Quantitative Methods in Geography
Geography 3190
Fall 2010: MW 9 – 10:20 pm
Lab 1: Friday 9 – 9:50 am
Lab 2: Friday 10 – 10:50 am
Lecture in ENV 391: Labs in ENV 336

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Office Hours: MW 10:30 am – noon or by appointment

Course Objectives:
This course is designed to immerse students in descriptive and inferential statistics in a problem-oriented research context, primarily within geography. In order to succeed in the course, students must comprehend and be able to communicate the complete analytical process from:

Framing a research question
Generating statistical hypotheses related to that research question
Choosing the appropriate statistical test to test those hypotheses
Interpreting results of the statistical test
Drawing conclusions from the analysis

Students who fully understand the subject matter should be able to accomplish each of these tasks by the end of the class and should be able to read and comprehend analytical publications including scholarly journal articles and research reports that incorporate the use of basic quantitative analyses.

Required Text:
Cronk, B. C. 2008. *How to Use SPSS, Fifth Edition*. Pyrczak Publishing, Glendale, CA.

Supplemental Text:
McGrew, J. C., Jr. & C. B. Monroe. 2000. *An Introduction to Statistical Problem Solving in Geography, Second Edition*. McGraw Hill, Boston.

Grading:

8	Homeworks @ 15 pts each	=	120 pts
4	Exams @ 50 pts each	=	200 pts
4	Projects @ 50 pts each	=	200pts
1	Final Notebook	=	80 pts
1	Cumulative SPSS Practicum @ 200 pts	=	200 pts
1	Cumulative Final Exam @ 200 pts	=	200 pts

Total = 1000 pts *Final Grades (90% & above = A; 80 – 89.4% = B; 70 – 79.4 % = C; 60 – 69.4% = D; below 60 % = F)*

Note that exam dates may change depending on the pace of the course, which varies by semester.

All files, schedules, and due dates for homeworks and projects will be posted through the blackboard site for the course.

COURSE OUTLINE:		**Weekly Readings:**
Weeks 1&2 Aug 26 to Sep 3	Science, Hypothesis Testing, Basic Sampling, Scale Intro to SPSS	Cronk Chs. 1& 2, 6.1 M&M Chs. 1, 2, & 6
Week 3 Sep 8 – 10	Grouping, Central Tendency, Dispersion Descriptive Statistics in SPSS	Cronk Ch. 3 M&M Ch. 3
Week 4 Sep 13 – 17	Finish descriptive statistics: Graphing Data Graphing Data in SPSS	Cronk Ch. 4
Week 5 **Sep 20 – 24**	**Wednesday: Exam 1, weeks 1 to 4** Z-Scores & Basic Probability in Statistical Inference	Reading Handout
Week 6 Sep 27 – Oct 1	Normality, Central Limit Theorem, Confidence Intervals Normality& Confidence Intervals in SPSS	Reading Handout M&M Ch. 7
Week 7 **Oct 4 – 8**	**Wednseday: Exam 2, weeks 5 to 7** Parametric Tests of Sample Differences Student's t tests & ANOVA	Cronk Ch. 6.2, 6.3, 6.4, 6.5 M&M Ch. 10
Week 8 Oct 11 – 15	Non-parametric Tests of Sample Differences Mann-Whitney & Kruskal-Wallis in SPSS	Cronk Ch. 7.3, 7.4, 7.5 M&M Ch. 10
Week 9 Oct 18 – 22	Application of Tests and Synthesis of Results: Sample Differences	Cronk Ch 6 & 7
Week 10 **Oct 25 – 29**	**Wednesday: Exam 3, weeks 7 to 10** Tests on Categorical Data Chi-Square tests in SPSS	Cronk Ch. 7.1 & 7.2 M&M Ch. 11
Week 11 Nov 1 – 5	Application of Tests and Synthesis of Results: Categorical Data Tests	Cronk Ch. 7
Week 12 Nov 8 – 12	Correlation and Simple Linear Regression Correlation and Regression in SPSS	Cronk Ch. 5 Reading Handout
Week 13 Nov 15 – 19	Application of Tests and Synthesis of Results: Correlation & Regression	M&M Chs. 13&14
Week 14 **Nov 22 – 24**	**Monday: Exam 4, weeks 10 to 14** Effect Size	Reading Handout Cronk Appendix A
Week 15 Nov 29 – Dec 3	**Cumulative SPSS Practicum**	
Week 16 Dec 6 – 10	Choosing tests, framing arguments, interpreting results, drawing conclusions **Notebooks due Monday, Dec 13**	

Cumulative Final Exam Monday Dec 13th, 8 am

DISABILITY ACCOMODATION
The Department of Geography, in cooperation with the Office of Disability Accommodations, complies with the Americans with Disabilities Act in making reasonable accommodations for qualified students with disabilities. Please present your written accommodation request by the second lab.

