

Advanced Spatial Analysis

Geography 585

Spring 2006

Course Location:	Breland Hall 185
Lecture time:	Mondays, 4:30 to 7:00 pm
Instructor:	Dr. Christopher Brown
Office:	Breland Hall, Room 103
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EMAIL:	brownchr@nmsu.edu
Office hours:	Monday and Wednesday, 11:00 am to 12:00 pm; Monday, 3:00 to 4:00 pm, & by appointment

Required textbook: James E. Burt and Gerald Barber, 1995. Elementary Statistics for Geographers, 2nd Edition. Guilford Press.

Related course materials: Miscellaneous articles and other materials will be put on reserve in the library, posted to WebCT, or handed out in class; details will be provided during the semester. In addition, various Internet resources will be accessed through use of the Web, and students will be reading the geographic literature extensively in support of the term paper.

Course description and objectives - This course has a two-fold nature. First, the class is designed to introduce or reintroduce students to applications of basic statistical methods within geographic research. Second, the class explores in greater detail the field of geostatistics, techniques that explicitly examine how values of variables vary spatially. Within the department, we are interested in seeing that students have a good feel for a range of geographical data analyses, that students understand the basic concepts involved in spatial analysis, and that students become familiar with and are able to critically review and understand literature describing spatial analysis. The key to effective geographic analysis is to **think spatially about a wide range of geographic problems**, and this course is designed to help develop the spatial cognition that this requires. This class **will not examine** in great detail the specific technical details of statistical techniques, how these techniques were derived, or the computational mechanics of these techniques. The University Statistics Center (<http://www.nmsu.edu/~univstat/main.html>) is well suited for these more mechanical questions, and the staff of this Center can help in these areas.

Course format - The class is designed in a combination of lecture and seminar format. Lecture material will cover the background of descriptive and inferential statistics, and lectures will also introduce the basic assumptions of specific techniques, how they are applied, and how results should be interpreted. A goal of this effort is that students

understand how and why specific techniques are or should be applied and what the results mean. To build on this foundation, we will also examine a range of geographic literature through library research, focusing on critical review of this literature. Some of this material will be provided through handouts or put on reserve; students will also perform a literature search to find other examples of specific techniques we are examining in lecture.

WebCT and World Wide Web Support for this class - This class is offered as a "web-supported" class, which means that we meet "live and in color" as in a traditional class, but course notes (Powerpoint frames) and other helpful material will be provided on the Web. Specifically, we will be using WebCT to connect to a special server at NMSU (salsa.nmsu.edu) that contains all of these materials. Aside from this syllabus (which of course is also available on line) and some miscellaneous materials I provide the first day in class, most other materials and assignments are provided to you via the Web and WebCT.

Exams - Two exams will be given throughout the term which will focus on specific techniques covered in the class. These exams will be essay in nature and will ask that you understand the terminology involved in various methods, that you be able to conceptualize how and when certain methods should be applied, and that you be able to evaluate the results of these techniques. Although you will not need to actually "crunch numbers" through direct application of these tools on the exams, it is fair game that you be asked to outline the application of various techniques we will examine. One goal of this class is that students know how to "go about doing this stuff," and we are keen that you know how to undertake research that would employ these methods. We will also have a comprehensive final exam during the exam period which will be in the same format as the previous midterm exams.

Article reviews and write-ups - As a means of exploring how techniques are applied in geographic research, we will be reading a sampling of geographic literature that reviews the use of certain methods. Each student will have an opportunity to "walk us through" an article; this will involve leading a discussion in a "seminar mode," concisely summarizing the article in question, discussing the specifics of the tool or technique used, and providing some critical evaluation of the use of the tool, given what we have covered in the class. Student presentations will be evaluated in a general manner as to how well these points are covered.

As a means of getting familiar with a broader scope of readings, students will also do some focused library work to find, read in detail, critically review, and write-up 4 peer-reviewed research articles that summarize specific statistical techniques. These assignments and due dates are already posted on WebCT, so you will have adequate advance notice as to what is expected in these write-ups and when they are due. These write-ups will require a similar treatment as the discussion exercise above (summary, diagnosis of the tool used, and critical review), but will be in a written format. Students will need to include a copy of the article being reviewed, and each write-up should be 3-4 pages, word-processed and double spaced, and written clearly and concisely in a form suitable for publication. The

format of these is similar to that employed in book reviews found in research journals, with an emphasis on critical analysis and synthesis. **NOTE** - in recent discussions with a former student from this class that has found "work in the field," these reviews were noted as "the thing that taught me the most about how certain techniques are used and how to interpret the results."

