

**BUSH 631- 605: Quantitative Methods I**  
**Fall 2015**  
**Time: Friday 1:30 – 4:20 pm**  
**Location: Allen 1110**

**Instructor:** YuJung (Julia) Lee

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**Office:** Allen 1033

**Office Hours:** Mon. 3:30-4:30, Wed. 10-11:30

**Course website:** available on ecampus

**Course Description**

This is a graduate course in quantitative social science research methods. The course is designed to: 1) develop analytic skills for use in public policy and decision-making; 2) improve research design skills; 3) assess the validity and limits of statistical information presented to you; and 4) have a thorough understanding of basic statistical methods.

Through this course you will be able to employ basic statistical skills and learn the tools and techniques of research design in order to better assess public policies. In order to do so, we will be using STATA, a commonly used statistical software, and this course will help you become proficient in the use of it. Lastly, this course will help you for future studies and employment. As a policy maker, gaining statistical literacy is an invaluable skill that will help you make decisions and recommendations or persuade others.

In general, the topics to be covered will include: research and experimental design, hypothesis building and testing, probability distributions, statistical description, inferential statistics, sampling, and basic regression methods for observational data.

Not all textbook and homework material will be covered in class. The lectures may also include material not covered in the text. Therefore, the optimal approach to mastering class material includes studying class notes, homework assignments, assigned textbooks and readings, and practicing data analysis techniques.

**Student Learning Outcomes:**

By the end of the semester, you will be able to:

1. identify and evaluate different research methods;
2. design research by formulating research questions and testable hypotheses, and discussing data collection methods including those for surveys;
3. complete training and obtain certification for Human Subjects research;
4. assess the reliability and validity of various research projects, including experimental and quasi-experimental research designs;
5. generate and interpret descriptive statistics and measures of central tendency and dispersion;
6. analyze contingency tables;
7. conduct and interpret inferential statistical analysis using means tests for differences between groups, ANOVA, correlation, chi-squared tests, and other appropriate tests.
8. understand basic linear regression models
9. understand normal, binomial, and Poisson probability distributions

10. read and critique scholarly articles presenting statistical information;
11. be comfortable using STATA.

### **Required Textbooks and Readings**

1. Meir, Kenneth J., Jeffrey L. Brudney, and John Bohte. 2011. *Applied Statistics for Public and Nonprofit Administration*, 8<sup>th</sup> edition. Thompson-Wadsworth Publishers.
2. Acock, Alan A. 2014. *A Gentle Introduction to Stata*, Fourth Edition. Stata Press. ISBN: 978-1597181426.
3. STATA Statistical software, Stata/IC version 14. See:  
www <http://www.stata.com/order/new/edu/gradplans/gp-campus.html>
4. Additional readings will be made available on the course webpage.

### **Supplementary Materials (optional):**

1. *Statistics in a Nutshell* by Sarah Boslaugh and Paul Andrew Watters (available from the TAMU library electronically)
2. *Statistics for Lawyers* by M.O. Finkelstein and B. Levin. Springer, 2<sup>nd</sup> edition.
3. STATA learning resource: <http://www.ats.ucla.edu/stat/stata/>

### **Course Requirements and Grading**

**Course Requirements:** Students should read the assigned chapters before coming to each class, paying particular attention to definitions, formulas, and figures/tables in the assigned chapters. The final grade is based on:

Class Attendance and Participation	5%
Weekly Problem Sets	50%
Exam #1 (in class)	20%
Exam #2 (take home)	25%

Attendance is required. Your lowest problem set grade will be dropped. University rules regarding excused and unexcused absences can be found at: <http://student-rules.tamu.edu/rule07>

**In Class Exam:** You will be allowed a calculator and one 8 ½ by 11 inch “cheat sheet” of notes for the in class exam. The in class exam is closed book.

**Problem Sets:** The weekly problems sets will be posted online and you will usually have one week to complete them. It may be handwritten (must be legible) or typewritten. You must hand in a hard copy.

**Extra Credit:** There is no extra credit for this course.

**Late Work Policy:** Late work will *not* be accepted. In the case of an emergency or excused absence (ex. hospitalization, family death), accommodations may be made with timely notification and appropriate documentation. Early work is always accepted.

**Challenging a Grade:** Exams keys will be handed out in class after grading is completed. You are STRONGLY encouraged to compare your work with the answer key soon after the exam has been returned. If you feel that your exam has been graded incorrectly after comparison with the

answer key, please submit a *typewritten statement* to my mailbox with the exam explaining the point of contention *within 3 days* of the class period in which the exam was returned to the class. Note that your exam is then subject to being re-graded and your grade may actually decrease.

**Note on Group Work and Problem Sets:** Group work on exams is not allowed. You are encouraged to work with your classmates on the weekly problem sets. Although group work is encouraged, *your write-up of your homework must be your own*. If you do not understand this statement, please ask the professor as soon as possible, failure to adhere to this policy may result in honors code violation. You must turn in a *hard copy* of your homework at the beginning of class on the date it is due. To receive full credit, you must show the work you did to get to the answer in addition to giving the correct answer. All Stata and Excel work must be documented so that it communicates what you are doing to an outside viewer. Communication skills are important in public service.

