THE GEORGE WASHINGTON UNIVERSITY
Department of Statistics

Intermediate Statistical Laboratory: Statistical Computing Packages
Stat 2183-80 (2183W.80) – Fall 2014

SYLLABUS

Instructor: Swetha Valluri
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Phone #: 202-994-7583
Office hours: Tuesday & Thursday 3:30-4:30 PM

Lecture: Tuesday & Thursday 5:10 PM – 7:00 PM, Rome B104.

Textbooks:  1. An Introduction to Statistical Methods and Data Analysis, 5th edition, Ott and Longnecker.
             2. Quick Start to Data Analysis with SAS, by DiIorio and Hardy.

Course Description: This course aims to teach the methodology and skills needed to analyze data in SAS and R. The student is expected to be familiar with the concepts of confidence interval, hypothesis testing, and the central limit theorem. In addition to presenting information on statistical packages and programming, this course will integrate statistical theory with applications. Blackboard will be used extensively. Any changes to the syllabus will be announced in class.

Topics to be covered include:

A) Parametric Inference
   i. Review: One sample z and t tests, paired t-test
   ii. Review: Two sample z and t tests
   iii. Categorical data
   iv. Analysis of variance (One-way and two-way ANOVA)
   v. Tests of independence and goodness-of-fit tests
   vi. One, two, and k-sample tests for the variance
   vii. Regression and correlation (simple and multiple)
   viii. Analysis of covariance: Principal component analysis

B) Nonparametric Inference
   i. Permutation tests
   ii. One sample sign and Wilcoxon tests
   iii. Two sample Wilcoxon test for location
iv. Kruskal-Wallis test
v. Friedman test

**Learning Outcomes:** As a result of completing this course, students should be able to:
i) Understand parametric and non-parametric techniques used to analyze data
ii) Have an understanding of SAS & R programming language
iii) Perform all of the tests learned during the course in SAS & R
iv) Write statistical reports, including results of student’s data analysis in SAS & R and discuss relevant statistical conclusions

**Projects & Quizzes:**
*Projects:* There will be four projects during the semester. The projects and datasets will be posted on Blackboard. A report along with SAS code and output must be submitted on Blackboard.
*Quizzes:* There will be three 20-minute in-class quizzes. Topics and dates will be announced in class at least one week prior to the quiz.

**Midterm Exam:** There will be one midterm for this course. If the midterm is missed, you will receive zero credit for that part of the grade. No make-up midterm will be given. In the case of exceptional circumstances (e.g. well-documented medical problems), a missed midterm will not be counted.

**Final Exam:** The final exam is cumulative. In the event that you are going to miss an examination, you must notify me prior to the examination. There will be no make-up final. In accord with university policy, the final exam will be given during the final exam period.

**Course Grading:** Your final letter grade will be based on a total score computed as follows:

- Class Participation & Quizzes: 15%
- Computer Projects: 40%
- Midterm: 20%
- Final: 25%

The score you get in relation to the rest of the class will determine your grade. A grade of INCOMPLETE willONLY be given to a student who is passing the course and cannot complete the course due to illness or other (well documented) circumstances beyond their control.

**Prerequisites:** One course in statistics: Stat 1051, Stat 1053, or equivalent.

**ACADEMIC INTEGRITY**
I personally support the GW Code of Academic Integrity. It states:: “Academic dishonesty is defined as cheating of any kind, including misrepresenting one's own work, taking credit for the work of others without crediting them and without appropriate
authorization, and the fabrication of information.” For the remainder of the code, see: http://www.gwu.edu/~ntegrity/code.html

SUPPORT FOR STUDENTS OUTSIDE THE CLASSROOM

DISABILITY SUPPORT SERVICES (DSS)
Any student who may need an accommodation based on the potential impact of a disability should contact the Disability Support Services office at 202-994-8250 in the Marvin Center, Suite 242, to establish eligibility and to coordinate reasonable accommodations. For additional information please refer to: http://gwired.gwu.edu/dss/

UNIVERSITY COUNSELING CENTER (UCC) 202-994-5300
The University Counseling Center (UCC) offers 24/7 assistance and referral to address students' personal, social, career, and study skills problems. Services for students include:
- crisis and emergency mental health consultations
- confidential assessment, counseling services (individual and small group), and referrals

http://gwired.gwu.edu/counsel/CounselingServices/AcademicSupportServices

SECURITY
In the case of an emergency, if at all possible, the class should shelter in place. If the building that the class is in is affected, follow the evacuation procedures for the building. After evacuation, seek shelter at a predetermined rendezvous location.