Term paper - The final component of work to be done for this class is a term paper in which students dig much more deeply into a specific tool, technique or method, this being related to a student's thesis topic or general area of research interest. For example, students interested in the use of remote sensing techniques for land use studies may wish to concentrate on principal components analysis. Alternately, a student who is interested in modeling surface water runoff may be more interested in the use of spatial interpolation techniques for generating a continuous surface from point precipitation data. This literature review/term paper should cover at least 15 pieces of literature in reasonable detail and would be a narrative that could serve as the foundation of a thesis literature review -- this would be a good thing! Details are provided in separate handouts and WebCT postings.

Grading and evaluation -- Exams will cover key concepts from lecture, article reviews, and discussions. All written assignments **must** be typewritten, word-processed, or similarly computer-generated and handed in **on time!** If you are turning work in late with a valid excuse, written documentation of such excuse must be attached to the work when you turn it in. Work turned in late without a valid excuse will lose 10% for each day late. No extra credit assignments will be given or accepted, as ample opportunities exist for students to earn the grade they seek with the work detailed below.

Final grades are based on the percentage of total possible points earned by the student during the semester. Withdrawals from this course are students' responsibility, and **the instructor will not withdraw students from this class under any circumstances.** Incomplete grades will not be given except in the case of extraordinary circumstances related to serious illness, bereavement, or personal crises. Documentation will be required in these limited cases, and granting of incomplete grades is solely at the instructor's discretion. Details of the various exercises we will do in class and their weight towards the final grade in the course are provided below:

Library Lunge - Reviews/write-ups (n=4)	25%
Midterm exams (n=2)	20%
Final exam (Thursday, 8 May 2006, 4:00 to 6:00 pm)	20%
Final Term Paper	25%
Class participation and article discussions	10%

Academic Integrity - As stated in the NMSU Graduate Catalog, "Students at NMSU are expected to observe and maintain the highest academic, ethical, and professional standards of conduct." I expect all work submitted in this class to represent each student's own individual efforts, and any student found guilty of cheating or plagiarism will be subject to the strictest disciplinary action, including issuance of a failing grade. As stated by the NMSU Student Handbook, plagiarism is defined as "submitting examinations, themes, reports, drawings, laboratory notes, undocumented quotations, computer-processed materials, or other material as one's own work when such work has been prepared by another person or copied from another person." Also, as stated by the Academic Dean of Students in the NMSU College of Arts and Sciences, "both intentional and unintentional plagiarism is considered academic misconduct." If you have any questions or concerns regarding the honesty or integrity of work being done by you or a classmate, please feel free to talk to me. Further information concerning the University's Code of Conduct can be found at the following URL on the NMSU Webpage:

http://www.nmsu.edu/Campus_Life/vpsa/public_html/SCOC

Further information concerning plagiarism can also be found at the website of Georgetown University, a source that is widely acknowledged for work in this area:

