UST 601: Applied Quantitative Reasoning I
Fall 2015
Tuesdays 6:00 PM-9:50 PM
Urban 247

Professor: Ben Clark
Email: b.y.clark@csuohio.edu (most efficient way to contact me)
Phone: Office: 216-687-2497 Goggle Voice: 216-264-0025
Office Location: UR312 (3rd Floor of Urban Building)
Office Hours: 2:00-3:30 Tuesdays or by appointment (https://benclark.youcanbook.me/)

About this class
Evidence based decision-making in government is being driven more and more by our understanding and use of data. This course will provide graduate-level instruction in the use and application of statistics for the public and non-profit sectors. The course is designed to aid students in learning statistical methods and the underlying theory that enables and constrains evidence and data based decision-making.

The course provides an introduction to descriptive statistics, probability theory, statistical inference, and decision analysis, with an emphasis on the ways in which they are applied to practical policy questions. Use of computer tools for carrying out statistical analysis will also be a substantial emphasis of the class.

The primary goals for the course are to enable students to understand:
• how statistical tools can be applied to problem-solving;
• how decision-making can be improved through statistical analysis;
• the nature and use of distributions;
• how sample data can be used to generalize to larger populations;
• the properties and limitations of estimators and hypothesis tests;
• the nature and strength of relationships between variables;
• how to transform raw data into useful information; and
• how to use computer tools to carry out statistical analysis.

As with all graduate courses, you should plan on working (at least) 3 hours out of class for each credit hour, or about 12 hours of work outside of class each week. Some weeks you will need more, some less.

Course Materials

Grade Composition
• 20% Homework and in-class exercises
• 30% Memos (3)
• 20% Mid-term
• 30% Final

Grading Scale
A: 94-100 B+: 87-89 B: 86-83 C: 70-79 F: <70
A-: 90-93 B-: 82-80
Course components

1. Readings
   Prepare for each class session by reading text assignments and identifying topics that may need additional clarification in class. Your first exposure to the material should be in this initial reading of the assigned chapter. Make full use of this reading time by taking notes and forming questions to ask during lecture. Most students find they get the most out of the textbook by reading it twice. The textbook is concise, so reading it twice will be easy. There may be some short exercises that accompany these videos. If assigned, you are expected to complete these exercises. Links to videos will be found on Blackboard.

2. Lectures
   Lectures serve to discuss and review material in the assigned readings/videos, not to introduce it. Lecture should be your second exposure to the assigned material. The objective of the lectures is to review the readings and clear up questions that you have, but they are not intended to be your first exposure to the material. Lectures will be most valuable (and least stress-inducing to you) if you have done the assigned reading first. By coming prepared you are better able to leverage your time in class to clarify what you have already learned, rather than be introduced to it.

3. Homework and In-Class Exercises
   You will need to review your notes, the readings, and videos to complete your homework. This will be your third exposure to the course material. You will be assigned homework every week. This homework will be graded for completeness, not correctness. Most weeks there will be homework that will require you to use R or Excel, both of which are available in the Levin College computer labs. R is free statistical software that works on Macs, PCs and Linux machines (available here: http://www.r-project.org). Homework assignments will be submitted through Blackboard prior to class starting. This is the ONLY way to turn in your homework. Don’t give me a paper copy. We will review questions in class, so a paper copy might help you.

4. Tests
   The tests assess accumulated knowledge, as well as the ability to respond to new problems. Tests will focus primarily on the most recent materials, but since this course builds cumulatively, concepts covered earlier may also be present. Reviewing class notes, re-reading the text, and re-doing your homework assignments in preparation for a test will be your fourth exposure to the class material. All tests are designed to test your knowledge of the techniques, your ability to appropriately apply them, and your ability in interpreting and communicating their results.

5. Memo
   You will write three (3) a two-page memos that utilizes one of the inferential statistical techniques we covered in class (Chi-Square, t-test, correlation, ANOVA, or regression). In this assignment you will use plain English (i.e. non-technical language or stats speak) to describe the findings from your statistical test. You will set up these findings with a very brief description of your research question and hypothesis. You will also provide a description of your data and variables used in the analysis. You can use a dataset provided by the instructor or one you have found yourself. This assignment will be your fifth exposure to the class materials. These assignments are designed to pull together different components of the class and translate those components into a real world example of how you would present the materials.
CLASS POLICIES

Please do not use a laptop, cell phone, or other electronic devices during class—the distract you, they distract me, they distract your classmates.

