regression analysis, and the impact of those violation;
  - apply appropriate correction techniques to address violations of assumptions;
- Use STATA software for policy analysis/empirical studies.

Textbook and readings

(EBE) Damodar Gujarati, Econometrics by Example, Palgrave, 2014 – Required

(Available at IU Bookstore, T.I.S., and online); we will discuss use of previous editions in class). I will put a copy on reserves.

Essential reading will be posted Oncourse from the following textbooks:

(GEE) Damodar Gujarati, Essentials of Econometrics, 4/e, McGraw-Hill, 2010 - Optional;
(PEP) Phillip H. Pollock III, The Essentials of Political Analysis, 4/e, SAGE, 2012 –Optional

Additionally, I would recommend: Kultar Singh, Quantitative Social Research Methods, SAGE, 2007, and Gary Koop, Analysis of Economic Data, 3/e, Willey, 2009. Some extracts from those texts will be posted ONCOURSE.

Prerequisites

An introductory statistics course, such as K300, is a formal prerequisite for this course. In addition, students are expected to have a firm grasp of algebra.

Teaching mode

Most of the time we will work in two modes – lecture and seminar. If something happens to be unclear for you or not understood you can interrupt me just rising your hand to ask a question or/and you can e-mail me your question after class. From time to time I will give you in-class exercises. Some questions that are going to be discussed are not covered in the textbook then you will be provided with handouts. Lecture notes will be appropriate and useful. Be advised that your lecture notes are not replacement to the reading of the textbook. Please read the assigned readings in advance of the lecture so you could better follow in-class discussions. You need to bring your notebook or paper, pencil or pen at every lecture. (Your personal notes are allowed to be used on quizzes and exams). Finally, informed attendance is required for participation in class discussions and for being in good staying.

Getting the most out of the class (with thanks to Professors R. Parks, R. Goldstone and A. Robbin).

The following pointers can help to ensure this.

1. Question your instructor and your readings. True knowledge only comes from an active engagement of the material. Questions in class are welcome, and prolonged class discussions should be looked upon as learning opportunities rather than digressions.

2. Explain the material you've just read to yourself. Don't expect the material to seep its way into your head; you must actively carry it in.

Assignments and Tutorials.

Roughly every week you will have to complete an assignment or tutorial. They count 25 % of the final grade score. You are encouraged to work in groups of maximum 2 students when completing the homework assignments. If you work with others please turn in a **single assignment** for the group **with each contributor's name** on it. Exercises given at the end of each section of the textbook will help you to understand important concepts. Please, work through as many problems as you can. This will make your home works and exams much easier. Your homework assignments ought to be typed. I can accept also clearly and carefully hand-written homework reports. Homework assignments and tutorials must be turned in at the beginning of the class on due date unless differently specified. Every day of the delay will reduce your score progressively: 1day – 10%, two days - 20%. No late assignment will be accepted after solutions have been posted. We will have 4-5 Lab assignments which can be completed at your own, but I can also arrange computer Lab sessions.

Things happen. Everyone is allowed to miss ONE assignment because of circumstances.

Computing.

The software we will use is Microsoft EXCEL and STATA. I will demonstrate statistical application of this program in lectures. You may use any statistical software you are familiar with: SPSS, STATA, SAS, MATLAB or R. We may discuss advantages and disadvantages of each of them.

Quizzes.

Three one-hour quizzes will be given during the semester. The third quiz will be administered during the final exam period. Makeup quizzes will not be taken except in extraordinary cases (e.g., severe illness, documented by a physician's note; family emergency). In these cases students are expected to contact the professor before the scheduled quiz time to arrange a makeup time.

Short 5-min quizzes

will be administered once or twice a week in the beginning of a class to stimulate the assigned readings (if necessary).

Quantitative Research Project.

In this course we will complete a quantitative research project which will require you to collect, describe and analyze data in one of the fields of public policy (details will be provided in late February). The final products of your projects are presentation and short empirical papers (up to 10 pages). The final version of the papers is due on April 22 (Friday), 9pm.

Grading Policy

Your final grade will be determined based on a combination of your performance on assignments, quizzes, class participation and research paper:

·Assignments:	25%
·Class participation/Discussion and class notes (no photocopies): 5%	
·3 Quizzes (exams):	45%
·Presentation:	12%
·Short paper:	10%
·Short 5-min quizzes:	3%

Ladies and Gentlemen! Students must be respectful of their classmates and the professor in the classroom or will be asked to leave class. **Disruptive behaviour will not be tolerated**. Such students will also be asked to leave the class. It is within the discretion of the instructor to determine what constitutes disrespectful and disruptive behaviour. In this regard, please note that all cell phones, pages, buzzers, etc. must be turned off during the class period. In cases of true emergencies, students should ask permission to leave on any such electronic devices **before** the class begins and the devices must be put in silent mode.

