Applied Data Analysis and Interpretation

Course No.: AEC 6905  
Instructor: Dr. Glenn D. Israel

Section No.: 028F  
Office: 218 Rolfs Hall

Term: Spring, 2014  
Office Hours: by appointment

Location: 409 Rolfs  
E-mail: gdisrael@ufl.edu

Time: Wednesday & Friday, 12:50 p.m. (6-7th)  
Telephone: 273-2586 (office)  
Inform instructor about religious holidays  
339-6429 (cell)

Course Description: Concepts and methods drawn from the social sciences for analyzing data in the human dimensions of agricultural and natural resource issues.

Course Objectives: Upon completing the course, students should be able to identify a research question and conduct a process analyzing a data set using quantitative methods. Specifically, students should be able to:

1. Determine appropriate statistical techniques for a given research question and data set.
2. Conduct exploratory analyses to assess data quality and describe distributions of variables.
3. Implement data reduction strategies and assess measurement properties of constructs.
4. Conduct bi-variate analyses using tabular analysis, correlation and other methods.
5. Conduct multi-variate analyses using General Linear Model techniques (Manova, Mancova, Regression) or Log-Linear Models.
6. If appropriate, conduct an analysis using structural equation models or hierarchal linear models.
7. Prepare a report of the methods and results which is suitable for publication.

Text: There is no text for the course. Instead students are expected to retrieve and read on-line journal articles listed below. In addition, each student should obtain a copy of SAS or SPSS statistical software (the instructor uses SAS) for his or her personal computer.

Preparation: Students should have completed STA 6126 and 6127 (or equivalent) and a research methods course.

Participation: In addition to attending each class, you should read assigned articles in a timely manner. Given the nature of the course, students are expected to participate in discussions for all scheduled classes.

Grading: Based on the project report, the grade for the course will use the following scale:
   A = Report acceptable for publication as is or with minor revisions
   B+ = Report acceptable for publication with major revisions
B = Report suitable for publication in a lower-tier journal with revisions
C+ = Report suitable for publication in a lower-tier journal with major revisions
C = Report not suitable for publication

Note: the grading system is based on a connoisseurial evaluation methodology. The instructor has over 25 years of experience in publishing and reviewing quantitative studies.

Data sets available from the instructor for the Course Project (and related publications):

1. Small Farms Survey data, 1989


2. Small Farms Survey data, 2008 (n=275)


4. Florida Horse Owner Survey, 2005 (n=615)


5. Lake User Survey, 2005 (n=965)


6. Florida Yards & Neighborhoods evaluations, 1999-2004, 2010-12 (n=400+; n=480+)


7. NELS:88 public use data, Base year – third follow-up (n=~20,000)


8. ECLS-K public use data (Early childhood longitudinal study), Kindergarten-first grade

9. Common Core of Data (CCD) for public schools (NCES)

10. Student-supplied, instructor-approved data sets

Note: use of any data set must comply with University of Florida policies concerning research involving human subjects.

Relevant Websites:

Quantitative Research in Public Administration, PA 765, NCSU
http://www2.chass.ncsu.edu/garson/pa765/index.htm
On-line text:
http://www2.chass.ncsu.edu/garson/pa765/statnote.htm

Using SPSS to Understand Research and Data Analysis
http://wwwstage.valpo.edu/other/dabook/home.htm

G-Power Reference

Statsoft Electronic Statistics Textbook
http://www.statsoft.com/textbook/stbasic.html

