Preparation for Statistics in Sociology

August 13, 2012 – August 16, 2012
McKinney Room, Soc/Psych 329, 9:00am – 5:00pm

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Objectives
This course provides an introduction for the two-semester graduate statistics courses by reviewing topics in research design and mathematics which underlie the practice of statistics in the social sciences. In a sense, the two semesters which follow will explain the “how” of statistics; the purpose of this course is to provide the “why”. Students will gain an understanding of the logic of variable selection, the mathematical literacy needed for graduate-level statistics, and fundamentals of statistical computing with SAS.

Course Structure
The course will begin promptly at 9:00am, and will continue with a reasonable lunch break until approximately 5:00pm each day. Morning lectures will focus on topics relevant to research design, mathematics, and introductory statistics. Afternoon labs will illustrate concepts in statistical computing with SAS.

A Note on Computers
Students should bring their own laptops. If a student does not have a laptop to use, the department can provide a laptop. Laptops should be used for the afternoon lab sessions only. Students should not use laptops, phones, tablets, etc. during the morning lectures.

Class Schedule

Monday, August 13

Morning:  Research design, calculus
  Research design: types of variables, measurement, logic of causal order
  Calculus overview: limits, derivatives, integrals

Afternoon:  Installing SAS
  Installing SAS
  Introduction to the SAS windowing environment (DMS)

Assignment:  ASR articles
Read two articles from a recent issue of The American Sociological Review, distributed in class, with an eye towards variables used, measurement, and causal pathways. Everyone will present one of these articles on Tuesday.

Acknowledgements: This course draws inspiration and material from similar offerings in the Duke Political Science department, taught by Sunshine Hillygus, Jacob Montgomery, and Chris DeSante.
Tuesday, August 14

Morning:  Research design (continued)
          Discussion of assigned articles

Afternoon: Variables in SAS
          Good programming: logging and commenting
          Introduction to the DATA step
          Variables: labels, formats, missing values
          Logical operators
          If-then statements
          Recoding variables
          Subsetting data by variables and by observations

Wednesday, August 17

Morning:  Matrix algebra, probability
          Scalars, vectors, matrices
          Matrix operations
          Probability: sets

Afternoon: Tables in SAS
          Advanced recoding: arrays and loops
          Descriptive statistics: the FREQ, MEANS, and UNIVARIATE procedures

Thursday, August 18

Morning:  Probability (continued), statistics
          Distributions, marginal and joint
          Expected values
          Univariate statistics
          Hypothesis testing

Afternoon: Advanced topics in SAS
          Sorting and merging data
          Other topics as desired, time permitting

References


