ANG 6930

Spring 2015

Applied Statistics in Biological Anthropology

TIME:	M periods 7-8, W period 7
PLACE:	TUR 1208H
INSTRUCTOR:	David Daegling, B376 Turlington Hall (352) 294-7603 daegling@ufl.edu Office Hours: M 4:00-5:00 PM; F 1:00 – 3:00.

COURSE OBJECTIVES: This course provides a practical, problem-based approach to data analysis in the field of biological anthropology. Primary objectives include learning skills for informed application of parametric, nonparametric and resampling approaches to statistical inference, as well as an understanding of effective communication of quantitative data. *A basic familiarity with statistics is assumed*. There is no textbook for the course, but we will review papers in the primary literature as exemplars of statistical application (or misapplication) for some topics. We will use the open-source platform **R** for statistical analyses. You may wish to consult some of the many published and online resources for **R** to familiarize yourself with its applications. This course is not designed to provide background in statistical theory.

STUDENT LEARNING OUTCOMES: Successful completion of the course will provide students with the following skills:

- Competence in the operation of **R**
- Determination of distributional properties of data
- Graphic presentation of quantitative data
- Parametric and nonparametric statistical applications
- Resampling statistical applications
- Hypothesis specification
- Selection of appropriate statistical procedures
- Diagnosis of validity of statistical inferences

COURSE REQUIREMENTS: The grading criteria for the course include timely and correct completion of homework assignments (80%), attendance and participation (10%) and a take-home final exam (10%). For some assignments and the final exam you will be given unique datasets to analyze and interpret.

OTHER POLICIES: Late assignments get zero credit unless prior arrangement with the instructor has been made. Cell phones and pagers must be off during class. Academic dishonesty in any form will not be tolerated and is subject to university policy (University of Florida Rules - 6C1-4 Student Affairs), which includes provisions for expulsion from the university. Students requesting classroom accommodation must first register with the Dean of Students Office (DSO). The DSO will provide documentation to the

student who must then provide this documentation to the Instructor when requesting accommodation. Students experiencing personal problems that are interfering with their academic performance are encouraged to contact the University Counseling Center (301 Peabody Hall, 392-1575), Student Mental Health (Student Health Care Center, 392-1171), or Sexual Assault Recovery Services (Student Health Care Center, 392-1161).

COURSE ADMINISTRATION: Syllabi, assignments, datasets, resources, and readings will be distributed through e-learning: <u>http://lss.at.ufl.edu/</u>. This term we will be using the CANVAS platform.

COURSE SCHEDULE (open dates are devoted to review of problem sets, script troubleshooting, and critique of readings)

Week		Торіс	Reading
1	(1/7)	Navigating R	Dalgaard Chapter 1
2	(1/12) (1/14)	Understanding probability Handling data	Dalgaard Chapter 3; Cheng & Pitt 2003 Zuur Chapters 2, 3
3	(1/21)	Structure of ANOVA	Dalgaard Chapters 5, 7 (through 7.2)
4	(1/26) (1/28)	Resampling methods	Lee 2001; Zuur Chapter 6
5	(2/2) (2/4)	Covariation	Rodgers & Nicewander 1988
6	(2/9) (2/11)	Factorial designs	Dalgaard Chapters 7 (through 7.6), 12 (12.6)
7	(2/16) (2/18)	Heirarchical ANOVA	Conover and Iman 1981
8	(2/23) (2/25)	Regression models	Dalgaard Chapter 6; Foley 1991
9	(3/9) (3/11)	ANCOVA	Dalgaard Chapter 12 (12.7), Grant et al 1992
10	(3/16) (3/18)	Multiple regression	Dalgaard Chapter 11, 13; Dunbar & Schultz 2007

11	(3/23)	Circular distributions	Griffin & Richmond 2009
12	(3/30) (4/1)	Analysis of frequencies	Dalgaard Chapters 8, 13
13	(4/6) (4/8)	Discriminant functions, PCA	Corruccini 1975, Fleagle & Reed 1996
14	(4/13) (4/15)	Bayesian inference	Gowland and Chamberlain 2002
15	(4/20) (4/22)	Spatial autocorrelation Statistical risk management	Bivand Chapter 9 Taleb 2007