### Course Title:
Research Design and Analysis II

### Term/Semester/Year:
Spring 2010

### Course Catalog Number:
PSYC 7111

### Instructor:
Stephen Armeli

### Course Description:
This course is the second part of a two-semester sequence in statistics and research design. In this course I will continue to build upon the concepts and techniques you learned in 7110 (e.g., appreciation of the flexibility of the general linear model, aspects of research design). I will also introduce more advanced quantitative techniques (e.g., logistic regression, factor analysis, structural equation modeling) and you are required to present a research project in which you have (or will) apply one (or more) of these techniques. Similar to 7110, this course will be geared toward individuals with an applied slant; topics and assignments will focus on basic theoretical concepts, hands-on application with SPSS (PASW) (and other software where available), and APA style report writing.

### Prerequisites (If any):
PSYC 7110 Research Design and Analysis I

### Goals and Objectives:
After completion of this course, students should be able to demonstrate familiarity with:

- The use of regression modeling to examine associations between quantitative and qualitative independent variables and quantitative dependent variables;

- The use of regression modeling to examine interactions among quantitative and qualitative independent variables in predicting quantitative dependent variables;

- The assumptions underlying the inferences made using the general linear model and techniques for assessing violations of such assumptions;

- The use of binary logistic and multinomial logistic regression modeling to examine associations between quantitative and qualitative independent variables and qualitative dependent variables;

- The use of repeated measures analysis of variance to examine change within-person and how such changes vary across persons;

- Advanced multivariate procedures such as exploratory and confirmatory factor
- Planning and presenting research ideas and analysis results.

| Course Topics: | Review multiple regression; model building strategies; ANCOVA as regression; Mediation and moderation, Moderation (graphing; simple slope testing); Moderation: Higher-order interactions (e.g., 3-way interactions); Modeling non-linear relationships (quantitative outcomes); Linear regression diagnostics; Power estimation; Logistic/Multinomial regression; Repeated measures analysis: Repeated measures ANOVA; Regression change score vs. residual; Exploratory factor analysis (EFA); Confirmatory factor analysis; Structural equation modeling (SEM). |