DPLS 722 Quantitative Data Analysis

Spring 2011 3 Credits

Catalog Description
Quantitative data analyses require the use of statistics (descriptive and inferential) to summarize data collected, to make comparisons of data sets, and to generalize results obtained from samples back to the populations from which the sample were drawn. Knowledge about statistics and statistical analysis can help a researcher interpret data for the purpose of providing meaningful insights about the problem being investigated.

Prerequisite: DPLS 720
Professor: David Whitfield, EdD
Office hours: Please email or call for an appointment
Office phone: 360. 866. 9794
Email: whitfield@gonzaga.edu; or, david@interculturaleadership.com

Class Logistics
Meeting place: Room T106
Meeting time: Saturdays 8-12 a.m.
Meeting Dates: (2011): 1/15, 1/29, 2/12, 2/26, 3/5, 3/19, 4/2, 4/16,

Course Overview
Quantitative data analyses require the use of statistics (descriptive and inferential) to summarize data collected, to make comparisons of data sets, and to generalize results obtained for a sample back to the population from which the sample was drawn. Knowledge about data analyses can help a researcher interpret data for the purpose of providing meaningful insights about the problem being investigated. This course approaches statistics from a problem-solving perspective as emphasis is placed on selecting appropriate statistical techniques for various research designs and on interpreting and reporting data analyses results. Computer data analysis (using Microsoft Excel) will be a primary focus of the course to further illustrate the use and interpretation of statistics in research.

The course content is organized into seven modules. Although the course will progress through the modules on a scheduled basis, if you find yourself confused and frustrated, I encourage you to slow down and work at your own pace. Arrangements can be made for you to take an incomplete for the course and finish the work at a later time.

This course focuses on understanding and application. The key ideas to be thoroughly understood are:

- Demonstrate a solid understanding of basic statistics through both talking and writing about core statistical concepts.
- Formulate research questions and corresponding statistical hypotheses that can enhance understanding of a given phenomena.
- Create or use existing databases to seek answers to research questions or to test hypotheses.
• Select appropriate statistical techniques (methods) for a given question or hypothesis statement
• Apply statistical procedures to test hypotheses using appropriate statistical application(s)
• Correctly interpret statistical application output
• Communicate findings verbally and in written format
• Apply Microsoft Excel in the process

Outline of Sessions
Session 1-January 16
a. Course overview
b. Overview of statistics (Module 1)

Session 2-January 30
a. Inferential statistics and sampling distributions (Module 2)
b. The standard normal distribution and hypothesis testing (Module 3)

Session 3-February 6
a. The t-distribution and hypothesis testing (Module 4)

Session 4-February 20
a. Module 4 (cont.)
b. Hypothesis testing for ANOVA (Module 5)

Session 5-March 20
a. Module 5 (cont.)
b. Hypothesis testing for correlation and regression (Module 6)

Session 6-March 27
a. Module 6 (cont.)
b. Nonparametric tests (Module 7)

Session 7-(March 27) Continued-Since these are relatively short modules, we will combine the sessions
Module 7 (cont.)

Session 8-April 10
a. Final exam
b. Lab assignments, self-evaluations, and statistics project due

Click on the module you would like to access

NOTE: PLEASE IGNORE THE REFERENCE TO SPSS

Module 1: Overview of Statistics for Quantitative Research
http://guweb2.gonzaga.edu/doctoral/Mod1.html
Module 2: Inferential Parametric Statistics and Sampling Distributions
http://guweb2.gonzaga.edu/doctoral/ld722/ld722-2/m2pm.html

Module 3: An Introduction to Hypothesis Testing
http://guweb2.gonzaga.edu/doctoral/ld722/ld722-3/m3pm.html

Module 4: t-Distributions and Hypothesis Testing
http://guweb2.gonzaga.edu/doctoral/ld722/ld722-4/m4pm.html

Module 5: Hypothesis Testing for One-way and Two-way Designs
http://guweb2.gonzaga.edu/doctoral/ld722/ld722-5/m5pm.html

Module 6: Correlation and Regression Analyses
http://guweb2.gonzaga.edu/doctoral/ld722/ld722-6/M6PM.html