Extra Credit
There are no extra credit possibilities in this class. Grades are only based on the assigned work.

Late Work
In the absence of extreme and documented circumstances or documented illness, due dates and times are final. If you have to miss class it is your responsibility to turn in your work ahead of time. Unless some catastrophic and documented event occurs, late work will not be accepted, period.

Expectations of Written Work
Spell-check and proofread everything you hand in (note that these are different). Critically evaluate all of your output for correctness, completeness, and clarity. Work in this class earning the grade of "A" is error-free in terms of all three of these. If you have difficulty expressing yourself in writing, you are strongly encouraged to seek the assistance of a professional editor prior to turning in your written materials. Cleveland State’s Writing Center may also be of assistance in this regard.

General paper guidelines
- Double space
- 12 point font (Times New Roman or Garamond are preferred). No sans serif fonts, like Arial. This is an example of a sans serif font. This is an example of a font with serifs.
- 1 inch margins
- Assignments will be turned in through the website TurnItIn.com. You will be given access to the class portal for TurnitIn.com the first week of class so you can check for plagiarism in your own work prior to turning in an assignment.

Information literacy skills require students to address ethical and legal uses of information. At times you may want to quote, or state directly what an author has said. Remember to set off quotations in quotation marks and to document them according to the APA style. If you derive your paraphrased statement from several authors, use a single pair of parentheses and a series of references separated by colons for example: (Johnson, 1999; Perry, 2004; Smith, 2006). Please note: plagiarism will result in the student receiving a failing grade for the piece of work involved. Ignorance is not an excuse. If you do not understand what is or is not plagiarism please ask. This is your first and last warning.

Paraphrasing
Paraphrasing should be used to support your thinking and should form the bulk of your evidence. A paraphrase is a restatement of the author’s words or ideas. Paraphrasing adds weight to the argument you are presenting. Where possible maintain the intent of the original passage, or if synthesizing the work of several authors use the style indicated above.

Your memos will be submitted on Blackboard, which has TurnItIn.com integrated into its functionality. By using TurnItIn.com in this class, you can verify that you are not plagiarizing your work, and ensure the legal and ethical use of other’s work. Note, this website also lets your instructor see where you are plagiarizing very easily.
Attendance
I take attendance. You are not, however, required to attend class. You are adults and can make the decision to attend or not attend. However, I strongly recommend that you attend every class in its entirety, for the following reasons:

• Arriving on time allows you to participate in the homework discussion, clarifying issues you may have or share with other students;
• Attending class provides you with an additional presentation of the material;
• Exam material will be drawn from the text and lecture material, and not all lecture material is in the text (and not all text material is in the lecture);
• You are responsible for changes to this syllabus announced in class.

Grade Appeals
Grade appeals must be made typewritten, with supplemental information attached as appropriate.

UNIVERSITY POLICIES

University/College Policies

University Deadlines
• For the current semester, the deadline for dropping a course is September 4, 2015.
• The last day to withdraw from the course is October 30, 2015.
• The final examination week is December 7-12 2015.

Writing Assistance
Students with difficulty writing may contact the Writing Center located in Rhodes Tower 124 for assistance. Their website is here: https://www.csuohio.edu/writing-center/writing-center-2

Grades of “I” and “X”
X - The grade of "X" can be assigned by the instructor when an attending/participating student has stopped attending/participating without notification and has not completed all assignments for reasons that cannot be determined by the end of the grading period. An "X" automatically becomes an F if not resolved by the last day of instruction of the following semester. An “X” also will be assigned by the University Registrar when no grade is submitted by an instructor.