EXTRA CREDIT
The Department of Geography does not allow extra credit assignments (work not specified on a course syllabus).

ACADEMIC DISHONESTY
Students caught cheating or plagiarizing will receive a "0" for that particular assignment or exam. Additionally, the incident will be reported to the Office of Student Rights and Responsibilities for further penalty. According to the UNT catalog, the term "cheating" includes, but is not limited to: (a) use of any unauthorized assistance in taking quizzes, tests, or examinations; (b) dependence upon the aid of sources beyond those authorized by the instructor in writing papers, preparing reports, solving problems, or carrying out other assignments; (c) the acquisition, without permission, of tests or other academic material belonging to a faculty or staff member of the university; (d) dual submission of a paper or project, or resubmission of a paper or project to a different class without express permission from the instructor(s); or (e) any other act designed to give a student an unfair advantage. Altering a returned test and claiming a grader or scanning machine made an error is also considered cheating. The term "plagiarism" includes, but is not limited to: (a) the knowing or negligent use by paraphrase or direct quotation of the published or unpublished work of another person without full and clear acknowledgment; and (b) the knowing or negligent unacknowledged use of materials prepared by another person or agency engaged in the selling of term papers or other academic materials.

CLASSROOM/OFFICE COURTESY
Please follow these guidelines to avoid disrupting the class:
(1) Turn off cell phones before arriving.
(2) Do not arrive late or leave early (except for a bathroom break or emergency).
(3) Do not sleep or eat during class.
(4) Do not work on other assignments during class.
(5) Do not talk when the instructor is lecturing, unless prompted for feedback by the instructor.

ACCEPTABLE STUDENT BEHAVIOR:
Student behavior that interferes with an instructor's ability to conduct a class or other students' opportunity to learn is unacceptable and disruptive and will not be tolerated in any instructional forum at UNT. Students engaging in unacceptable behavior will be directed to leave the classroom and the instructor may refer the student to the Center for Student Rights and Responsibilities to consider whether the student's conduct violated the Code of Student Conduct. The university's expectations for student conduct apply to all instructional forums, including university and electronic classroom, labs, discussion groups, field trips, etc. The Code of Student Conduct can be found at www.unt.edu/csrr

ATTENDANCE/TARDINESS POLICY
After missing (*excused* or *unexcused*) 5 class periods a student will receive a WF (F if after the WF deadline) for the course. Students who are greater than 5 minutes late should come to class so as not to miss the material, but they will be counted absent for the period. Perfect ('perfect' means 'entirely without any flaws, defects, or shortcomings' [dictionary.com]) on-time attendance (lecture and labs) will result in a 3% course grade reward in the final course grade (e.g., an 88% [B] would become a 90% [A]). Those who miss (or are tardy for) only one class period (lecture/lab) will receive a 1.5 % final grade reward.

MISSED-CLASS POLICY
Neither the professor nor the TA re-teaches the course outside of lecture or lab; we are happy to answer questions, clarify content, and provide guidance for those who attend class and come in with informed questions after they have attempted the work themselves. Students who miss class must secure notes from another student in the class; notes will not be provided by the instructor.

University of North Texas
Department of Geography

Matrix Summary of Comparative Methods

Number of Samples	**Type of Test**		
	Non-Parametric		**Parametric**
K	X^2 K-Sample Test	Kruskal-Wallis H-test	Analysis of Variance
2	X^2 Two Sample Test	Mann-Whitney U-test	t-test of difference between means
1	X^2 One Sample Test	Kolmogorov-Smirnov D-Test	t-test
Relationships and Trends	N/A	Spearman Rank Correlation	Product-Moment Correlation Simple Linear Regression
Measurement Scale	**Nominal**	**Ordinal**	**Interval/Ratio**

Adapted from Shaw and Wheeler, *Statistical Techniques in Geographical Analysis.*

Email received in August from Spring 2009 Student

Dear Dr. Wolverton,

I would like to thank you so much for serving as a reference for my interview with Wood Mackenzie. They offered me the job and I accepted about two weeks ago. I've already moved to the Houston area and start on August 17th.

Many of the skills that I acquired from your course proved to be extremely valuable for the interview. Before the interview started, they had me perform quantitative analysis on energy and pricing data for the North American power grid that I would present to the manager and head analysts in a powerpoint presentation. If it had not been for the knowledge that I gained from your course, the interview might have been over at that point. In fact, the head analyst complemented me for including a wider variety of statistical information than any of the other candidates.

Thank you so much again for serving as a reference and for teaching the Quantitative Methods course, without which, I may have never landed this job.

Best Regards,

Student

I promised the student they would remain anonymous.