

SPRING, 2023 – COURSE INFORMATION SHEET – APSTA-GE.2002 (2 credits)

Instructor: Tod Mijanovich

Office hours: I'll always be available Mondays 2-4, and you can make an appointment in that time slot using my [booking page](#), but my schedule is flexible, so feel free to make an appointment for a convenient time for you. Please give me at least a few minutes' notice if you want to see me on Monday. Meetings will be by Zoom (<https://nyu.zoom.us/my/mijanovich>), but I'm also open to meeting in Washington Square Park!

Prerequisites: APSTA-GE.2001 or the equivalent.

Course time and location: Wed 2-4:30, GCASL 388.

Course Description:

Introduces students to an array of inferential techniques (two-way anova, simple and multiple regression, and nonparametric methods) using the latest version of the statistical software, R, as a platform to obtain a hands-on experience with the analysis of real data. The course is not appropriate for students seeking to learn the mathematical underpinnings of these techniques.

Course Objectives:

The objectives of this course are to provide students with (1) a knowledge of three additional methods of statistical inference, building upon the foundation they obtained in APSTA_GE.2001 or the equivalent -- two-way analysis of variance, multiple regression, and selected nonparametric analyses, (2) an understanding of statistical interaction; and (3) a working knowledge of R, one of the more popular statistical software packages, so that they may carry out their own quantitative data analyses as independent researchers using the methods covered in the course.

Course Learning Outcomes: Upon completion of this course, students will (1) be conversant in the statistical software, R, and will be able to write R code to analyze their own quantitative data using methods learned in class; (2) be knowledgeable about one of the most important foundational methods of statistical analysis, namely, multiple regression; (3) be able to build upon their knowledge of multiple regression to study more advanced statistical methods that rely on it; and (4) understand the role of statistical interactions and know how to incorporate interactions in statistical model building and interpret the results based on them.

Course Orientation:

This course is a seven-week module that extends the material covered in Statistics for the Behavioral and Social Sciences I, APSTA_GE.2001. This course provides a conceptually oriented approach to learning applied statistics. It is not appropriate for students seeking to learn the mathematical theory underlying these statistical techniques.

This is a practice-intensive course. Students are expected to spend 8-10 hours per week outside of class on homework that includes readings from the required text, analyses of real data based on textbook end-of-chapter exercises, and relevant journal articles.

Course Materials:

Website: Handouts, readings, PowerPoint slides, datasets, homework assignments, and general information will be posted on Brightspace.

Required Text: [Statistics Using R: An Integrative Approach](#), by Weinberg SL, Harel D, and Abramowitz SA; 2020, Cambridge University Press.

Resources for the text on the Cambridge website

Software for the course: We will be using R software to conduct statistical analyses. R is freely available, and is often used in conjunction with RStudio, a user-friendly programming environment for R. I encourage you to download and install both R and RStudio on your computer. The easiest way is to begin at [this page](#).

Computer Labs at NYU:

NYU offers a Virtual Computer Lab (VCL) to all NYU degree-seeking students with active e-mail accounts. Students who qualify will see the VCL channel on the **Academics** tab in NYUHome. To access the VCL: Log into NYU Home (home.nyu.edu); Select the **Academics** tab, then scroll down until you see the "Virtual Computer Lab" channel; Click **VCL Log In**; Once on the VCL page, click **Log Into the VCL Now!**; Enter your **NetID** and **password**; Click **Log In**. **Note:** The first time you log into the VCL, you will be prompted to install the Citrix ICA plug-in.

R is available through the VCL. In addition, as a student in this class you have priority access to the computer labs which means that you may enter the labs at any time by swiping your ID. For a current list of software available by location, please see the [ITS Software Applications by Location](#) page.

Course Requirements & Grading:

Homework:

Homework assignments will be posted under the Assignments tab and will be due just prior to the start of class the following week. All homework should be submitted under the Assignments tab. Students are responsible for completing all homework assignments on time and raising related questions in class. When end-of-chapter exercises are assigned for homework, your answers should be in your own words. When an assignment involves Stata, a Stata do-file should be submitted along with the assignment.

Exams:

There will be one cumulative take-home final consisting of two parts, a multiple choice/short answer part and a second part that will require the analysis of a dataset using Stata to answer a series of questions, and a brief write-up of results.

Grading:

50% Homework, each graded on a 5-point scale.
50% Final Exam

Final Grade Determination:

A 93-100
A- 90-92
B+ 87-89
B 83-86
B- 80-82
C+ 77-79
C 73-76
C- 70-72
D+ 65-69
D 60-64
There is no D-
F Below 60

Syllabus:

<i>Week</i>	<i>Date</i>	<i>HW Due</i>	<i>Topics</i>	<i>Book chapters</i>
1	1/25/23		Overview of Tests of Inference. Brief Review of One-Way Analysis of Variance Two-way Analysis of Variance	

2	2/1/23	1	Two-way ANOVA Cont'd. Examples with Tests of Simple Effects and <i>Post Hoc</i> Multiple Comparisons	13/14
3	2/8/23	2	Correlation and Simple Regression as Inferential Techniques; Regression Assumptions & Diagnostics	14
4	2/15/23	3	Multiple Regression: The Main Effects Model	15
5	2/22/23	4	Multiple Regression: Interaction & Simple Slopes	16
6	3/1/23	5	Multiple Regression Cont'd; Chi-Squared Tests	17
7	3/8/23	6	Wrap Up and Review for Final Exam	
			Cumulative FINAL EXAM – TAKE HOME	