

## Spring 18 Advanced Topics/400 Level Course Description

### **830:400 Advanced Statistical Methods in Psychology**

**Professor Melchi Michel**

**PSY 301, TTh4 (1:40-3:00pm)**

**Prerequisites:** B or better in 830:200 or equivalent statistics course; Jr or Sr 830 Major or permission of instructor

#### **Overview:**

The overall goal of this course is to teach students how to take raw behavioral science data, explore it, and present the results in a useful way. Students will receive a broad introduction to some of the fundamental tools and concepts of statistics for representing, visualizing, modeling, and interpreting data. In comparison to Quantitative Methods (a prerequisite), this course will cover some more advanced techniques including exploratory data analysis, nonparametric methods, multiple regression, model fitting, and modern Monte Carlo and bootstrap resampling techniques. Importantly, the course will focus on cultivating an intuitive understanding for statistical techniques and how to apply them to practical problems, and will discourage rote “plug and chug” computation and uncritical application of traditional NHST methods. To that end, the course exercises will deal almost exclusively with real datasets gathered to answer scientific questions, and students will learn to use the powerful open-source software package 'R' to explore, visualize and analyze these data.