INTRODUCTION TO SPSS

Summer Statistics Institute

The University of Texas at Austin

May 26-29, 2009

Lectures: SZB 422

Tue 1.30 – 5.30 PM
Wed 1.30 – 5.30 PM
Thu 1.30 – 5.30 PM
Fri 1.30 – 5.30 PM

Instructor:

Dr. James Bryant
(Please call me James or Jim)
Email: jtbryant@austin.utexas.edu
Web: www.bio.utexas.edu/faculty/bryant
Office: PAI 1.48**C**
Phone: 232-6491
Office Hours: By appointment – please email me 3 or 4 convenient times

Teaching Assistant:

T.B.A.

Course Summary Description:

An appreciation of the importance of statistics within academic pursuits has become apparent to most students, researchers and professionals. It is now readily appreciated that the majority of subjects require the description and understanding of information and that observations are not purely or innately black and white. Therefore, statistics is a vital philosophical approach, which allows everyone to more readily comprehend and understand the world around us and to make better decisions within our daily lives based upon the evaluated information which we possess.

This is an introductory course on the effective use & application of Statistical Package for Social Sciences (SPSS). The course is designed for an audience ranging from someone with some prior statistical experience to graduate students requiring help with analysis and designing their research.

Course Objectives:

The course is designed to demonstrate the functions of SPSS and to promote **PRACTICAL CRITICAL THINKING & PROBLEM SOLVING** skills; during information analysis. By the end of the course students will be able to manipulate information, summarize information, evaluate information and present ordered & compelling documents/presentations to a target audience – using SPSS & Microsoft Word.

Students completing the course will learn how to:

- Acquire information & samples
- Input information into SPSS
- Recode information
- Compute variables
- Summarize information
  - Tables
  - Charts
- Understand distributions (sampling & normal)
- Understand the theory behind inferential statistical techniques
- Evaluate information
  - Question the strength of the sample
  - Achieve statistically sound inferences
  - Asses the strength of their conclusions
- Report research findings in a scientifically sound fashion

Texts & Further Readings:

Although there are no required texts for this course, several background texts are listed, which act as a broad resource to understanding 'frequentist' statistics.

- **How To Lie With Statistics**, Huff, D., (W.W. Norton, New York, 1993)
  This is a useful overview of how statistics have been misused in the past. By understanding how incomplete information may be presented through poor statistics, the reader can appreciate more fully how to present information which is complete and fully descriptive of reality.

- **Statistics for the Life Sciences**, Samuels, M.L. & J.A. Witmer, 3rd Edition (Pearson Education, Inc., New York, 2003)
  Samuels is a particularly good introductory text to statistics. The book is clearly laid out and logically presents statistics methods. Inferential statistical tests are built upon in an incremental mathematical order, from simple first principals.

- **Biostatistical Analysis**, Zar, J.H., 4th Edition (Prentice Hall, 1999)
- **Biometry**, Sokal, R.R. & Rohlf, F.J., 3rd Edition (Freeman, New York, 1995)
  'Biostatistical Analysis' and 'Biometry' are viewed widely as graduate level statistical course books. Both provide details about quite a wide array of statistical tests. Although these texts are exceptionally good as reference materials, they are not necessarily books one would use to learn statistics from scratch.

Blackboard (Bb):

Announcements, course material and discussion boards will be posted on the SSI – Statistical Foundations Blackboard site (http://courses.utexas.edu). Students are requested to **CHECK Bb & EMAILS ON A DAILY** basis.

Students are encouraged to post questions and answers to the DISCUSSION BOARDS during the course, to highlight and promote understanding of the course

material, for all. Students are also encouraged to post suggestions and feedback to help improve the course.

Emails:

Students are requested to **CHECK EMAILS ON A DAILY** basis. Students who do not receive regular emails from their instructor through Bb should immediately contact their instructor.

Students should feel free to email their instructor to request an appointment, if you have any questions or problems. Please ensure that you include the course name in the subject of your email and also note your full name at the end of all emails. If you would like to schedule an appointment please provide 3 or 4 days and times which are convenient for you. Your instructor can then select the earliest convenient time to meet.

