The Colin Powell School for Civic and Global Leadership
Department of Psychology
Doctoral Program in Clinical Psychology
The City College of New York
Spring 2017

PSY V0600/PSYC 70600 – Statistical Methods II
Classes and Locations:
Wednesdays 12:15 PM – 3:15 PM
Shepard 107

Instructor: Adriana Espinosa
e – mail: aespinosa@ccny.cuny.edu
Office: Shepard One
Office Hours: Mondays 1 – 2 PM

Course Description:
The goal of the course is multi-fold: To thoroughly cover univariate statistical models; to implement statistical methods using software; and to develop the understanding required to read literature which is based on statistical analysis in the field of psychology. We will begin with a review of general linear models. Then we will move into prediction models such as multiple regression, generalized estimating equations and logistic regression. If time permits, we will study quasi-experimental design models such as regression discontinuity design, propensity score matching and move towards multivariate modeling.

Pre-requisites: PSY V0500 (or equivalent)

Required Texts:
Myers, J.L., Well, A.D., & Lorch, R.F., Jr. (2010). *Research design and statistical ana*lysis. (3rd ed.). New York: Routledge. **(We used this text in part I. It is a good reference for linear models in part II)**

Cohen, J., Cohen, P., West, S.G., & Aiken, L.S. (2003). *Applied multiple regression/correlation analysis for the behavioral sciences*. (3rd ed.). Mahwah, NJ: Erlbaum.

Morgan, S. E., Reichert, T. & Harrison, T. R. *From Numbers to Words: Reporting Statistical results for the Social Sciences*. Boston, MA: Pearson.

Recommended Texts:
Hayes, A. (2013). *Introduction to Mediation, Moderation and Conditional Process Analysis*, Guilford press.

Keren, G. Lewis, C. (1993) A Handbook for Data Analysis in the Behavioral Sciences: Statistical Issues. New Jersey; Lawrence Erlbaum Associates Inc.

Neter, J. Wasserman, W. (1974) Applied Linear Statistical Models; Regression, Analysis of Variance, and Experimental Designs. Illinois. Richard D. Irwin, Inc.

Required Statistical Software:

IBM SPSS – You can purchase a student license (*Standard v21 Student Grad Pack*) for a reasonable price at OnTheHub.com. Other websites also offer the grad pack. I suggest you search the internet to find the most reasonable price. We will use the PROCESS macro for SPSS from Andrew Hayes (available for free here: http://processmacro.org/index.html).

G*Power 3 – You can download this free software for Power Analysis from the Institute for Experimental Psychology at Heinrich Heine University Düsseldorf via the following link: http://www.psycho.uni-duesseldorf.de/abteilungen/aap/gpower3/download-and-register.

Learning Objectives:
At the end of this course students should be able to:

1. Understand and apply regression models commonly used in Psychology.
2. Effectively communicate results from data analyses.
3. Feel comfortable reading and discussing empirical journal articles.
4. Formulate own hypotheses, find data to analyze and write an empirical paper targeting a specific journal.

Problem Sets:
In most instances, I will assign weekly problem sets. Unless otherwise specified, problem sets will be due at the beginning of the following Thursday lecture. I encourage you to take these problem sets very seriously. All material covered in this class is only solidified through practice. Solutions to problem sets will be available after class. I will not accept late problem sets.

Assigned Readings:
To supplement our lectures, I will assign journal articles that utilize the empirical tools we discuss in class. The purpose is to get you thinking about research within a practical framework. I have included a preliminary list in the course calendar below. All papers are up on Blackboard.

In-class assignments / Quizzes:
I will assign some group assignments to be completed during lab time. In addition, we may have short quizzes pertaining to the journal articles assigned. Both in-class

assignments and quizzes will count towards your overall assignment grade. See grading policy below.

Course Materials and Communication: I will regularly send e-mail with special class announcements via Blackboard. Please make sure the e-mail address you have registered with Blackboard is valid and check it frequently. In addition, all relevant course information, assignments, hints for problem sets, readings, and sample exams will be posted on Blackboard.

Final Research Project: An essential requirement for this course is completion of a research paper. The purpose of the paper is to give you experience in organizing empirical research by using statistical methods appropriate for answering an interesting question in the field of Psychology. Please refer to the attached guidelines for further details about the project.

Study Groups: I strongly encourage you to form/join a study group of 2 or 3 individuals to work on problems, study for exams and generate ideas for your final project. At the very least, this exercise will make your class experience more enjoyable.

Grading Policy:
Your final grade will depend on the following:
1. Exam: 35% - April 5th (take home)
2. Final Exam: 35% - May 30th (5 pm over email)
3. Problem Sets and Quizzes: 30% - Due throughout the term
There is no extra credit available for this course.

