Professor Martin Gallivan
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OFFICE HOURS:
1:00 - 2:45 pm Monday / Wednesday
Washington 109 and by appointment

ANTH 454 / 554 QUANTITATIVE RESEARCH METHODS IN ANTHROPOLOGY

Monday / Wednesday 5:00 – 6:20, Morton Hall

COURSE DESCRIPTION:

The class is designed as an introduction to statistics for anthropologists. Following a brief discussion of quantitative research design, the course considers analytical techniques used to describe and evaluate archaeological assemblages as well as ethnographic, biological, and linguistic data. We will cover data base construction, descriptive statistics, exploratory data analysis, probability and sampling, hypothesis testing, non-parametric statistics, and the graphical presentation of data. At the end of the class we'll also briefly discuss several more advanced statistical techniques for those interested in taking their quantitative research skills to the next level. The class meets in a technology enhanced classroom equipped with computers and a range of software applications. Students will use these as tools for implementing and presenting statistical analysis. The primary software application used in the class is SPSS 14.0 (Statistical Package for the Social Sciences) which will be used during most class meetings. A student version of SPSS (limited to 50 variables and 1500 cases) is bundled with one of the class texts, SPSS 14.0 Guide to Data Analysis, and a full version of the software is available in the College's computers labs. No prior statistical knowledge is necessary for the class. Those with a solid foundation in quantitative analysis may be better served by a more advanced statistics class.

CLASS STRUCTURE AND REQUIREMENTS:

Classes will include a mix of lecture, demonstration, and hands-on work with computer software and anthropological data sets. We will be using SPSS regularly, with several "lab days" devoted to informal, one-on-one assistance using SPSS in un-graded, in-class assignments.

Six assignments to be completed outside of class give students the opportunity to work through the techniques covered in the course. The course concludes with a final research project involving a data set selected by each student. Students should plan well in advance for this project by selecting a research question and an appropriate data set by mid-November at the latest. Data sets may be drawn from published sources, the research of William and Mary faculty, archaeological or ethnographic reports, or a students' own research. Please consult me if you are having trouble identifying a data set. Students will present a 15 minute summary of their research project during the exam period illustrated by PowerPoint.

GRADING:

Assignments 1-7: 10 % each
Final research project: 30 %

TEXTS:

The texts for the course are Joseph F. Healey's *Statistics: A Tool for the Social Sciences*, Robert Dunnell's *Statistics for Archaeologists*, and *Marija Norusis' SPSS 14.0: Guide to Data Analysis*. SPSS 14.0, student version is bundled with the Norusis text.

COURSE WEB SITE: http://blackboard.wm.edu/

We will make extensive use of a course web site, located on-line at the URL listed above. The web site will include reserve reading, data sets for in-class exercises, and the class assignments. For each assignment, answers will be posted on the web site once all the papers are submitted.

CLASS SCHEDULE:

Aug 30 Course introduction
Assignment 1 distributed – Research Design (due Sept 11)

Sept 4 Quantitative Research and Anthropology: Do I really have to know this stuff?
• Bernard ch 1 - 2 [skim pps. 50 – 64] (Blackboard)
• Gallivan and McKnight 2006 *[skim for an example of quantitative research]* (Blackboard)
• Gallivan 2007 *[skim for a study combining qualitative / quantitative evidence*] (Blackboard)

Sept 6 Statistical Reasoning and Representation
• Healey ch 2 – 4
• Drennan ch 1 – 3

Sept 11 Introduction to SPSS
• Norusis ch 2, 4 - 5
Assignment 2 distributed – Exploratory Data Analysis (due Sept 20)

Sept 13 Lab Day: EDA with SPSS
• Drennan ch 4
• Norusis ch 6 – 7

Sept 18 Lab Day: Creating and Manipulating Databases with Excel, Access, and SPSS (part 1)
Assignment 3 distributed – Database Construction in Excel, Access, SPSS (Due Oct 4)

Sept 20 Lab Day: Creating and Manipulating Databases with Excel, Access, and SPSS (part 2)

Sept 25 The Normal Curve, Samples, and Data Transformation (part 1)
• Norusis ch 10 – 11
• Drennan ch 5, 7
• *Recommended: Healey ch 5 – 7*

Sept 27 The Normal Curve, Samples, and Data Transformation (part 2)

Oct 2 Hypothesis Testing and the *t* Test
• Healey ch 8 – 9
• Drennan ch 11
Assignment 4 distributed – T test (due Oct 23)

Oct 4 Lab Day: Comparing Means
• Norusis ch 12 - 14

Oct 9 Analysis of Variance
• Norusis ch 15
• *Recommended: Healey ch 10*

Oct 11 Chi-square
• Norusis ch 17
• *Recommended: Healey ch 11*

Oct 16 Fall Break

Oct 18 Non-parametric Statistics
• Norusis ch 18 – 19
• *Recommended: Healey ch 13 - 14*
Assignment 5 distributed – Non-parametric statistics (due Nov 1)

Oct 23 Lab Day: Review of ANOVA, Rank Order statistics, and Chi-square

Oct 25 Correlation and Regression
• Norusis ch 20-21
• *Recommended: Healey ch 15*

Oct 30 Calculating Diversity
• Kintigh 1989 (Blackboard)
Assignment 6 distributed – Regression, Correlation, and Diversity (due Nov 13)

Nov 1 Multiple Regression and Correlation
• Norusis ch 23
• *Recommended: Healey ch 17*

Nov 6 Lab Day: Review of Correlation and Regression

Nov 8 Advanced Statistics: Classification and Cluster Analysis
• *Recommended: Shennan ch 11 (Blackboard)*
Assignment 7 distributed – Final Project Proposal (due Nov 27)

Nov 13 Advanced Statistics: Principal Components Analysis and Correspondence Analysis
• *Recommended: Shennan ch 12-13 (Blackboard)*

Nov 15 Lab Day: Review of Advanced Statistical Methods

Nov 20 Pulling It All Together: Organizing and Presenting Quantitative Research Projects

Nov 22 Thanksgiving Holiday

Nov 27 Lab Day: Project Work

Nov 29 Lab Day: Project Work

Dec 4 Lab Day: Project Work

Dec 6 Lab Day: Project Work

TBA Final Presentations

Dec 20 Final project papers due: 4:00 pm, Washington 109