Preparation For Class:

Classes are designed to be interactive and students are **STRONLY** encouraged to **ASK QUESTIONS** & to chit chat.

The lab sessions are designed to:

1. Review & promote practical problem solving & interpretation skills
2. Highlight statistical software tool sets (SPSS)
3. Demonstrate how real data can be presented and interpreted

Students will work together in assigned small groups to analyze data sets through SPSS. After initial small group discussions, students will review data sets together as a whole class to ensure that everyone understands the material in hand.

Computer Software:

Statistical software such as SPSS greatly helps to speed up data analyses and interpretation, especially for larger data sets. The software package SPSS 17.0 will be used in the lab sessions and is available from:

http://www.spss.com/downloads/papers.cfm?ProductDemoLink=00035.

Alternatively students enrolled at UT may purchase SPSS 17.0 “Grad Pack” in the University Co-Op for $196. This is a great offer for students who will be carrying out more data analysis in the future. The base SPSS module without discounts can cost as much as $7,000, depending upon academic affiliation and corporate licensing agreements. In contrast the Grad Pack includes the base module and advanced modules.

In addition **UT students** can also use the SPSS **at home or off-site** through the **WINDOWS TERMINAL SERVICE**. To access and set up the terminal service visit www.utexas.edu/its/wts/. To use Terminal Services, **DISK SERVICES** are required and are billed to an IF account at $5/year maximum (pro-rated). To set up the terminal service and disk services just follow the relevant links on the Windows or Mac Terminal Service homepage. For assistance setting up the services either please contact the ITS help desk, at 475-9500, or visit www.utexas.edu/its/wts/.

Classroom Distractions:

- Cell phones should be turned **OFF PRIOR** to class

Accommodations For Students With Disabilities:

Any student with a disability who requires ANY accommodations should contact the instructor as soon as possible.

Course Schedule:

The times of delivery & emphasis of course content are tentative.

DAILY TIME PLAN:

Time	Section
1.30 – 2.45	Session 1
2.45 – 3.00	Coffee Break
3.00 – 4.00	Session 2
4.00 – 4.15	Coffee Break
4.15 – 5.30	Session 3

Day 1:

Introductions & groups
PHILOSOPHY, **QUESTIONS**, experimental design, sampling & **REALITY**
Branches of statistics – descriptive (90% of the job) & inferential statistics
Introduction to SPSS
Handling data
OBSERVE, QUESTION, SUMMARIZE, CONCEPTUALIZE, INFER!
Samples, variables, COMPUTING & RECODING
Descriptive statistics I - tables & charts
Probability & simply understanding tables!

Day 2:

Review & recap
Philosophy, questions, design, sampling & REALITY
OBSERVE, QUESTION, SUMMARIZE, CONCEPTUALIZE, INFER!
Descriptive statistics II – tables & charts
The shape of your data & **The Sampling Distribution**
Sampling & controls
Outcomes of sampling - standard error & confidence intervals
Testing your ideas - Hypothesis testing
Independent samples t-test
Levine's test
Wilcoxon Mann Whitney
Putting together models I
QUESTIONS, QUSTIONS, QUSTIONS – **Organization!**
MS Word

Day 3:

Review & recap
Philosophy, questions, design, sampling & REALITY
OBSERVE, QUESTION, SUMMARIZE, CONCEPTUALIZE, INFER!
Paired samples t-test & descriptive statistics
Chi-square & descriptive statistics
ANOVA (one factor) & descriptive statistics
ANCOVA & descriptive statistics
Correlation/Regression & descriptive statistics
Putting together models II
QUESTIONS, QUSTIONS, QUSTIONS – **Organization!**

Day 4:

Review & recap
Philosophy, questions, design, sampling & REALITY
OBSERVE, QUESTION, SUMMARIZE, CONCEPTUALIZE, INFER!
ANCOVA
Correlation & Regression
Putting together models II
QUESTIONS, QUSTIONS, QUSTIONS – **Organization!**
SPSS command language – (optional)
Students own data – (optional)