<http://gervaseprograms.georgetown.edu/hc/plagiarism.html>

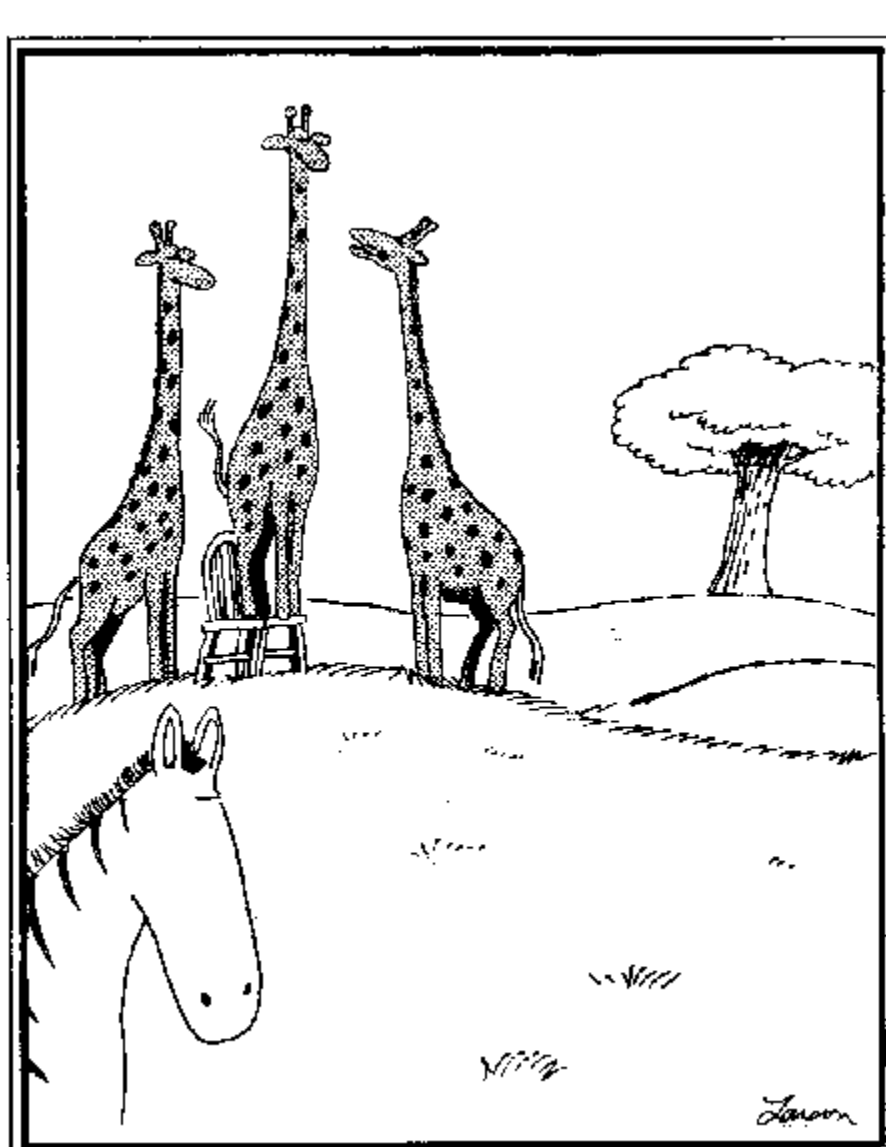
Students with Disabilities - As a faculty member at New Mexico State University, I subscribe to university policy on students with disabilities who may have special needs in meeting class requirements. Students with physical, psychological, or learning disabilities are encouraged to contact the office of Services for Students with Disabilities (SSD). If you have a documented disability and anticipate needing accommodations in this course, please meet with me soon. For more information about the programs and services available, including academic accommodations for students with disabilities, contact the office of SSD in Garcia Annex, 646-6840 (voice) or 646-1918 (TTD/text telephone).

If you have a condition which may affect your ability to exit safely from the premises in an emergency or which may cause an emergency during class, please discuss any concerns with me and Ms. Jane Spinti, SSD Coordinator. Feel free to call Ms. Elva Telles (EEO/ADA and Employee Relations Director) at 646-3333 with any questions about the Americans with Disabilities Act (ADA) and/or Section 504 of the Rehabilitation Act of 1973. All medical information will be treated confidentially.

Policy on attendance and due-dates for assignments -- Timely attendance in class is required and forms a portion of your grade. Failure to meet course requirements due to illness or other legitimate reason will require documentation for alternate arrangements to be made or to turn work in late without a penalty. If you have a scheduling conflict or personal situation that will cause you to arrive late to class or leave early on a regular basis, please show the courtesy to advise me ahead of time. No make-up exams will be

given unless prior arrangements have been made with me or documentation of an illness or other legitimate excuse is provided.

Seeking help and access to faculty -- If you feel that you are having difficulty keeping up with class assignments or in understanding the material we are covering, please see me **as soon as possible!** Please note the office hours posted at the beginning of the syllabus. If you cannot make it to my office during these hours, please contact me via EMAIL or phone to make an appointment. I hope you all enjoy this class and find the things we will learn to be of interest and of use to you in your graduate work at NMSU. Good luck!



"No lions anywhere? ... Let me have the chair."