### **Classroom Policies and Communication**

**Note on office hours:** I feel strongly that you should work on the material in the course throughout the week. Therefore, I strongly encourage you to come to my office hours should you need help. You may of course email me with questions but it is usually better to come to office hours. However, I will *not* be available on weekends for emails or questions. I encourage you to get started on your homework as soon as it is distributed.

**Course schedule:** The course schedule in the table below is subject to change. If there are any changes in readings or assignments, I will let you know in class and by email in advanced.

**Laptops:** Please bring your own laptop and STATA to class, but mainly use it when STATA is being used for instruction. Using laptops can be very distracting for everyone including me. Please be judicious.

**Additional Readings:** Additional readings will often be posted to on the course website to supplement the textbook material. I will announce by email whenever I post additional readings on the course website. You need to read these before class.

**Discussion board:** I have setup a discussion board on the course website for your questions and comments. Many times students want to ask each other quick questions, so the discussion board is nice way to communicate among yourselves and everyone gets to benefit from the answer. Feel free to answer a classmate's question, start a new thread, or add to somebody else's. You may also use it to organize study group sessions.

**TAMU email account:** Students must have a TAMU email account. It is necessary to log in to eCampus system that we are using. I will often send out class announcements, reminders, or logistical instructions using this email system. You are responsible for making sure that your TAMU account is current and working.

**Honor Code:** Every student is expected to adhere to the Aggie Honor Code. "An Aggie does not lie, cheat, or steal or tolerate those who do." Violation of the Code can result in

disciplinary action. If you have any questions about Honor Council Rules and Procedures, please ask the professor. You may find more information at <http://www.tamu.edu/aggiehonor>.

**Cheating or Plagiarism:** All work submitted in this course must be your own work, produced exclusively for this course. The use of someone else's ideas, quotations, music, graphs/charts, and/or paraphrases must be properly documented, even if you have the permission of that person. Direct quotes must be in quotation marks and have the page number in the citation. ***Plagiarism will result in a zero for the assignment and may result in a failing grade for the class.*** Violations may also be noted on student disciplinary records. If you are in doubt regarding any aspect of these issues, please consult with the instructors ***before*** you complete the relevant assignment. Also, please refer to your copy of *Credit Where Credit is Due: a Guide to the Citation of Sources for Bush School Students*. (Paraphrased and adapted with permission from Dr. M. Rose Barlow, Psychology of Trauma syllabus, Academic Dishonesty section.)

**Students with Disabilities:** The Americans with Disabilities Act (ADA) is a federal antidiscrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please contact the Department of Disability Services in Cain Hall, call 845-1637, or email [disability@tamu.edu](mailto:disability@tamu.edu).

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## COURSE SCHEDULE

WEEK	TOPICS	READINGS	NOTES
<b>Week #1</b> (9/4)	Introduction, course overview, and class requirements. Intro to Research Design	-MBB Ch. 1-2 -Acock Ch.1-3	Getting STATA setup
<b>Week #2</b> (9/11)	Research Design, Variables, Measurement, Sampling	-MBB Ch. 2-3 -Acock Ch. 4	Complete IRB CITI Training at <a href="http://rcb.tamu.edu/humansubjects/training">http://rcb.tamu.edu/humansubjects/training</a>
<b>Week #3</b> (9/18)	Descriptive Statistics	-MBB Ch. 4-6 -Acock Ch. 5	
<b>Week #4</b> (9/25)	Probability	-MBB Ch. 7-8	Hard stuff!
<b>Week #5</b> (10/2)	Probability Distributions	-MBB Ch. 9-10	
<b>Week #6</b> (10/9)	Inference and Hypothesis Testing	-MBB Ch. 11-12 -Acock Ch. 7	
<b>Week #7</b> (10/16)	Hypothesis Testing , Estimations, Sample Size, Significance tests	-MBB Ch. 13-14	
<b>Week #8</b> (10/23)	-exam on Friday	-review all readings	In-class exam!
<b>Week #9</b> (10/30)	Analysis of Nominal and Ordinal Data	-MBB Ch. 15-17 -Acock Ch. 6,9	
<b>Week #10</b> (11/6)	Intro to Regression Analysis	-MBB Ch. 18 -Acock Ch. 8	
<b>Week #11</b> (11/13)	More Linear Regression	-MBB Ch. 18-19 -Acock Ch. 10	
<b>Week #12</b> (11/20)	Even More Linear Regression & Intro to Multivariate Analysis	-MBB Ch. 18-19	
<b>Week #13</b> (11/27)	No class, Thanks giving break.		
<b>Week #14</b> (12/4)	Multivariate analysis	-MBB Ch. 19, 21	
<b>Week #15</b> (12/7)	Review		<i>Final exam is cumulative.</i>
	Final exam made available on 12/8		
(12/14)	<i>Final exam due 12/14</i>	Exam due by 11am	Work hard!