Political Science 201

Political Data Analysis

Spring 2022

R. H. Bruhl

CRN 20206, 3SH

TR 3:30-4:45 PM, BSB 331

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Office Hours TR 11:00-1:30

Syllabus

*Preamble*

Although this course is scheduled for on-campus lectures, due to the COVID situation this course will be conducted on-line for the first several weeks of class. During this period, lectures will be held “synchronously” **using Zoom through Blackboard at the scheduled lecture time of 3:30-4:45 p.m. on Tuesdays and Thursdays.** Written course materials will be published on Blackboard and your assignments are to be similarly submitted through Blackboard.

**Because your participation in this course will be dependent upon remote access to the University, please review the following technical requirements:**

* **Students not having at-home access to Blackboard should contact UIC Information Technology Services at https://it.uic.edu/services-support/student-resources.**
* **Technical, digital literacy, and research skills you are required to have include:**

1. Using the eLearning environment in Blackboard.
2. Emailing your instructor and attaching files to emails using the Inbox.
3. Verifying your browser is the most current version and browser privacy settings are correct. See the next section below
4. Creating files using MS Word, MS Excel, MS PowerPoint and attaching these files to your assignment submissions.
5. Managing your files. Create a folder for each course you are taking under My Documents on your computer. Create a folder for each week. Save your files often and with Lastname\_WeekX-assignmentX.docx. It's recommended that you save several versions to revert back to by adding -v1, -v2 etc. to the end of your filename for example Lastname\_Week1-assignment1-v1.docx and Lastname\_Week1-assignment1-final.docx.
6. You may also be asked to use a webcam and upload videos or audio files, use social media to communicate with your peers, or collaborate electronically.
7. Uploading MS Word, MS PowerPoint, MS Excel, PDFs in completing assignments.
8. Researching information in the UIC Library or using the databases available through the UIC Library. Make sure to include citations to avoid plagiarism.
9. Copying and pasting (“Control+C” for copying and “Control+V” for pasting on a PC, “Command+C” for copying and “Command+V” for pasting on a Mac) into a MS Word document or PowerPoint file.
10. Downloading and installing software and applications.

* **Blackboard Supported Browsers**

Blackboard can be accessed on Mac, Windows, Linux, and mobile device operating systems iOS and Android. Download the free Blackboard App for use on your mobile device. Blackboard recommends using the newest version of the following browsers and applications:

1. Chrome;
2. Firefox; or
3. Safari

**Please note that when uploading assignments to Blackboard, those assignments must be submitted as Word or pdf documents. Apple formatted documents cannot be viewed on Blackboard and need to be converted to Word or pdf formats.**

* **Make sure your browser is current with regard to the UIC computing and internet environment. This can be checked at https://media-as.academicpartnerships.com/apoc/browser\_check.html.**
* **Students not having the required technical skills should contact UIC Information Technology Services at UIC Information Technology Services at https://it.uic.edu/services-support/student-resources.**
* **Students not having the required library and research skills should contact the University Library at https://library.uic.edu.**
* **SPSS. To complete your assignments for this course you will need access to the statistical analysis computer program SPSS®. You have two options:**

1. **The Virtual Computer Lab will again be available this semester, including access to SPSS. For more information go to UIC Information Technology Services at https://it.uic.edu/services-support/student-resources/software-resources/remote-access-to-specialized-software-with-virtual-computer-labs/**
2. **You may also purchase a personal use copy of SPSS from the University of Illinois Webstore at https://webstore.illinois.edu.**

*Course Objectives*

The object of this course is to understand the how and why of basic statistical analysis. It is the instructor’s belief that *the skills of statistical analysis are best developed by doing statistical analysis*. Consequently, the course material will be covered primarily through project work in which students will execute statistical analyses for different types of data and research questions. These projects will cover the following statistical concepts and procedures:

1. Descriptive Statistics for Qualitative or Categorical data;
2. Descriptive Statistics for Quantitative data;
3. Probability and Sampling Distributions;
4. Comparing categorical observations from two or more different groups using Chi-Square analysis;
5. Comparing quantitative observations from two different groups using the t-test;
6. Comparing quantitative observations from several different groups using ANOVA;
7. Assessing the relationship between one quantitative measure and another as a Correlation; and
8. Quantifying the relationship between one quantitative measure and one other quantitative measure through Bivariate Regression.

