CLINICAL RESEARCH COURSE CONTENT

- SESSION 1A: PRINCIPLES OF DATABASES, DATA ACQUISITION AND STORAGE
    - 1. The basic structural forms of database design will be described, including flat-file (row/column), hierarchical and relational.
    - 2. Advantages and disadvantages of the various database types will be presented.
    - 3. Data manipulation, delimiters, record length and other database concepts will be defined and discussed.
    - 4. The major types of variables (numeric, character, categorical) will be discussed.
    - 5. Basic variable definitions, categorical, ordinal, continuous measures.
- SESSION 1B: DATA ENTRY AND MANIPULATION AT THE CONCLUSION OF THIS LAB, THE STUDENT WILL BE ABLE TO:
    - 1. Create a simple flat-file database in Stata with keyboard entry
    - 2. Input an existing dataset with delimiters to create a Stata dataset
    - 3. Create data labels for variables and codes
    - 4. List datasets and checking for errors
    - 5. Use file transfer programs and change from one file format to another
- SESSION 2A: DESCRIPTIVE STATISTICS: SUMMARIZING VARIABLES
    - 1. Define and describe measures that are used to characterize and summarize data.
    - 2. Measures of central tendency (mean, median, mode), spread (range, standard deviation, standard error) and shape (skewness and kurtosis) will be defined and presented.
- SESSION 2B: DESCRIPTIVE STATISTICS & BASIC GRAPHICS IN STATA AT THE CONCLUSION OF THIS LAB, THE STUDENT WILL BE ABLE TO:
    - 1. Use Stata to produce measures of central tendency (mean, median, mode), spread (range, standard deviation, standard error) and shape (skewness and kurtosis).

- 2. Produce tabular output in Stata using multipe methods.
- 3. Use graphics available in Stata to display data and check for errors.
- SESSION 3A: DATA TRANSFORMATION AND MANIPULATION
    - 1. Data is often not in the form that is required for the analysis of a particular problem. Methods and rational for transforming data will be presented.
    - 2. Techniques of simple transformations will be discussed, as well as methods for dichotomizing or polychotomizing continuous data.
    - 3. Uses of scatter, dot, and box plots and probability density and cumulative density functions for data exploration and display will be reviewed
- SESSION 3B: DATA RECORDING AND TRANSFORMATION & MORE GRAPHICS AT THE CONCLUSION OF THIS LAB, THE STUDENT WILL BE ABLE TO:
    - 1. Perform simple transformations
    - 2. Dichotomize or polychotomize continuous data.
    - 3. Calculate of time between events.
    - 4. Change string variables into numeric variables.
    - 5. Create more complex graphics.
    - Techniques of simple transformations will be presented, as well as methods for dichotomizing or polychotomizing continuous data.
    - Calculation of time between events.
    - 3. Changing string variables into numeric variables.
    - 4. More complex graphics.
- SESSION 4A: LEVELS OF ANALYSIS, MERGING FILES, ALTERNATIVE STATISTICAL PACKAGES AND INTRODUCTION TO COURSE DATASETS
    - 1. Introduction to clustered data, multilevel data, keyed variables, and the impact of file design on type of analysis possible, efficient file structure for repeated (longitudinal) data.
    - 2. Alternative statistical packages available.
- SESSION 4B: MERGING FILES, CHANGING FILE STRUCTURE, ANALYSIS OF REAL DATA. AT THE CONCLUSION OF THIS LAB, THE STUDENT WILL BE ABLE TO:
    - 1. Merge data files to add variables, add cases, and use of keyed files (look-up tables) to add variables.
    - 2. Change file structures to facilitate analysis.
    - 3. Use looping procedures in Stata, write and save command files in Stata.

- 4. Link to word processing of graphs and output files from Stata.
- 5. Compare of the advantages and disadvantages of SPSS and STATA