Grading
Your grade will be determined by the following deliverables with percentages indicated:

<table>
<thead>
<tr>
<th>Deliverable</th>
<th>Percentage</th>
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</thead>
<tbody>
<tr>
<td>Group and Individual Presentations</td>
<td>10%</td>
</tr>
<tr>
<td>Modules 1-4</td>
<td>25%</td>
</tr>
<tr>
<td>Application Questions x3</td>
<td>15%</td>
</tr>
<tr>
<td>Research Project</td>
<td>20%</td>
</tr>
<tr>
<td>Final Exam</td>
<td>30%</td>
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</tbody>
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Assignments & Tasks
- There will be 4 statistics modules on Blackboard created by Dr. Sandi Wilson and used in this course for a number of years. Those modules will be a resource for students and the assigned workgroups. Each module will have associated ‘Application Questions‘ which will be completed by each workgroup. Satisfactory completion of each set of application questions is a basic expectation. See Blackboard for more detail on these assignments.
- Course Projects A will consist of one group presentation and two individual presentations of a peer reviewed journal article reporting on research using a quantitative methodology and increasingly complex methods. See Blackboard for specifics Assignments > Course Projects
- Course Projects B will involve each individual to imagine, design, test, and write up a mock study using real data to complete a quantitative research project. See Blackboard for specifics Assignments > Course Projects
- Readings and reflective journal - In this course we will use three text based sources - see below, with suggested readings outlined in the course plan below. It is expected that all students will complete all the reading assignments prior to each class meeting. These readings will form the basis for class discussions and exploration of the concepts. These readings will also support and shed light on the 4 modules prepared by Dr. Wilson. The Sirkin text is meant to be both a resource and a primary source of clarification for basic
statistical concepts. Selected concepts will be more thoroughly deconstructed in class (e.g., standard deviation, error, variables, probability, p values, t-tests, etc.) Journal entries will be made on Blackboard in the discussion area - see Blackboard > Assignments for specifics on this expectation.

First Meeting
- Housekeeping Issues & Group process
- Foundations of the Course
- Group Work
- Debrief
Readings 2nd Meeting:
- Somekh & Lewin pp. 197 - 214
- Sirkin pp. 1 - 31
- Keller pp. ix - 47

Second Meeting
- Readings review and discussion - Formalizing assumptions and using the Scientific Method - Distributions & Frequencies
- Discussion & Group Work
Readings for 3rd Meeting:
- Somekh & Lewin pp. 215 - 225
- Keller pp. 48 - 103
- Sirkin - Chapter 2 - 4
- Wilson Module 1 - Blackboard

Third Meeting
- Readings review and discussion - counting, measurement, variables, and central tendency, standard deviation, and error
- Group & Individual Presentations
Readings for 4th Meeting:
- Somekh & Lewin pp. 226 - 235
- Sirkin - Chapters 5 - 6
- Wilson Modules 2 & 3
- Keller pp. 104 - 151

Fourth Meeting
- Readings review and discussion - Dispersion & Contingency Tables
- Application Questions Module 1 due
Readings for 5th meeting:
- Somekh & Lewin pp. 236 - 249
- Sirkin - Chapters 7 - 9
- Wilson Modules 2 & 3

Fifth Meeting
- Readings review and discussion - Inference, Probability, Z tests and t tests.
Readings for 6th Meeting:
• oSomekh & Lewin pp. 251 - 273
• Sirkin - Chapters 10-12
• Wilson Module 4

Sixth Meeting
• Somekh & Lewin pp. 274 - 281
• Readings review and discussion - ANOVA - Variation revisited
• Group & Individual Presentations
Application Modules 2 & 3 Due
• Readings for 7th Meeting:
• Sirkin - Chapters 13 - 14

Seventh Meeting
• Readings review and discussion - Regression
Readings for Final Meeting:

Final Meeting
• Complexity, Multivariate Analysis, Language & Network Theory - Whither research in Leadership Studies?
• Presentations
• Application Modules 4 Due
• Wrap up - Research projects due April 19th

Required Readings