Your course grade will be determined by various analytical assignments. Project work for this course will be completed, for the most part, using the computer application program SPSS ® (Statistical Package for the Social Sciences). The required textbook for this course is *Understanding Statistical Analysis and Modeling* (Bruhl, Sage).

*Grading*

As previously noted, each student’s grade in this course will be determined through a series of data analysis projects and other homework assignments. In order to facilitate student learning, each student will be allowed to correct and re-submit these assignments. However, the re-submitted assignment should be completed one class period after the original assignment was returned.

Because each topic builds from the previous topic, assignments are expected to be submitted in a timely manner. **All assignments are to be submitted through Blackboard. Please note that your assignments must be submitted as Word documents or pdfs.**

*Tentative Lecture and Discussion Schedule*

The schedule of lecture topics is “tentative” because some lectures may be delayed or advanced to best accommodate the learning experiences of the class as a whole. Any changes in the schedule will be announced in class and repeated on Blackboard.

| **Date** | **Topic** |
| --- | --- |
| 1/11/22 | Lecture: “Introduction” |
| 1/13/22 | Lecture: “The Definition of Statistics” |
| 1/18/22 | Discussion of Chapters 1 and 2; Instructions for Assignment 3 |
| 1/20/22 | Assignment 3 “Quals” (Chapter 3) Review; Instructions for Assignment 4 |
| 1/25/22 | Assignment 4 “SPSS, Quals” (Chapter 3, SPSS) Review; Instructions for Assignment 5 |
| 1/27/22 | Assignment 5 “Quants” (Chapter 4) Review; Instructions for Assignment 6 |
| 2/1/22 | Assignment 6 “Variance” (Chapter 5) Review; Instructions for Assignment 7 |
| 2/3/22 | Assignment 7 “SPSS, Quants” (Chapter 5, SPSS) Review; Instructions for Assignment 8 |
| 2/8/22 | Review; “Notes on Probability, I, II, and III” |
| 2/10/22 | Assignment 8 “Z-transformation” (Chapter 6) Review; Instructions for Assignment 9 |
| 2/15/22 | Lecture 1: “Statistical Inference”; Lecture 2: “Significance Testing” |
| 2/17/22 | Assignment 9 “Stochastic Independence” (Chapters 7 and 8) Review; Instructions for Assignment 10 |
| 2/22/22 | Lecture 3: “Chi-Square”; Lecture 4: “Chi-Square with SPSS” |
| 2/24/22 | Assignment 10 “SPSS, Chi-Square” (Chapter 11, SPSS) Review; Instructions for Assignment 11 |
| 3/1/22 | Lecture 5: “t-test”; Lecture 6: “t-test using SPSS” |
| 3/3/22 | Assignment 11 “Chi-Square” (Chapter 11, SPSS) Review; Instructions for Assignment 12 |
| 3/8/22 | Lecture 7: “ANOVA”; Lecture 8: “ANOVA using SPSS” |
| 3/10/22 | Assignment 12 “SPSS, t-test” (Chapter 12, SPSS) Review; Instructions for Assignment 13 |
| 3/15/22 | Review; Instructions for Assignment 14 |
| 3/17/22 | Assignment 13 “t-test” (Chapter 12, SPSS) Review |
| 3/22/22 | SPRING BREAK |
| 3/24/22 | SPRING BREAK |
| 3/29/22 | Review |
| 3/31/22 | Assignment 14 “SPSS, ANOVA” (Chapter 13, SPSS) Review; Instructions for Assignment 15 |
| 4/5/22 | Lecture 9: “Algebra”; Lecture 10: “Curve-fitting”; Instructions for Assignment 16 |
| 4/7/22 | Assignment 15 “ANOVA” (Chapter 13, SPSS) Review; Lecture 11: “Co-Variation”; Lecture 12: “Correlation and regression” |
| 4/12/22 | Assignment 16 “Algebra and Linear Models” Review; Instructions for Assignment 17 |
| 4/14/22 | Lecture 13: Interpreting Regression Models”; Lecture 14: “Correlation and Regression using SPSS” |
| 4/19/22 | Assignment 17 “SPSS, Correlation and Regression” (Chapter 14, SPSS) Review; Instructions for Assignment 18 |
| 4/21/22 | Review |
| 4/26/22 | Assignment 18 “Correlation and Regression” (Chapter 14, SPSS) Review |
| 4/28/22 | Closing remarks |

