

PSYC 533H: The General Linear Model in Psychology (Honors)

Goals of Course

Evaluating hypotheses through the statistical analysis of empirical data is one of the cornerstones of modern science. In this course, we examine how the General Linear Model (GLM), including the multiple regression model, is used in psychological science. Goals of the course are for you to

- Gain an understanding of how to specify GLMs that are both appropriate for your data and that provide direct tests of theoretically motivated hypotheses.
- Become competent in fitting GLMs within commonly used statistical software, such as SPSS.
- Become a thoughtful and critical consumer of psychological research using the GLM.

Teaching Philosophy

A great deal of research shows that students learn more effectively when they are actively engaged in the learning process rather than passive recipients of information. Furthermore, there is often incongruence between classroom-based assignments, typically solvable by mimicking in-class demonstrations, and real-world problems, which usually require initiative, creativity, and solution searching. This class, therefore, will be structured to engage students as active learners helping to construct their own knowledge, find solutions to problems, present unique findings, and contribute to an overall atmosphere of intellectual curiosity.

Grading & Honor Code

The honor code is in effect for this course. Students shall not misrepresent others' work as their own, and will give full credit for others' contributions to the extent that these are allowed within the parameters of an assignment. Individual assignments are to be conducted independently.

Course grades will be based on three major components.

- Quizzes (30%). There will be 6 quizzes throughout the semester. They will cover material discussed in lecture. Quizzes may not be made-up if missed unless it is for university approved reasons. The lowest score will be dropped, meaning that 5 quizzes will count towards the final grade.
- Homework (20%). Five homework assignments will be due approximately biweekly. Assignments will largely require using SPSS.
- Research Project (50%). In collaboration with other students you will take part in a semester-long research project in which you generate hypotheses, collect data, conduct data analysis and communicate your findings. The project will include a mid-term written proposal (15%), final write up of results (20%), and final presentation (15%).

Grading Scale

A	95 – 100%	Highest level of attainment
A-	91 – 94%	
B+	88 – 90%	
B	85 – 87%	High level of attainment
B-	81 – 84%	
C+	78 – 80%	
C	75 – 77%	Adequate level of attainment
C-	71 – 74%	
D	61 – 70%	Minimal passing level of attainment
F	<60%	Failed, unacceptable performance

Research Project

You may be able to use this research-exposure course to meet a requirement of the Carolina Research Scholars Program (http://www.unc.edu/depts/our/students/students_crsp.html). I encourage you to visit the Office for Undergraduate Research website <http://our.unc.edu/> to learn about how you might engage in research, scholarship and creative performance while you are at Carolina.

Statistical Software

We will use the SPSS data analysis program in this class. SPSS provides a spreadsheet-like graphical user interface in which commands can be issued either through menus and push buttons or via a script. It is installed in all ITS computer labs and can also be accessed from your personal computer using Virtual Lab (<http://virtuallab.unc.edu/>). See instructions on how to access SPSS offcampus in the Resource folder on Sakai.

Texts

All information needed to succeed in the course will be provided in lecture. However, readings are offered as an additional resource.

The majority of readings come from the following text:
Cohen, J., Cohen, P., West, S.G. & Aiken, L.S. (2003). *Applied multiple regression/correlation analysis for the behavioral sciences* (3rd Edition).

Supplemental articles are also assigned and made available on Sakai.

Date	Topic	Assignments/Quizzes	Readings
8/18	Introduction and Orientation		Sections 1.1, 1.3-1.4, 1.7
8/20	Variables, Distributions and Graphs		Section 2.1
8/25	Variables, Distributions, and Graphs		Sections 4.1-4.2
8/27	Research Methods & Design		Krosnick & Presser, 2009
9/1	Bivariate Correlation		Section 2.2-2.3
9/3	Bivariate Correlation	Q1	Section 2.2-2.3
9/8	Simple Regression	H1 Due	Sections 2.4-2.5
9/10	Simple Regression		Sections 2.6-2.7
9/15	Simple Regression	Q2	Sections 2.8-2.11
9/17	Project Meetings		
9/22	Multiple Regression		Sections 3.1-3.2
9/24	Multiple Regression	<i>Midterm Due</i>	Sections 3.3-3.4
9/29	Multiple Regression		Sections 3.5-3.6
10/1	Multiple Regression	Q3	Sections 3.7-3.8; 10.5
10/6	Research Qs & Regression		Section 5.1-5.2
10/8	Simultaneous versus Hierarchical Regression	H2 Due	Section 5.3
10/13	<i>Present Proposals</i>	<i>Proposals</i>	
10/15	Fall Break		
10/20	Influence and Outlier Detection		Sections 4.3-4.6
10/22	Influence and Outlier Detection		Sections 10.1-10.3
10/27	Polynomial Regression Models	H3 Due	Sections 6.1-6.4
10/29	Interactions: Continuous by Continuous	Q4	Section 7.1- 7.3
11/3	Interactions: Continuous by Continuous		Section 7.4
11/5	Categorical Predictors in Regression	H4 Due	Sections 8.1-8.2
11/10	Interactions: Categorical by Categorical	Q5	Sections 9.1-9.2
11/12	Interactions: Categorical by Categorical		
11/17	Interactions: Categorical by Continuous	H5 Due	Sections 9.3-9.4
11/19	Interactions: Categorical by Continuous		Baron & Kenny, 1986
11/24	Moderation & Mediation	<i>Written Projects due</i>	Baron & Kenny, 1986
11/26	Thanksgiving		
12/1	Wrap-up		
Saturday, 12/5	Final Exam: 12:00	Final Presentations	