I. Rationale

The purpose of this advanced research methods course is to help equip professionals to design and carry out research with direct implications for social work practice and social welfare policy. Building on the experience in SW 978 and 981, this course will focus on more advanced topics in experimental (e.g. multivariate analysis of variance, analysis of covariance) and correlational (e.g. regression, factor analysis, structural equations) statistical analyses. It is intended to serve three main purposes:

1. Provide students with a conceptual understanding of multivariate statistical methods by limiting the technical and mathematical nature of the discussion of those concepts and focusing on their practical applications.
2. Provide students with the skills necessary to interpret research articles that have employed multivariate statistical techniques.
3. Prepare students to apply multivariate statistical methods to the analysis of their own quantitative data.

More advanced materials will also be presented in the area of research design. The course will provide students with an opportunity to apply knowledge of these techniques in computer analyses of various datasets and in the critical review of the published work of others.

II. Prerequisite:

SW 981 or a similar course with approval of instructor is required to take this course.

III. Objectives

Through their experiences in SW 983, students will:

A. Review ethical content introduced in SW 978 and SW 981, as warranted, especially as regards responsible data collection, management, and reporting for the topics covered in SW 983.
B. Demonstrate mastery of advanced experimental and correlational statistical techniques.
C. Demonstrate an ability to select an appropriate series of statistical tests to analyze research problems of interest.
D. Be able to use the general multiple regression model to do multiple regression as well as analysis of covariance and multiple analysis of variance.
E. Be able to apply their knowledge of research methods and statistics in the critical review and synthesis of the work of others.
F. Demonstrate a more advanced ability to use computer statistical packages to analyze data and then to write up the results of these analyses in an appropriate form.

Students will be conversant regarding the kinds of questions that are best addressed with more advanced methods such as path analysis, factor analysis, survival analysis, and structural equation modeling.
IV. Topics (Additional subtopics can be found in the “Doctoral Research Courses and Topics” matrix)

**Primary**

*Introduced and requires lab work*

- Test power
- Arguments for and against significance tests
- Confidence intervals and point estimates
- Nonlinear functional forms—logistic regression
- Analysis of Covariance (ANCOVA)
- Factorial ANOVA and interaction effects
- Linear Multivariate Regression
- Multicollinearity
- Parsimony
- Curvilinear Regression

**Overview**

*Includes conceptual introduction, research questions that could be addressed by such methods, and demonstration but no lab work.*

- Path Analysis
- Factor Analysis
- MANOVA
- Logistic Regression
- Survival Analysis
- Confirmatory Factor Analysis
- Structural Equation Modeling
- **Latent Class analysis**