*Assignment Schedule*

| **Number** | **Topic** | **Textbook** | **Due Date** | **Points** |
| --- | --- | --- | --- | --- |
| 1 | Reading Reflections on Representation | Chapter 1 | 1/18/22 | 15 |
| 2 | Reading Reflections on Research Design | Chapter 2 | 1/18/22 | 15 |
| 3 | Describing observations of a qualitatively assessed property | Chapter 3 | 1/20/22 | 10 |
| 4 | Describing observations of a qualitatively assessed property: SPSS Tutorial, Parts A and B | Chapter 3 | 1/25/22 | 10 |
| 5 | Describing observations of a quantitatively assessed property | Chapter 4 | 1/27/22 | 10 |
| 6 | Describing variability in a set of observations of a quantitatively assessed property | Chapter 5 | 2/1/22 | 10 |
| 7 | Describing variability in a set of observations of a quantitatively assessed property: SPSS Tutorial, Parts A and B | Chapter 5 | 2/3/22 | 20 |
| 8 | Standardization by the Z-transformation | Chapter 6 | 2/10/22 | 20 |
| 9 | Probability and stochastic independence | Chapters 7 and 8 | 2/17/22 | 20 |
| 10 | Assessing an association between two qualitatively assessed coexisting properties: SPSS Tutorial, Parts A and B | Chapter 11 | 2/24/22 | 20 |
| 11 | Assessing an association between two qualitatively assessed coexisting properties: SPSS Exercise, Parts A and B | Chapter 11 | 3/3/22 | 20 |
| 12 | Assessing an association between a quantitative and coexisting qualitative property through the t-test: SPSS Tutorial, Parts A and B | Chapter 12 | 3/10/22 | 20 |
| 13 | Assessing an association between a quantitative and coexisting qualitative property through the t-test: SPSS Exercise, Parts A and B | Chapter 12 | 3/17/22 | 20 |
| 14 | Assessing an association between a quantitative and coexisting qualitative property through ANOVA: SPSS Tutorial, Parts A and B | Chapter 13 | 3/31/22 | 20 |
| 15 | Assessing an association between a quantitative and coexisting qualitative property through ANOVA: SPSS Exercise, Parts A and B | Chapter 13 | 4/7/22 | 20 |
| 16 | Algebra and linear models of association | Hand-out | 4/12/22 | 30 |
| 17 | Assessing an association between two quantitatively assessed coexisting properties through correlation and regression: SPSS Tutorial, Parts A and B | Chapter 14 | 4/19/22 | 50 |
| 18 | Assessing an association between two quantitatively assessed coexisting properties through correlation and regression: SPSS Exercise, Parts A and B | Chapter 14 | 4/26/22 | 50 |
| TOTAL |  |  |  | 380 |

Grading:

* 90-100% = A
* 80-89% = B
* 70-79% = C
* 60-69% = D
* Below 60% = F

*Plagiarism*

It is expected that each student will do his or her own work, and plagiarism will result in a grade of zero for the plagiarized assignment. Moreover, a second plagiarism offense will result in a failing grade for the course.

*Religious Holidays*

We will observe University policy for religious holidays. Any special requests should be addressed to the Instructor.

*Special Instructional Needs*

Any student with special instructional needs is requested to discuss those needs with the Instructor at the student’s earliest convenience.

*Other Student Issues*

The University offers many services to assist students with personal issues or concerns related to student life, and students are encouraged to seek out those services as they may become necessary. If such services are required, please feel free to contact the Instructor as such issues and concerns may affect the student’s academic activities. Such communications between a student and the Instructor will be kept confidential as specified by University policy.