Other considerations

Please keep in mind that job interviews are not an excuse for missed assignments, classes, or tests. You must schedule your job search around class assignments. You may be excused from an assignment or exam only in cases of illness or family emergency. If you miss an assignment or test due to a family emergency, you must notify me **before** the assignment or test is due. In the case of **justified** emergency situation (e.g. an official note of a doctor, priest, minister, rabbi, etc.), you will be allowed to make up an assignment or test.

Academic (dis)Honesty:

SPEA faculty do not tolerate cheating, plagiarism, or any other form of academic dishonesty. If you have not done so, you should read the IUB Code of Student Rights, Responsibilities, and Conduct, which can be accessed at http://dsa.indiana.edu/Code/ so you will be sure to understand what these terms mean and what penalties can be issued for academic dishonesty. Academic dishonesty can result in a grade of F for the class (an F for academic dishonesty cannot be removed from the transcript). Significant violations of the Code can result in expulsion from the University.

Plagiarism is using another person's words, ideas, artistic creations, or other intellectual property without giving proper credit. According to the Code of Student Rights, Responsibilities, and Conduct, a student must give credit to the work of another person when he/she does any of the following:

    a. Quotes another person's actual words, either oral or written;

    b. Paraphrases another person's words, either oral or written;

    c. Uses another person's idea, opinion, or theory; or

    d. Borrows facts, statistics, or other illustrative material, unless the information is common knowledge.

Grading Scale

Your final grade in the course is determined in accordance with the table below.

A+=>95% **unadjusted**	B+= 87 - 89.99%	C+= 77 - 79.99%	D+= 67 - 69.99%
A = 93 - 100%	B = 83 - 86.99%	C =73 - 76.99%	D = 63 − 66.99%
A- = 90 − 92.99%	B- = 80 - 82.99%	C- =70 - 72.99%	D- = 60 - 62.99%

Instructor reserves the right to increase a student's grade for good class participation that includes class attendance, having read the course materials, responding to questions, and adding to the intellectual dialogue in the classroom. This option has been used extensively in the past. In addition, some of the in-class exercises are extra credit. Extra credit can be used to make up for lost homework and quiz points. Extra credit cannot be used to make up for lost exam and project points. Extra credit exercises reward students who come to class and work on the exercises in class. If a student does not come to class he/she cannot get credit for extra credit exercises handed out during that class.

Hints for success:

Working together on homework is encouraged. If you work with others on homework please turn in a single assignment for the group (2 students max). You are encouraged to use office hours to discuss your progress in the course, to get clarifications or more detailed explanations on the methods we discuss in class, or even to work through an example problem. However, you are discouraged from using office hours to "fish" for extra hints or answers to the homework.

Tentative Course Outline (Subject to weekly update by instructor) - updated 1/10/16

Week	Topic	Readings
1	The Nature and Scope of Econometrics; Data; STATA;	GEE ch1
	Basic Ideas of Linear Regression: the Two-Variable Model	GEE ch2
2	MLK (January 18, classes do not meet)	
	Multiple Regression: Estimation and Hypothesis Testing	EBE ch1
	Stata Handout: Correlation and Linear Regression	oncourse
3	Multiple Regression: Estimation and Hypothesis Testing	EBE ch1
4	Functional Forms of Regression Models	EBE ch2
5	Functional Forms of Regression Models	EBE ch2
6	**Review**	
	EXAM 1	
7	Dummy variables	EBE ch3
8	Dummy variables	EBE ch3
	Model Selection: Criteria and Tests	EBE ch7
9	Multicollinearity: What Happens if Explanatory Variables are Correlated?	EBE ch4
	Heteroscedasticity	EBE ch5
10	Spring Break! ☺	
	Please, find to work on projects! ☹	
11	Autocorrelation	EBE ch6
	Putting all together	EBE ch7
12	Review – exam 2	
12	**EXAM 2**	
13	Index construction;	Oncourse
	Making Controlled Comparisons;	
14	Association measures	Oncourse
	Qualitative dependent variable – Linear Probability models	
15 -16	TBA: Possible topics: (i) Intro to Factor analysis; (ii) Intro to statistical lerning; (iii) Bayesian Network analysis; (iv) by request	**Short paper – Data Analysis – Due on April 22, by 9pm.**
16	Catch Up or Additional Examples Overview of Final Exam Content **Project Presentations**	NB: week 16 – Mandatory attendance
	Final Exam (cumulative) Mon., May 2	**2:45–4:45 p.m.**