George Mason University  
Schar School of Policy and Government  
POGO 511: Introductory Data Analysis  
Spring 2020, Mondays 7:20-10:00 p.m.  
Arlington Founders Hall Room 206

Instructor: Alisha K. Martinez, Ph.D.  
Phone: 571-205-9239  
Email: ascruz2@gmu.edu  
Office Hours: Mondays 6:00-7:00 p.m. next to Room 206 in Arlington Founders Hall

TABLE OF CONTENTS
- Course Description
- Time and Location
- Expected Learning Outcomes
- Course Materials
- Course Software
- Course Topics
- Course Grading
- Homework Policy
- Final Exam Policy
- Project Information
- Grading Policy
- Plagiarism
- Acknowledgement
- Academic Accommodation for a Disability
- Tentative Course Schedule (Subject to change at the instructor’s discretion)

Course Description
Students are introduced to the basic methods of descriptive statistics, statistical estimation testing, and regression. The course is largely driven by adult learning theory to incorporate as much practical application of these tools in real-world scenarios. The main software used in the class is SPSS and Microsoft Excel. All students are expected to complete a statistical project with a team of students using one of the data sets provided by the instructor at the end of the course. More information on the statistical project will be provided during the first three lectures of the course. All course materials will be made available in Blackboard, including powerpoints, handouts, datasets, homework, and rubrics for the statistical project and final paper. Students are expected to review Blackboard regularly to stay abreast of updates and modifications to the course, as necessary.

Time and Location
The course will meet in Room 206 of Arlington Founders Hall on Mondays from 7:20-10:00 p.m. Office hours will take place adjacent to Room 206 of Arlington Founders Hall on Mondays from 6:00-7:00 p.m. Appointments are not required but strongly recommended.

Expected Learning Outcomes
As a result of completing this course, students should be able to:
- Read and understand scholarly articles that describe basic statistical analysis
- Assess policy reports and materials that use statistical analyses
• Conduct basic statistical analysis (descriptive statistics, hypothesis testing, regression, etc.) to analyze various policy issues
• Use SPSS to run various statistical tests and interpret the SPSS outputs
• Organize and clean data sets to complete a statistical project
• Collaboratively work in a team setting for in-class assignments on a data set
• Deliver professional presentations for a statistical project
• Deliver assignments and projects in a timely manner

**Course Materials**

**Required Textbook**

**Recommended resources:**


Course Software
We will use SPSS to support the application of basic statistical analysis in the class. SPSS is available in all ITU Labs and the DiSC Lab. Students may also access SPSS for a duration of time (typically 4 hours or less) via the Virtual Computing Lab. For more information on how to access SPSS, please visit https://infoguides.gmu.edu/software/spss#s-lg-box-17180794.

There are several resources available on GMU’s Library website pertaining to SPSS. Students are encouraged to check out those resources, which can be found at the following web address: https://infoguides.gmu.edu/software/spss#s-lg-box-17180799

Students are recommended to purchase a 6-month (or longer) licence of SPSS. SPSS v26 is available for purchase for home use from Hearne Software or other sources. For more information on purchasing SPSS through Hearne Software, please visit https://www.hearne.software/Software/SPSS-Grad-Packs-for-Students-by-IBM/Editions. Please note that the promotion of Hearne Software was found on the Software for Digital Scholarship part of the GMU library website. The instructor has not purchased SPSS v26 through Hearne Software but from the descriptions of what is included, the Statistics Standard package which includes advanced stats and regression models should suffice for the purposes of this course.

You do not need to purchase SPSS before the semester begins. We will discuss the options described within the syllabus in greater detail during the first class.

Course Topics
- Descriptive statistics and data visualizations
- Probability distribution and hypothesis testing for means and statistical estimations
- Simple linear regression analysis

Course Grading

<table>
<thead>
<tr>
<th>Item</th>
<th>Percentage of Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 Problem Sets</td>
<td>30%</td>
</tr>
<tr>
<td>In-Class Assignments and Participation</td>
<td>15%</td>
</tr>
<tr>
<td>Final exam</td>
<td>25%</td>
</tr>
<tr>
<td>Project paper</td>
<td>20%</td>
</tr>
<tr>
<td>Project presentation</td>
<td>10%</td>
</tr>
</tbody>
</table>

Homework Policy
Homework (problem sets) will be distributed in class and available in Blackboard for download. Readings and homework assignments are due by 7:20 p.m. on the date the assignment is due as reflected in the course schedule. Students must submit completed problem sets (scanned or uploaded) into Blackboard by the start of class on the date the assignment is due. Students are permitted and encouraged to work as a group to complete the problem sets, but the final product must be original work and submitted individually by each student. Late assignments will be marked down by half a letter grade for each day the assignment is late.
Final Exam Policy
A final exam will be administered in class. This exam is open book and open notes, and must be completed individually. Students must be present, in class, at the time of the exam to receive credit.