Web Pages that Perform Statistical Calculations
http://statpages.org/

Very useful web site with examples and syntax for multivariate analysis:
http://www.ats.ucla.edu/stat/spss/
http://www.ata.ucla.edu/stat/sas/
http://help.pop.psu.edu/help-by-software-package/sas
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<tr>
<th>Date</th>
<th>Topic</th>
<th>Readings for class</th>
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<td>Jan. 8</td>
<td>Introduction and Research question selection</td>
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<tr>
<td>Jan. 10</td>
<td>Exploring data structures &amp; descriptive statistics, inc. nested data</td>
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<td>Jan. 15</td>
<td>Assessing Bias in survey data</td>
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<td>Jan. 17</td>
<td>Using plots and graphs/Descriptive statistics</td>
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<td>Jan. 22</td>
<td>Dealing with missing data: Imputation methods</td>
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<td>Jan. 24</td>
<td>Imputation cont.</td>
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<td>Measurement issues: index construction with Principle components</td>
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<td>Moderator/Mediator variables</td>
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<td>Survey weighting</td>
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<td>Survey weighting (cont.)</td>
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<td>Feb. 19</td>
<td>No class – Israel at new agent training</td>
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<td>Feb. 21</td>
<td>Regression</td>
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<td>Feb. 26</td>
<td>No class – Israel to WERA-1010</td>
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<td>Feb. 28</td>
<td>No class – Israel to WERA-1010</td>
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<td>Mar. 5</td>
<td>No class – Spring break</td>
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<td>Mar. 7</td>
<td>No class -- Spring break</td>
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<td>Dummy variables</td>
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<td>Collinearity assessment</td>
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<td>ANOVA &amp; MANCOVA</td>
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<td>ANOVA &amp; MANCOVA (cont.)</td>
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<td>Mar. 28</td>
<td>Logistic regression</td>
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<td>Apr. 1</td>
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<td>Apr. 4</td>
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<td>10, 11</td>
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<td>Hierarchal Linear Models (HLM): Two-level models</td>
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<td>Apr. 11</td>
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<td>HLM: Growth models</td>
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<td>Structural equation models (SEM)</td>
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<td>Apr. 23</td>
<td>Student reports &amp; Course reflection</td>
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<td>Apr. 25*</td>
<td>Final paper due</td>
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*Official UF Reading day
Reading Assignments:


(3) Yang C. Yuan. Multiple Imputation for Missing Data: Concepts and New Development.


Additional References:


Grades and Grade Points
For information on current UF policies for assigning grade points, see
https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx

Absences and Make-Up Work
Requirements for class attendance and make-up exams, assignments and other work are consistent with university policies that can be found at:

Academic Honesty
As a student at the University of Florida, you have committed yourself to uphold the Honor Code, which includes the following pledge: “We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honesty and integrity.” You are expected to exhibit behavior consistent with this commitment to the UF academic community, and on all work submitted for credit at the University of Florida, the following pledge is either required or implied: "On my honor, I have neither given nor received unauthorized aid in doing this assignment."

It is assumed that you will complete all work independently in each course unless the instructor provides explicit permission for you to collaborate on course tasks (e.g. assignments, papers, quizzes, exams). Furthermore, as part of your obligation to uphold the Honor Code, you should report any condition that facilitates academic misconduct to appropriate personnel. It is your individual responsibility to know and comply with all university policies and procedures regarding academic integrity and the Student Honor Code. Violations of the Honor Code at the University of Florida will not be tolerated. Violations will be reported to the Dean of Students Office for consideration of disciplinary action. For more information regarding the Student Honor Code, please see: http://www.dso.ufl.edu/SCCR/honorcodes/honorcode.php.

Software Use:
All faculty, staff and students of the university are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against university policies and rules, disciplinary action will be taken as appropriate.
Campus Helping Resources
Students experiencing crises or personal problems that interfere with their general well-being are encouraged to utilize the university’s counseling resources. The Counseling & Wellness Center provides confidential counseling services at no cost for currently enrolled students. Resources are available on campus for students having personal problems or lacking clear career or academic goals, which interfere with their academic performance.

- University Counseling & Wellness Center, 3190 Radio Road, 352-392-1575, [www.counseling.ufl.edu/cwc/](http://www.counseling.ufl.edu/cwc/)
  - Counseling Services
  - Groups and Workshops
  - Outreach and Consultation
  - Self-Help Library
  - Training Programs
  - Community Provider Database

- Career Resource Center, First Floor JWRU, 392-1601, [www.crc.ufl.edu/](http://www.crc.ufl.edu/)

Services for Students with Disabilities
The Disability Resource Center coordinates the needed accommodations of students with disabilities. This includes registering disabilities, recommending academic accommodations within the classroom, accessing special adaptive computer equipment, providing interpretation services and mediating faculty-student disability related issues. Students requesting classroom accommodation must first register with the Dean of Students Office. The Dean of Students Office will provide documentation to the student who must then provide this documentation to the Instructor when requesting accommodation.

0001 Reid Hall, 352-392-8565, [www.dso.ufl.edu/drc/](http://www.dso.ufl.edu/drc/)