

Time: TH 9:00 AM – 12:00 Noon
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SURVEY OF STATISTICAL TECHNIQUES IN BUSINESS RESEARCH

**ISDS 8530
FALL 2009**

■ **TEXTBOOK, USER GUIDE, AND LECTURE NOTES:**

- (1) *Applied Statistics: From Bivariate Through Multivariate Techniques*, Rebecca M. Warner, Sage Publication, 2008.
- (2) *SPSS 16.0: Graduate Version*, SPSS Inc., 2009.
- (3) *Survey of Statistical Technique in Business Research: Lecture Notes*, Mehdi Amini, Fall 2008.

■ **RELATED WEBSITES:**

- SPPSS[®] Inc. Software products
<http://www.spss.com>
- The BSC: The McGraw-Hill /Irwin Business Statistics Center
<http://www.mhhe.com/business/opsci/bstat/>
- The US Census Bureau: Provides a multitude of social, economic, and government data
<http://www.census.gov/statab/www/>
- Fortune Magazine:
<http://www.fortune.com>

■ **ADDITIONAL REFERENCES:**

- *Statistics in Research*, by Ostle and Malone, Iowa State University Press, 1988.
- *Statistical Design Analysis of Experiments*, by Mason, Gunst, and Hess, Wiley & Sons, 1989.
- *Experimental Design*, by Berger and Maurer, Duxbury, 2002.

- Design and Analysis of Experiments, by Montgomery, Wiley & Sons, 2001.
- Applied Linear Statistical Models, by Neter, Wasserman, and Kutner, Irwin, 1985.
- Multiple Regressions in Behavioral Research, By Pedhazur, Holt, Rinehart, and Winston, 1973.
- Data Analysis Using Regression Models, by Frees, Prentice Hall, 1996.
- Applied Regression Analysis, by Kleinbaum and Kupper, Duxbury, 1978.

■ **COURSE DESCRIPTION:** Experimental and survey investigations are integral components of scientific research method. Application of these procedures within the “hard” and “soft” sciences invariably leads to the use of techniques and methods offered by the science of statistics. The *science of statistics* deals with: (a) collection and summarization of data,; (b) designing experiments and surveys; (c) measuring the magnitude of variation in both experimental and survey data; (d) estimating population parameters ad providing various measures of the accuracy and precision of these estimates; (e) testing hypotheses about population; and (f) studying relationships among two or more variables.

The fundamental objective of this course is to provide students with a survey of basic statistical methods pertinent to business research. The coverage includes a brief review of descriptive statistical methods followed by inferential statistical techniques including hypothesis testing, analysis of variance, association analysis, regression analysis, and nonparametric methods.

To prepare our Ph.D. students for scientific business research, the course provides an experiential learning process including three components. (1) “Small” homework assignments: the purpose is to understand topics covered in the class. (2) “Large” data set analyses: Collection, analyses, and presentations of data set(s) relevant to the major field of student Ph.D. program. The data set(s) may be collected through a number of sources including faculty, internet, and etc. The objective of this component is to engage our students in the real-world research within their academic filed and allow them to apply the statistical methods to the real-world large-scale data sets. And (3) Extensive use of *SPSS* software to complete components 1 and 2.

■ **PREREQUISITE:** ISDS 7020, or equivalent.

■ **EXAMINATION & GRADING:**

“Small” Homework Assignments:	25%
“Large” Data Set Assignments:	25%
Presentations & Discussions:	15%
Research Paper:	15%
Mid-Term Exam:	20%
Final Comprehensive Exam	30%

	100%

To distinguish individual student’s performance as accurately as possible, we’ll be using “+” and “-” grading system.

■ **ASSIGNMENTS:**

I. Readings:

In addition to the textbook, papers and articles are assigned to provide further understanding of the concepts discussed in the class. Completions of these reading assignments are essential to our class discussions, exercises, and case presentation and discussions.

II. “Small” Homework Assignments:

To practice the concepts discussed within the lectures, “small” homework assignments are made from the textbook and/or other sources. These assignments are required to be completed by individual students. Solutions to these assignments will be presented in the class by students and supporting documents are posted on the course website. Solution to these assignments must be collected in one binder and submitted at the end of semester.

III. “Large” Data Set Assignments:

Early in the semester, student teams are formed. Each team is expected to (1) indentify sources and collect a “large” data set relevant to the issues of research interests in his/her major field of study (e.g., marketing, MIS, management, accounting, and etc.). The sources of research data could be faculty, websites, journal articles, and etc. (2) Receive approval from the instructor. (3) Apply the topics discussed in the class on the “large” data set. (3) Present analyses, results, and conclusions to the class in a series of three presentations, each 15-20 minutes of length. And (4) develop a final research report summarizing all conducted analyses, results, and conclusions. It is expected to use SPSS extensively in completing all relevant analysis.

■ **PARTICIPATION & ATTENDANCE:** Class attendance and participation are expected. The technical nature and organization of the course require your maximum participation in

the class discussions and activities. Active participation of students in all class discussions, assignments presentations, and semester projects 1 and 2 presentation sets and discussions are encouraged. A substantial portion of this class is intended to foster learning through discussion.

- **SYLLABUS:** The syllabus below is a tentative outline for the course. We will make a reasonable effort to adhere to this schedule but you should know that I reserve the right to alter this calendar as circumstances may dictate. All changes will be announced in class. Students not attending class are responsible for obtaining this information. Each session is described by the topic, related chapter in the textbook and lecture number. The reading and exercise assignments are included within the lecture notes distributed each week. Also, group case assignments (case presentation and analysis, critic, and jury) schedule follow the tentative outline.

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WEEK	DATE	TOPIC	READING Textbook	ASSIGNMENT SPSS 16.0
1	09/03	Review of Basic Concepts	CH 1	Install software & read intro
2	09/10	Intro to SPSS: Basic Statistics, Sampling Error and Confidence Intervals Statistical Significance Testing	CH 2 CH 3	Intro Relevant CH
3	09/17	Preliminary Data Screening	CH 4	Relevant CHs
4	09/24	Comparing Group Means Using The Independent Samples t Test One-Way Between Subject ANOVA	CH 5 CH 6	Relevant CH Relevant CH
5	10/01	**** Team Project Day****		
6	10/08	Bivariate Pearson Correlation Alternative Correlation Coefficient	CH 7 CH 8	Relevant CH Relevant CH
7	10/15	Bivariate Regression Adding a third Variable: Preliminary Exploratory Analyses **** Team Presentation **** **** Exam I: Take-Home (CHs 1-8) ****	CH 9 CH 10	Relevant CH Relevant CH
**** Fall Break: 11/17 – 11/20 ****				
8	10/22	Multiple Regression Analysis with Two Predictor Variables Dummy Predictor Variables and Interaction Terms in Multiple Regression	CH 11 CH 12	Relevant CH Relevant CH
9	10/29	Factorial Analysis of Variance Two Predictor Variables	CH 13	Relevant CH
10	11/05	**** Team Project Day ****		

11	11/12	Multiple Regression Analysis with More Than Two Predictor Variables	CH 14	Relevant CH
12	11/19	Analysis of Covariance **** EXAM II: Review ****	CH 15	Relevant CH
13	11/26	**** EXAM II: Comprehensive Take-Home **** **** Weekend: Sat & Sunday **** **** Thanks Giving: 11/26 – 11/29 ****		
14	12/03	**** Team Final Presentation**** **** Research Project Summary Reports ****		

“Small” Homework will be assigned during the class sessions.