Project Information
Students will complete a statistical project as a team. Students will provide preferences for which data set they would like to complete the statistical project on during the first few weeks of the course. This project will involve statistical analysis on one of five available data sets. This analysis should involve statistical techniques reviewed in the class and include at least one example of regression. Students must show proficiency in understanding regression, describing confidence intervals, and significance tests of coefficients.

Students will have opportunities during class to run basic statistical analysis on their selected data set with their project team. Students are expected to complete in-class assignments collaboratively with their project team and complete a data analysis plan. Each project team is expected to complete a brief (about 15 minutes) presentation and submit a project paper in both hard copy and electronic version. Rubrics will be posted in Blackboard for the presentation and the final paper closer to the due date of these assignments.

Grading Policy

<table>
<thead>
<tr>
<th></th>
<th>A+</th>
<th>98-100%</th>
<th>B-</th>
<th>80-82.49%</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>93-97.49%</td>
<td>C</td>
<td>70-70.49%</td>
<td></td>
</tr>
<tr>
<td>A-</td>
<td>90-92.49%</td>
<td>F</td>
<td>Below 70%</td>
<td></td>
</tr>
<tr>
<td>B+</td>
<td>88-88.49%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>83-87.49%</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Plagiarism
Any act of plagiarism is unacceptable. Plagiarism is defined as the use of another person’s words or ideas that are presented as one’s own. It is strongly recommended that sources are properly cited in all assignments in this course. The Schar School of Policy and Government takes plagiarism seriously and implements a zero tolerance policy. Therefore, if any assignments submitted by a student are plagiarized, they will automatically receive a grade of an F. This could impact a student’s overall grade.

Acknowledgement
The instructor would like to acknowledge that this syllabus was informed by many sources including Dr. Michelle Buehl, Dr. Margo Mastropieri, Dr. Jessica Terman, and previous instructors of POGO 511.

Academic Accommodation for a Disability
If any student requires accommodation based on the impact of a special need or disability, please contact the Disability Resource Center (DRC) at 703-993-2474. Academic accommodations must be arranged between the student and the DRC. The student must notify the instructor of any accommodation at the beginning of the semester to make modifications.
## Tentative Course Schedule
*(Subject to change at the instructor’s discretion)*

<table>
<thead>
<tr>
<th>Lecture</th>
<th>Date</th>
<th>Topic</th>
<th>Reading/Exam/Homework</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Jan 27</td>
<td>Introduction, overview of course, introduce five problem sets</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Feb 3</td>
<td>Guest speakers, research in a policy context, ethics, project teams announced</td>
<td>Ch. 1 (Berman &amp; Wang)</td>
</tr>
<tr>
<td>3</td>
<td>Feb 10</td>
<td>Research design, descriptive stat., relationships, variables, program evaluation, threats to validity, scholarly articles</td>
<td>Ch. 2 (Berman &amp; Wang)</td>
</tr>
<tr>
<td>4</td>
<td>Feb 17</td>
<td>Concept measurement, scales, levels of measurement, internal reliability, logic models, performance mgmt.</td>
<td>Ch. 3&amp;4 (Berman &amp; Wang) PS1 Distributed</td>
</tr>
<tr>
<td>5</td>
<td>Feb 24</td>
<td>Data collection, sampling, data input, central tendency, measures of dispersion, review survey instrument, codebook</td>
<td>Ch. 5&amp;7 (Berman &amp; Wang) PS1 Due</td>
</tr>
<tr>
<td>6</td>
<td>March 2</td>
<td>Inferential statistics, confidence intervals, hypothesis testing, statistical significance, critical values</td>
<td>Ch. 10 (Berman &amp; Wang) Review Ch. 5-7</td>
</tr>
<tr>
<td></td>
<td>March 9</td>
<td><em>No Class – Spring Recess</em></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>March 16</td>
<td>Statistical significance, critical values, degrees of freedom, chi-square, non-parametric tests</td>
<td>Ch. 11 (Berman &amp; Wang) PS2 Distributed</td>
</tr>
<tr>
<td>8</td>
<td>March 23</td>
<td>T-tests, Mann-Whitney and Wilcoxon tests, homogeneity</td>
<td>Ch. 12 (Berman &amp; Wang) PS2 Due</td>
</tr>
<tr>
<td>9</td>
<td>March 30</td>
<td>ANOVA</td>
<td>Ch. 13 (Berman &amp; Wang) PS3 Distributed</td>
</tr>
<tr>
<td>10</td>
<td>April 6</td>
<td>Simple regression (and multiple regression if time permits)</td>
<td>Ch. 14 (Berman &amp; Wang) PS3 Due</td>
</tr>
<tr>
<td>11</td>
<td>April 13</td>
<td>Comprehensive Review</td>
<td>Ch. 1-7 &amp; 10-14 (Berman &amp; Wang)</td>
</tr>
<tr>
<td>12</td>
<td>April 20</td>
<td>Final Exam <em>(administered in class)</em></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>April 27</td>
<td>Teams work on projects</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>May 4</td>
<td>Project presentations, course evaluations, reflection</td>
<td>Project Presentations and Project Paper Paper due</td>
</tr>
</tbody>
</table>

Last modified: January 3, 2020