

Psychology 313  
Correlation and Regression  
Fall 2011

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Office Hours	MWF 10:10–10:50 and by appointment. I am almost always available for extended periods after class to discuss course material and answer questions.
Course Meeting Times and Location	MW 8:45-10:00 Hobbs 107
Course Website	<a href="http://www.statpower.net">http://www.statpower.net</a>  Click on the link for Psychology 313.
Textbook	<p>As part of my “green book” initiative, we shall be using the Weisberg textbook listed below along with course handouts and readings from several sources. (The textbook retails for \$142.00 if you wish to purchase a hard copy, but is available online free, as detailed below.)</p> <p>Weisberg, Sanford (2005). <i>Applied linear regression (3<sup>rd</sup> Ed.)</i> Available free in electronic format at <a href="http://www.netlibrary.com">www.netlibrary.com</a>. Ebook ISBN: 0471704083. You should log into netlibrary from Vanderbilt and establish an account, then save the ALR textbook to your folder for quick retrieval.</p> <p>Note: You should also download the ASCII data files and install the R package ALR3. These are available on the author’s website, <a href="http://www.stat.umn.edu/alr/">http://www.stat.umn.edu/alr/</a></p> <p>At the ALR website, you will also find an invaluable resource — scripts for reproducing, in R, the calculations shown in the body of the text. You should download these, as they provide superb training in using R to perform regression analyses. You should download the file, An R Primer. This is a free companion resource for the text.</p>

Course Description and Rationale	<p>Psychology 313 is designed to be a course in introductory to advanced regression and correlation “from the ground up.” We assume you have only an introductory graduate statistics course, and move through applied linear regression (both simple and multiple), treating topics such as outlier detection, missing data, transformation of variables, selection of variables, and assessment of interaction effects along the way, at the level of the textbook by Weisberg and other intermediate texts such as Cohen, Cohen, Aiken, and West.</p> <p>We work primarily with the freeware statistics program R, although occasionally we may run an analysis on SPSS for demonstration purposes. In general, in my small graduate seminars, we adjust the pace according to the overall ability and background level of the students, and try to accommodate a variety of backgrounds.</p>
Catalog Description	<p><i>Covers fundamental concepts in bivariate and multiple regression and correlation techniques. Emphasizes the theory and assumptions underlying OLS and logistic regression, computational procedures, and interpretation of results. Specific applications include: (1) coverage of the full range of correlation indices; (2) a range of regression strategies (e.g., reduced-form regression, path analysis, ordered and unordered step-wise inclusion); (3) statistical power; (4) regression diagnostics; (5) nonlinear regression and linearizing transformations; (6) testing interactions; and (7) conditions for causal analysis and analysis of change.</i></p>
Course Prerequisites	<p><i>Required:</i> A good course in Introductory Graduate Statistics such as Psychology 310P is required. We will not assume that you have any background at all in multivariate analysis.</p> <p><i>Additional optional background that will help:</i>  Experience with the R Statistical Package (although we will provide introductory materials).  Any course in multivariate analysis</p>
Course Grade	<p>There will be (roughly) <i>weekly</i> assignments in the course. Grade will be based on your performance on these assignments.</p>
Required Software	<p>If you have not already done so, please download and install R on your computer. You will probably benefit by also installing the free program RStudio as well. More details are available in the <i>R Code and Support</i> section of the course website.</p>