I - Incomplete. The "I" grade is given when the work in a course has been generally passing, but when some specifically required task has not been completed through no fault of the student. An "I" grade can be assigned by the instructor when all three of the following conditions are met:
1. Student is regularly attending/participating in the class and has the potential to pass the course;
2. Student has not completed all assignments and has stopped attending/participating for reasons deemed justified by the instructor; and
3. Student has notified the instructor prior to the end of the grading period.
Plagiarism
This is how the CSU Student Code of Conduct defines plagiarism:
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.

Infraction types (from the CSU Code of Conduct):
Minor Infraction – Minor infractions comprise those instances of cheating, plagiarism, and/or tampering which affect the grade of an individual class assignment or project of lesser (<25% of grade) importance. Multiple instances of minor infractions within a course or across courses constitute a major infraction.

Major Infraction – Major infractions comprise those instances of cheating, plagiarism, and/or tampering which affect the overall course grade, such as a major/comprehensive exam, term paper or project, final grade evaluation, or academic standing and status. Major infractions automatically result in an entry on the student’s permanent record that the student has engaged in academic misconduct (see 3.1.2.A(2)(b)).

More details on consequences of plagiarism can be found in the Student Handbook under Academic Regulations (Policy on Academic Misconduct) at the following link:
http://www.csuohio.edu/studentlife/StudentCodeOfConduct.pdf

Students with Special Needs
Educational access is 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 on the impact of a disability should contact the Office of Disability Services at (216) 687-2015. The Office is located in MC 147. 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.

Cancellation of Class Due to Weather
I only cancel class for weather when the university tells me to. Check the CSU website on snowy days to see if the university is open or closed.
CLASS SCHEDULE*

<table>
<thead>
<tr>
<th>Date</th>
<th>Week's Topic</th>
<th>Notes for the day</th>
</tr>
</thead>
<tbody>
<tr>
<td>Week 1</td>
<td>8/25/15 Introduction (1); Research Design (2); Conceptualization and Measurement (3)</td>
<td></td>
</tr>
<tr>
<td>Week 2</td>
<td>9/1/15 Measuring performance (4); Data Collection (5)</td>
<td></td>
</tr>
<tr>
<td>Week 3</td>
<td>9/8/15 Central Tendency (6); Measures of Dispersion (7)</td>
<td>R-Day</td>
</tr>
<tr>
<td>Week 4</td>
<td>9/15/15 Probability (Blackboard reading)</td>
<td>Memo 1 Due</td>
</tr>
<tr>
<td>Week 5</td>
<td>9/22/15 Contingency tables (8); Getting Results (9)</td>
<td>R-Day</td>
</tr>
<tr>
<td>Week 6</td>
<td>9/29/15 Hypothesis testing with chi-square (10)</td>
<td>R-Day</td>
</tr>
<tr>
<td>Week 7</td>
<td>10/6/15 Mid-Term</td>
<td></td>
</tr>
<tr>
<td>Week 8</td>
<td>10/13/15 No Class - Columbus Day</td>
<td></td>
</tr>
<tr>
<td>Week 9</td>
<td>10/20/15 The T-test (12)</td>
<td>Memo 2 Due</td>
</tr>
<tr>
<td>Week 10</td>
<td>10/27/15 The T-test (12)</td>
<td>R-Day</td>
</tr>
<tr>
<td>Week 11</td>
<td>11/3/15 ANOVA (13)</td>
<td>R-Day</td>
</tr>
<tr>
<td>Week 12</td>
<td>11/10/15 Simple Regression (14)</td>
<td></td>
</tr>
<tr>
<td>Week 13</td>
<td>11/17/15 Simple Regression (14)</td>
<td>R-Day</td>
</tr>
<tr>
<td>Week 14</td>
<td>11/24/15 Multiple Regression (15)</td>
<td>R-Day</td>
</tr>
<tr>
<td>Week 15</td>
<td>12/1/15 Forecasting (17); Review</td>
<td>Memo 3 Due</td>
</tr>
<tr>
<td>Week 16</td>
<td>12/8/15 Final Exam</td>
<td></td>
</tr>
</tbody>
</table>

*Syllabus is subject to change at the instructor’s discretion. These changes will be announced in class.

Read the appropriate chapters before class each week.  
For example, you should come to class on September 1st having already read chapters 4 & 5.