Policy on attendance:
Students are expected to attend every class session of each course in which they are enrolled and to be on time. An instructor has the right to drop a student from a course for excessive absence. The instructor may treat lateness as equivalent to absence. No distinction is made between excused and unexcused absences. The College Bulletin sets the default policy that a student may be dropped if absent more than 4 classes (for classes meeting twice per week) or 2 classes (for classes meeting once a week).
Early in the semester the Registrar requests instructors to report any students who have not attended even a single class. The registrar's office will drop these students from the course.

Withdrawal from the course:
The deadline to officially withdraw from the course is April 19th. Students who unofficially drop from the course will receive a grade of WU, which after some period turns into a grade of F.

Policy on Academic Integrity:

As stated in the CUNY Policy on Academic Integrity: 'Plagiarism is the act of presenting another person's ideas, research or writings as your own. The following are some examples of plagiarism:

- 'Copying another person's actual words without the use of quotation marks and footnotes attributing the words to their source;
- 'Presenting another person's ideas or theories in your own words without acknowledging the source;
- 'Using information that is not common knowledge without acknowledging the source;
- 'Failing to acknowledge collaborators on homework and laboratory assignments.
- 'Internet plagiarism includes submitting downloaded term papers or parts of term papers, paraphrasing or copying information from the internet without citing the source, and "cutting & pasting" from various sources without proper attribution.'
- 'A student who plagiarizes may incur academic and disciplinary penalties, including failing grades, suspensions, and expulsion.'
- 'A complete copy of the CUNY Policy on Academic Integrity may be downloaded from the College's home page.'

Violations of academic integrity will result in a written report to the Office of Academic Integrity.

Policy on Cell Phone use:

All cellphones must either be off or on vibrate. If you must take a call, please step outside of the classroom and be as least disruptive as possible. If you need to send a text or check your email, do it outside of the classroom as well. Anyone who is sending texts or emails during class time <u>will be asked to leave</u>. Cell phones must be off and put away during exams.

Accommodation of Disability:

The Office of Student Disability Services (SDS) is dedicated to providing students with disabilities equal access to the College curriculum. The Office ensures that, upon request, qualified students with disabilities are provided reasonable and effective accommodations, as mandated by law, as well as appropriate support services. Students who contact SDS and indicate that they have a disability or believe that they might qualify for services will be asked to make an appointment for an intake interview with SDS staff. To qualify for services, students must register with SDS by providing appropriate documentation from a qualified professional describing the nature of their disability and functional limitations. Although academic adjustments are mandated by law, the College is not required to alter demonstrably essential academic requirements of a course of study nor is the College mandated to lower or effect substantial modifications of reasonable academic standards.

Early planning is essential for many of the resources, adjustments and accommodations; students are asked to contact SDS at the earliest possible date. Forms are due at least one week prior to the test. <u>No form, no accommodations</u>.

Courtesy Policy:
Use of unauthorized hand held electronic equipment is not allowed in the classroom. In addition, eating, drinking, or use of unauthorized hand held electronic equipment is not allowed in the computer lab.

Course Calendar:
Unless otherwise specified, we will follow the list of topics and dates below. Topics and dates are <u>subject to change</u> at instructor's discretion.

Week 1 – Parts 2– 3 (Myers), Ch 1 – 4 (Morgan)
Review of the General Linear Model

Week 2 - Parts 2 – 3 (Myers)
Power Analysis with G*Power

Week 3 - MONDAY SCHEDULE

Week 4 - 13.4 (Myers) Ch 1-2 (Cohen), Ch7- 8 (Morgan)
Other General Linear Models (e.g. ANCOVA)

Week 5 – Ch 2-4 (Cohen) Ch 21-22 (Myers), Ch 5, 7-8 (Morgan)
Multiple Linear Regression

Week 6 – Handout , Ch 7 - 9 (Cohen)
Moderating Variables: Categorical and continuous variables. The pick point approach vs Johnson-Neyman method for identifying the conditional effect of continuous moderating variables.

Week 7 – Ch 6 (Cohen)
Consequences of violating normality/linearity assumptions of the linear regression method, data transformations

Week 8
Hierarchical Regression

Weeks 9 & 10 – Handout
Hierarchical Regression (testing moderation) and using PROCESS

Week 11 – **NO CLASSES - SPRING BREAK**

Week 12 - Ch 10 (Cohen)
Centering variables vs standardizing variables, Multicollinearity, using composite indexes as remedies, and data reduction methods

Week 13 – Ch 14 (Cohen)
Continued Multicollinearity, using composite indexes as remedies, and data reduction methods (Exploratory Factor Analysis and Principal Component Analysis)

Week 14 – Ch 15 (Cohen)
Analyzing categorical data: Logistic Regression

Week 15 - Ch 13 (Cohen)
Moderation with categorical data: Hierarchical Logistic Regression

Week 16 – Ch 13 (Cohen)
Mediating variables

Final Exam Due on May 30th at 5 PM – Late exams will receive one point deduction per minute late. I will not grade exams that are more than one hour late.