**STAT 5304**

**Introduction to Statistical Computing**

Instructor: Alan Elliott

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Course Description:

This course is intended for students interested in statistical computing. SAS (Statistical Analysis System), a widely used statistical language for research and industry, will be used throughout the course. The goal of this course is to enable students to do essential computations and statistical analysis using SAS statistical software.

Prerequisites: STAT 1301, STAT 2301, STAT 2331 or equivalent.

Course Objectives:

The goal of this course is to enable students to do essential computations and statistical analysis using commonly used statistical software.

Student Learning Outcomes:

After this course, the student should be able to . . .

* use SAS software, the most extensively used data analysis software tool worldwide
* access information from a variety of data sources
* combine, transform, and manipulate data sets
* summarize, and interpret information from small to very large data sets
* create informative graphs
* analyze data using standard statistical technique

Tentative Class Schedule

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| Class | Date | Topics |
| 1 | Mon  Jan 6 | Course introduction  Introduction to using the SAS software program / interface |
| 2 | Tue  Jan 7 | Commands and Procedures in SAS  Getting Data into SAS |
| 3 | Wed  Jan 8 | Working with Data  Sorting and Printing Data: (PROC SORT, PROC PRINT) |
| 4 | Thurs  Jan 9 | Summarizing Data  (PROC MEANS, PROC UNIVARIATE, PROC FREQ) |
| 5 | Fri  Jan 10 | Graphics in SAS  Modifying and Combining SAS Data Sets and ODS |
| 6 | Mon  Jan 13 | SAS Statistical Procedures  Procedures for analyzing continuous/quantitative data by group |
| 7 | Tue  Jan 14 | SAS Statistical Procedures  Procedures for analysis count /qualitative data by group |
| 8 | Wed  Jan 15 | SAS Statistical Procedures  Procedures for analysis correlation and regression |

Method of evaluation

Labs are incorporated into the class time with exercises designed to evaluate the student’s learning for each concept. The final class will contain a hands-on computer exam consisting of a data analysis problem.

Grading criteria:

50% in-class Daily Exercises

50% in-class final data analysis exam

**Required Text**

Elliott, A. C. and Woodward, W. A. (2010). *SAS Essentials: A Guide to Mastering SAS for Research*, San Francisco, CA: Jossey-Bass.

**Other References**

Bailer, A. J. (2010). *Statistical Programming in SAS* Cary, NC: SAS Institute Inc.

Delwiche, L. and Slaughter, S. (2008). *The Little SAS Book: A Primer, Fourth Edition*. Cary, NC: SAS Institute Inc.

SAS Institute Inc. (2011). *SAS Inc. 9.3 Language Reference: Concepts*. Cary, NC: SAS Institute

SAS Institute Inc. (2011). *Base SAS 9.3 Procedures Guide*. Cary, NC: SAS Institute Inc.