Applied Quantitative Reasoning I (UST601)
Cleveland State University
Spring 2017
Class Schedule: Thursdays 6-9:50 p.m.
UR 107

Instructor: Dr. Meghan E. Rubado
Office: UR321
Office hours: T/Th 3:30-5 p.m., and by appt.
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Office phone: (216) 687-2241

Course Description

This class introduces students to research methodology and quantitative analysis as it applies to the fields of public administration, planning, and policy. Practitioners and scholars in these fields use quantitative methods to answer important questions about human behavior and public problems, programs, and policies. This methodology requires use of statistical tools, the basics of which will be introduced in this class. Students will learn to analyze substantive social questions related to their fields of interest using statistical analyses, including: descriptive statistics, correlation, graphical analysis, hypothesis testing, confidence intervals, and regression analysis. Throughout the course we will learn key statistical concepts and methods, and we will consider the various ways in which these can help us learn about social phenomena.

The content in this course builds upon itself as we progress. It will be difficult to grasp current material if you’ve fallen behind on past material. All assessments, therefore, are inherently cumulative, though each will focus on the more recently covered material. Lectures will include introduction of new material, as well as practice problems and familiarization with statistical software required for completion of the term research paper. Regular attendance at lecture and lab is critical to success in this class.

Course Materials

There is one required textbook, which is available at the campus bookstore and online, which we will work from throughout the semester.


*Standard calculators (no phones or graphing calculators) must be used during quizzes.*

Course Requirements and Evaluation

Students evaluations will be based on homework assignments, a research paper, three quizzes, and participation/attendance.
Homework assignments: 20% of course grade. See schedule below for assignments and due dates. All homeworks are posted on Blackboard at least one week before the due date. Completed assignments are due at the start of class on the assigned due date. Late homework will not be accepted.

Research Project: 30% of course grade. This project, completed in pairs, will require students to write an original research paper that uses appropriate statistical methods to address a research question related to public administration, planning, or your specific field of interest. Each pair of students will submit one paper. See schedule below for due dates.

Quizzes: 30% total, 10% per quiz. There will be three in-class quizzes throughout the semester to test mastery of the course material. See schedule below for quiz dates.

Participation: 20% of course grade. Attendance and speaking up in class will contribute to your participation grade. For a solid A here, you would need near perfect attendance and to contribute very regularly in lectures. Missing more than one class will negatively affect your grade.

Grading criteria for course are as follows:

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<tr>
<td>A</td>
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<td>B+</td>
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Course Policies

Late work: Assignments are to be handed in at the beginning of class. If you are unable to attend class, you remain responsible for handing in assignments before the time that class begins. Only under extraordinary circumstances, in which students have made previous arrangements with me, will I accept late work. If previous arrangements are not made, students will receive no credit for late assignments. Similarly, students will not be granted additional time to prepare for quizzes, except where there is compelling reason for doing so. A request for an extension must be arranged in advance, and must be accompanied by a recommendation from a recognized authority (e.g., physician or an academic dean). Grades of incompletes will only be granted for the most severe and documented circumstances (e.g., death in family, health complications, etc.) that prevent students from completing the course as scheduled.

Academic honesty: Students are expected to submit only their own work with their original ideas and proper citations of outside sources. Students are encouraged to study together and discuss their ideas with one another. However, all work submitted for this course must be completed individually. According to the CSU Writing Center, the CSU Student Handbook describes plagiarism as stealing and/or using the ideas or writings of another in a paper or report and claiming them as your own. This includes but is not limited to the use, by paraphrase or direct quotation, of the work of another person without full and clear acknowledgment.
Contacting the professor: Students are encouraged to use e-mail and Blackboard to contact me regarding any questions or concerns. They also should feel free to drop into office hours. If you have a more complicated question that you feel will take some time to work out, it is a good idea to make an appointment to see me in the office. I will make every effort to accommodate students’ schedules.

University Policies

Students with Special Needs: Educational access includes the provision of classroom accommodations, auxiliary aids and services to ensure equal educational opportunities for all students regardless of their disability. Any student who feels he or she may need an accommodation based upon the impact of a disability should immediately contact the Office of Disability Services at 216-687-2015. The office is located in MC147. Accommodations need to be requested in advance and will not be granted retroactively. Students should notify the instructor as soon as possible if they have been granted an accommodation through the Office of Disability Services.

Writing Assistance: Students with difficulty writing may contact the Writing Center located in the Main Classroom 321 for assistance. Students should use the American Psychological Association (APA) format for citations and reference pages, unless agreed upon otherwise in advance with the professor.

Tentative Course Schedule of Topics, Readings, and Assignments (subject to change):

Thurs. 1/19
Introduction to the course, getting to know each other, some stats basics

Week 1: Thurs. 1/26
Topics: Social Inquiry and Statistics, Variables and Measurement, Sampling and Bias
Reading due: A&F Chapter 1 (all), Chapter 2 (all)

Week 2: Thurs. 2/2
Topics: Descriptive Statistics, Central Tendency, and Variation
Reading due: A&F Chapter 3 (all)
**HOMEWORK 1 (available on BB) DUE – bring hard copy to class**

Week 3: Thurs. 2/9
Topics: Probability Distributions, Z-Scores and Percentiles, Sampling and Inference
Reading due: A&F Chapter 4 (all)
**HOMEWORK 2 (available on BB) DUE – bring hard copy to class**

