

COURSE SYLLABUS
Current as of December 5, 2013

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. (6-7 th) Inform instructor about religious holidays	Telephone: 273-2586 (office) 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

Israel, G.D. 1991. "Reaching Extension's Clientele: Exploring Patterns of Preferred Information Channels Among Small Farm Operators." *Southern Rural Sociology*, 8(1):15-32.

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

Gaul, S. A., Hochmuth, R. C., Israel, G. D., & Treadwell, D. 2009. *Characteristics of small farm operators in Florida: Economics, demographics, and preferred information channels and sources*. WC088, 7 pp. Gainesville: University of Florida Institute of Food and Agricultural Sciences. Available at: <http://edis.ifas.ufl.edu/wc088>.

3. Extension Customer Satisfaction Survey, 2003-2013 (n=5000+)

Israel, G. D., & Galindo-Gonzalez, S. 2009. Diverse Market Segments and Customer Satisfaction: Does Extension Serve All Clients Well? *Journal of international agricultural and extension education*, 16(1), 89-103.

Strong, R., & Israel, G. D. 2009. The Influence of Agent/Client Homophily on Adult Perceptions About Extension's Quality of Service. *Journal of southern agricultural education research*, 59(1), 70-80.

Galindo-Gonzalez, S., & Israel, G. D. 2010. The Influence of Type of Contact with Extension on Client Satisfaction. *Journal of extension*, 48(1), available at: <http://www.joe.org/joe/2010february/a4.php>.

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

Israel, G.D. & *Wilson, K.M. 2006. "Sources and Channels of Information Used By Educational Program Clients." *Journal of applied communications*, 90(4):55-78.

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

Hoyer, M. V., Israel, G. D. & Canfield, D. E. 2006. "Lake User's Perceptions Regarding Impacts of Lake Water Level on Lake Aesthetics and Recreational Uses" Gainesville, FL: University of Florida. 145 pp.

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

Israel, G.D., Easton, J.O. & Knox, G.W. 1999. "Adoption of Landscape Management Practices by Florida Citizens." *HortTechnology*, 9(2): 262-266.

Israel, G. D., Kochert, J. L., Scalera, S. A., & Monaghan, P. F. Uncovering Barriers to Changing Homeowner Landscaping Practices. Presentation at the 17th International Symposium on Society and Resource Management, Masdison, WI, June, 2011.

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

Beaulieu, L.J., Israel, G.D., Hartless, G., & Dyk, P. 2001. "For Whom Does the School Bell Toll? Multi-contextual Presence of Social Capital and Student Educational Achievement." *The Journal of Socio-Economics*, 30: 121-127.

Israel, G.D., Beaulieu, L.J. & *Hartless, G. 2001. "The Influence of Family and Community Social Capital on Educational Attainment." *Rural Sociology*, 66(1): 43-68.

Israel, G.D. & Beaulieu, L.J. 2004. "Laying the Foundation for Employment: The Role of Social Capital in Educational Achievement." *The Review of Regional Studies*, 34(3):260-287.

Israel, G.D. & Beaulieu, L.J. 2004. "Investing in Communities: Social Capital's Role in Keeping Youth in School." *Journal of the Community Development Society*, 34(2):35-57.

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

http://www.psych.uni-duesseldorf.de/aap/projects/gpower/reference/reference_manual_02.html

