SPEA-V 370 (30362) – Research Methods and Statistical Modeling
Fall 2010, PV275 at 1:00pm–2:15 MW

Course information:
Room: PV275 at SPEA
Time: 1:00pm-2:15pm on Monday and Wednesday
Department: School of Public and Environmental Affairs
Instructor: Alexander Alexeev, e-mail: aalexeev@indiana.edu
Secretary: Mrs. Jennifer Mitchner (SPEA 341)
Website: http://oncourse.iu.edu/portal/login
Office Hours: regular - TBA or/and by appointment
Pre-requisites: Introductory Statistics K300 or equivalent
Student workload: up to 12 hrs/wk approximately
Required texts:

The course consists of two modules linked with each other: Research Methods and Statistical modeling. The first module of the course is designed to develop each student's ability to design an empirical study within the ethical constraints of human research and to understand the results of empirical research presented in professional journals. Specific research designs covered in this module include experimental designs, naturalistic observation, participant observation, quasi-experimental designs, and survey research. Research examples will be drawn from the fields of business, public policy, education and others with a special emphasis on social issues research (e.g. cultural and gender issues, environmental concerns, global change, and social justice). The second module of the course covers basics of the regression analysis and use of statistical software.

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 materials;
• draw information from different information sources;
• distinguish fact from interpretation;
• understand the role of theory in the social sciences;
• interpret maps, charts, graphs and other visual representations;
• Recognize and disclosure some of the misuses of statistics;
• Carry out an adequate statistical analysis for the basic types of data.

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. Form 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 before the lecture so you could better understand what’s going on in class. You need to bring your notebook or paper, pencil or pen at every lecture. Finally, informed attendance is required for participation in class discussions and for being in good staying. If necessary I am prepared to use flogging and/or unannounced quizzes to encourage you. Please do not make these necessary.

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 15% of the final grade score. You can discuss problems in small (2-3) groups but then your homework must be your own product. 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 homework 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. Every day of the delay will reduce your score progressively: 1 day – 10%, two days - 25%, three days – 40% down. During the second 8 weeks we will have 4-5 Lab assignments which can be completed at your own, but I can also organize computer Lab sessions.

Computing. The software we will use (mostly in the second module of the course) 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 some of them.

Quizzes. A one-hour quiz will be given at the end of each two modules; the second one 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.

Readings. We will heavily use the following texts:


These texts are available in the TIS, IU bookstore, or may be ordered online (at cheaper price!).
You may also consider a previous edition since it is less expensive.
Additionally, for the quantitative module I would recommend

**Quantitative Research Paper.** The quantitative paper requires you to analyze data in the field chosen by you. The paper follows the format of most published empirical papers. Sections of the paper, as outlined below, are due in advance, graded and returned to you for revision. The final version of the paper, which includes your analysis and a discussion of your findings, will include the previously revised sections. The final version of the paper is due December 10, COB. The sections of your paper are due on the following dates:

- **Introduction** 3% - due late September, (1-2 pages)
- **Review of the Literature** 10% - mid-October (3-4 pages)
- **Methods** 5% - early November (1-2 pages)
- **Results and Conclusions** 12% – Final Paper due December 10, COB

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

- **Assignments:** 15%
- **Class participation:** 5%
- **Quizzes:** 30%
- **Presentation:** 10%
- **Final Paper:** 30%

I will use the following grade ranges.
- A+: >97
- A: >93-97
- A-: >90-93
- B+: >87-90
- B: >83-87
- B-: >80-83
- C+: >77-80
- C: >74-77
- C-: >71-74
- D+: >67-71
- D: 63-67

Your scores will be posted on-line at the university Oncourse http://oncourse.iu.edu

**Incomplete.** Please, don’t do it. The University policy on grades of "incomplete" includes the following statement:

"CIRCUMSTANCES PERMITTING INCOMPLETES
The grade of Incomplete used on the final grade reports indicates that the work done by the end of the semester is satisfactory but has not been completed due to the factors like substantial illness, family emergencies, and like that. Poor preparation, unwise planning or an overloaded schedule will not be considered as “hardship” factors."
Any grade including incompletes granted in this course will be strictly based on the University policy.

COURSE ETHICS:
Please read carefully the Student Handbook guidelines. Understand what plagiarism and cheating are. Academic dishonesty will not be tolerated. You may verbally discuss a problem in a group. You may help your classmate with a computer program, and so on. What you may not is: you may not copy other student’s work! You may not allow others to copy your work! You may not share your computer files or data. Your assignment you turn in must be your own product! According to the university policy - if it is determined that a student has cheated in the course, then that student will be dropped out from the course and receive a failing course grade. It is also required, such incidents to report to SPEA’s Undergraduate Program Director and to the Dean of Students.

Tentative Class Schedule and Readings (subject to change by the instructor)

Research Methods
Week 1 / August 30
O’Sullivan:
Chapter 1: Beginning a Research Project: The Preliminary Steps
Chapter 2: Designs for Description

Week 2 / September 6
O’Sullivan:
Chapter 3: Designs for Explanation
Chapter 4: Measuring Variables

Week 3 / September 13
O’Sullivan:
Chapter 5: Sampling
Chapter 6: Contacting and Talking to Subjects

Week 4 / September 20
O’Sullivan:
Chapter 7: Data Collection: Questions and Questionnaires
Chapter 8: Protection of Human Research Subjects and Other Ethical Issues

Week 5 / September 27
O’Sullivan:
Chapter 9: Secondary Data Analysis: Finding and Analyzing Existing Data
Chapter 10: Combining Indicators: Index Construction

Week 6 / October 4
O’Sullivan:
Chapter 11: Univariate Analysis
Chapter 12: Examining Relationships among Variables: Tests of Statistical Significance

Week 7 / October 11
Review:
Quiz

Statistical Modeling Section
Week 8 / October 18
Gujarati:
Chapter 1, “The Nature and Scope of Econometrics”
Koop:
Chapter 2, Basic Data Handling
Chapter 3, Correlation

Week 9 / October 25
Gujarati:
Chapter 3: The Two-Variable Model: Hypothesis Testing
Chapter 4: Multiple Regression: Estimation and Hypothesis Testing
Koop:
Chapter 4: An Introduction to Simple Regression
Chapter 5: Statistical Aspects of Regression

Week 10 / November 1
Gujarati:
Chapter 4: Multiple Regression: Estimation and Hypothesis Testing
Chapter 5: Functional Forms of Regression Models
Koop:
Chapter 6: Multiple Regression

Week 11 / November 8
Gujarati:
Chapter 5: Functional Forms of Regression Models
Chapter 6: Dummy Variable Regression Models
Koop:
Chapter 7: Regression with Dummy Variables

Week 12 / November 15
Gujarati:
Chapter 7: Model Selection: Criteria and Tests
Chapter 8: Multicollinearity: What Happens if Explanatory Variables are Correlated?

Week 13 / November 22
Gujarati:
Chapter 9: Heteroscedasticity: What Happens if the Error Variance is Nonconstant?
Thanksgiving recess: November 23- November 29

Week 14 / November 29
Gujarati:
Chapter 9: Heteroscedasticity: What Happens if the Error Variance is Nonconstant?
TBA

Week 15 / December 6
Presentations
Course Review
Research paper due on December 10, COB

Week 16 / December 13
Quiz 2 – (Final) - 5:00-7:00 p.m., Wed., December 15