Week 4: Thurs. 2/16
Quiz 1 Review, Workshop/Practice
**HOMEWORK 3 (available on BB) DUE – bring hard copy to class**
Week 5: Thurs. 2/23
**Quiz 1**, *bring standard calculator*. No phones or graphing calculators permitted
Topics: Introduction to Research Paper; Using Data in Excel

Week 6: Thurs. 3/2
Quiz 1 results reviewed
Topics: Estimation (Point and Interval), Proportion Estimators, Sample Size Choice
Reading due: A&F Chapter 5 (all)
Research Paper Topic Proposal DUE – via Blackboard assignment

Week 7: Thurs. 3/9
Reading due: A&F Chapter 6 (all)
HOMEWORK 4 (available on BB) DUE – bring hard copy to class

***Spring Break – No Class 3/16***

Week 8: Thurs. 3/23
Topics: Comparing Means and Proportions, Small Sample Comparisons
Reading due: A&F Chapter 7 (all)
HOMEWORK 5 (available on BB) DUE – bring hard copy to class

Week 9: Thurs. 3/30
Quiz 2 Review, Workshop/Practice, Research Paper Brainstorming/Data Session
HOMEWORK 6 (available on BB) DUE – bring hard copy to class

Week 10: Thurs. 4/6
**Quiz 2**, *bring standard calculator*. No phones or graphing calculators permitted
Topics: Research Paper Development; Data Analysis in Excel

Week 11: Thurs. 4/13
Quiz 2 results reviewed
Topics: Associations with Categorical Variables
Reading due: A&F Chapter 8 (all)
DUE: Paper Draft 1 - lit review, theory, data

Week 12: Thurs. 4/20
Topics: Linear Regression and Correlation: relationships and testing
Reading due: A&F Chapter 9.1-9.4
HOMEWORK 7 (available on BB) DUE – bring hard copy to class

Week 13: Thurs. 4/27
Topics: Linear Regression and Correlation: inference and interpretation
Quiz 3 Review
Reading due: A&F Chapter 9.6-9.7
Research Paper

The task: In pairs, students will complete a major project that consists of an original research paper. The project aims to assess your ability to relate research questions to data and to determine and implement appropriate statistical analysis methods. Each pair of students will select a research question (or a couple related questions) to examine over the course of the semester. You should choose a topic related to your area of interest in public administration, planning, environmental policy, etc. You must find a dataset (or datasets) that can help answer your question and conduct appropriate statistical analysis. You will present your question, literature review, theory, and results in a research paper (one paper per pair).

All assignments must be submitted in 12-point font, double-spaced, 1-inch margins, and must be uploaded to the Blackboard assignment. No late work will be accepted. If you miss one of the deadlines, you will lose the associated points on your final grade for the project.

Due March 2: Research Question and Partnership Memo (one memo per pair)

In a 250-500-word memo, tell me with whom you are working, what question/s you are interested in researching, and what sort of data might help you answer the question/s. Your question should involve a relationship between two variables, for example: Do people’s political beliefs affect their attitudes toward genetically modified foods? If you are debating between a couple of options, tell me about both so I can help you narrow it down. In the memo, explain why you think the question is worth asking, and if you have any expectations about what the answer might be. Indicate whether you have an idea of where to find data on this question. (5 points)

Due April 13: First draft of front end of the paper (Introduction, Literature Review, Theory, and Data) - (one per pair)

In at least 4 full pages (~1000 words), provide the major sections that will begin the paper (everything except the actual data analysis, results, and conclusion).

Include a review of existing literature on and/or related to your research question. The articles, documents, and websites you consult will be guided by your topic. Whenever possible, you should cite scholarly articles and/or books, though news stories and online sources (such as think
thanks, research centers, etc.) are acceptable. You should briefly summarize relevant sources, explaining what they contribute to our understanding of your research topic, as well as their limitations. How many sources you should cite depends on your topic, but citing fewer than three sources will result in a loss of points.

In a separate section, explain the theory that underlies the relationship you plan to examine in your project. Here, it is important to establish a causal relationship that moves in one direction. For example, if you are investigating the relationship between home ownership and self-reported happiness levels, you would need to map out how home ownership affects happiness. Tell me whether you think the relationship is positive or negative and why. You can lean on the literature here, or develop a theory that stands apart from existing research. You should clearly note the hypotheses you draw from your theory (i.e., null and alternative hypotheses).

Finally, include a section in which you discuss the data you will use to answer your research question. This section should explain where the data comes from, how it was collected, and where it can be accessed. Discuss the relevant variables in the dataset and explain how they relate to your research question. Provide appropriate descriptive statistics (e.g. mean, standard deviation, range of the data) on the variables of interest.

(15 points)

Due May 11: Final paper (one per pair)

In 1,750-2,250 words, present your project in five sections:
1) Introduction: Explain your question and its relevance.
2) Literature Review: Synthesize existing research regarding your question.
3) Theory: Explain the underlying causal mechanism and your hypotheses.
4) Data and Methods: Describe your data, where it comes from, and how you will use it. Which tests will you perform?
5) Results and Discussion: Present the results of your analysis and interpret them, and draw conclusions about how these findings relate to your theory (i.e., reject the null, fail to reject). What do your findings mean in terms of the original research question?

A strong paper will connect the research question to relevant literature, develop a causal theory, select appropriate data and methodology, and compute and interpret the results accurately. (80 points)