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>

Course Schedule

Date:	Topic:	Readings for class
Jan. 8	Introduction and Research question selection	
Jan. 10	Exploring data structures & descriptive statistics, inc. nested data	
Jan. 15	Assessing Bias in survey data	
Jan. 17	Using plots and graphs/Descriptive statistics	
Jan. 22	Dealing with missing data: Imputation methods	1, 2, 3
Jan. 24	Imputation cont.	
Jan. 29	Measurement issues: index construction with Principle components	
Jan. 31	Indexes cont.: Factor analysis	
Feb. 5	Tabular analysis	4
Feb. 7	Moderator/Mediator variables	5, 6
Feb. 12	Survey weighting	
Feb. 14	Survey weighting (cont.)	
Feb. 19	No class – Israel at new agent training	
Feb. 21	Regression	
Feb. 26	No class – Israel to WERA-1010	
Feb. 28	No class – Israel to WERA-1010	
Mar. 5	No class – Spring break	
Mar. 7	No class -- Spring break	
Mar. 12	Dummy variables	7
Mar. 14	Regression cont.	
Mar. 19	Collinearity assessment	8, 9
Mar. 21	ANOVA & MANCOVA	
Mar. 26	ANOVA & MANCOVA (cont.)	
Mar. 28	Logistic regression	10, 11
Apr. 1	Logistic regression (cont.)	
Apr. 4	Effect size calculations	10, 11
Apr. 9	Hierarchal Linear Models (HLM): Two-level models	12
Apr. 11	HLM: Three-level models	13
Apr. 16	HLM: Growth models	
Apr. 18	Structural equation models (SEM)	14
Apr. 23	Student reports & Course reflection	
Apr. 25*	Final paper due	

*Official UF Reading day

Reading Assignments:

- (1) Joseph L. Schafer and John W. Graham. 2002. Missing Data: Our View of the State of the Art. *Psychological Methods*, 7(2), 147–177.
- (2) Roderick J. A. Little. 1988. Missing-Data Adjustments in Large Surveys. *Journal of Business & Economic Statistics*, 6(3), 287-296.
- (3) Yang C. Yuan. Multiple Imputation for Missing Data: Concepts and New Development.
- (4) Glenn D. Israel. 1992. Elaborating Program Impacts Through Data Analysis. Fact Sheet PEOD-3. Gainesville, FL: PEOD.
- (5) Reuben M. Baron and David A. Kenny. 1986. The Moderator-Mediator Variable Distinction in Social Psychological Research: Conceptual, Strategic, and Statistical Considerations. *Journal of Personality and Social Psychology*, 51(6), 1173-1182.
- (6) Jill A. Bennett. 2000. Mediator and Moderator Variables in Nursing Research: Conceptual and Statistical Differences. *Research in Nursing & Health*, 23, 415-420.
- (7) Lincoln Polissar and Paula Diehr. 1982. Regression Analysis in Health Services Research: The Use of Dummy Variables, *Medical Care*, 20(9), 959-966.
- (8) John Bibby. 1977. The General Linear Model: A Cautionary Tale. Pages 51-59 in Colm A. O'Muircheartaigh and Clive Payne (eds.), *The Analysis of Survey Data*. Volume 2: Model Fitting. John Wiley & Sons.
- (9) David A. Belsley. 1991. A Guide to Using the Collinearity Diagnostics. *Computer Science in Economics and Management*, 4, 33-50.
- (10) Jacob Cohen. 1992. A Power Primer. *Psychological Bulletin*, 112(1), 155-159.
- (11) David Hevey and Hannah M. McGee. 1998. The Effect Size Statistic: Useful in Health Outcomes Research? *Journal of Health Psychology*, 3, 163-170.
- (12) Judith D. Singer. 1998. Using SAS Proc Mixed to Fit Multilevel Models, Hierarchical Models, and Individual Growth Models. *Journal of Educational and Behavioral Statistics*, 24(4), 323-355.
- (13) Mathew Hankins, David French and Rob Horne. 2000. Statistical Guidelines for Studies of the Theory of Reasoned Action and the Theory of Planned Behavior. *Psychology and Health*, 15, 151-161.
- (14) E. Kevin Kelloway. 1998. *Using LISREL for Structural Equation Modeling*. Thousand Oaks: Sage. (Chapters 1-2).

Additional References:

- (15) Glenn D. Israel. 1992. Determining Sample Size. Available at: <http://edis.ifas.ufl.edu/pdffiles/PD/PD00600.pdf>
- (16) AAPOR. 2011. *Standard Definitions*, Final Dispositions of Case Codes and Outcome Rates for Surveys. 7th Edition. Available at: http://www.aapor.org/uploads/standarddefs_4.pdf.

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:

<https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>.

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/*
 - 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/*

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/