Introduction to Statistics and Data Analysis II

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This course is a continuation of Introduction to Statistics and Data Analysis I. The first week will focus on contingency table analysis and one-way analysis of variance. The rest of the course will be devoted to the methods and practice of regression analysis. The objectives of the course are to learn the basic mechanics of these techniques and to develop an appreciation for the practical issues involved in doing data analysis. There will be chances to work with realistic data and to examine the work of others that apply these techniques to answer social science questions.

The general format of the course remains the same as in the first session. There will be daily problem sets and reading assignments from the text. Participants will check their own work with the solutions manual in the library or with those provided by the instructor. The only way to master the material presented is by working through the daily problems.

There will be computer assignments using SPSS. These will give participants a chance to analyze realistic data and build models of their own. The emphasis of these assignments is on the interpretation of statistical results. These assignments account for 40% of the final grade.

The first exam will cover analysis of variance and simple regression. There will be one paper, which will be an evaluation of a social science article that uses regression analysis. This paper will be due as indicated below. The Midterm exam, Final Exam, and the paper will each count 20% toward the final grade.

The required books for the course are:


In addition to the text, we will be using the modules found on the CD-ROM.

Module A: Multiple Regression Analysis, Module B: Model Building in Regression, and Module C: Designs of Experiments and Analysis of Variance.


Other recommended books on regression include:


These books can be checked out of the ICPSR Library.

Schedule (to be modified as needed)
July 23  Introduction to Contingency Table Analysis, Chi-Square Test of Independence
Chapter 13: 13.1, 13.3-13.4

July 24  Introduction to One-way Analysis of Variance (ANOVA), Discussion of Model Assumptions
Chapter 16: 16.1-16.3

July 25  One-way ANOVA: Analysis of Residuals, Multiple Comparisons
Chapter 16: 16.4

July 26  Introduction to Regression, The Regression Equation
Chapter 14: 14.1-14.2 MLB: p. 9-20

July 27  Regression Model, ANOVA for Regression
Chapter 14: 14.3 MLB: 20-30
**COMPUTER ASSIGNMENT #1 DUE**

July 30  Regression: Correlation, Inference for Slope of Population Regression Line, Significance Tests
Chapter 14: 14.4 Chapter 15: 15.1 – p.742-748; 15.2 MLB: 30-38

July 31  Inferences for the Slope of the Population Regression Line:
Confidence Intervals, Prediction Intervals
Chapter 15: 15.2, 15.3

August 1  Analysis of Residuals, Diagnostic Plots
Chapter 15: 15.1-p.748-752 MLB: p.38-42

August 2  Small Group Meeting with Regression Output

August 3  **Midterm Test**

August 6  The Multiple Regression Model, Basic Results: ANOVA, Confidence Intervals and Significance tests
Module A: Sections 1-5 Module B: page B-204 MLB: p.47-54
**COMPUTER ASSIGNMENT #2 DUE**

August 7  Evaluation of the Multiple Regression Model, Analysis of Residuals, Multicollinearity
Module A: Section 6 Module B: Sections 4, 7 MLB: p.58-63
August 8  Topics in Multiple Regression: Qualitative Predictor Variables
   Module B: Section 3 - p. 85-95

August 9  Topics in Multiple Regression: Qualitative Predictor Variables (Cont.),
   Model Specification
   Module B: Section 3-p.92-101      MLB: p.56-58, 66-71

August 10 Topics in Multiple Regression: Interaction
   Module B: Section 3-p.102-112     MLB: p. 54-56
   **COMPUTER ASSIGNMENT #3 DUE**
   **ARTICLE EVALUATION ASSIGNMENT DISTRIBUTED**

August 13 Topics in Multiple Regression: Non-linear Relationships
   Module B: Sections 1-2       MLB: p.43-47, 73-74

August 14 Review and further clarification of topics.  **Article Evaluations Due**
August 15 Study Day (or Review Day as needed).

August 16  **Final Exam**