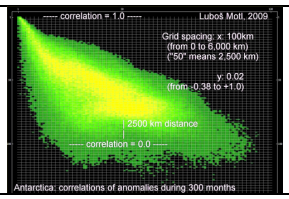
	**Advanced Spatial Analysis** **Geography 585** **Spring 2020**
Course location:	**Breland Hall 194 (Lecture/seminar) and Breland 192 (Laboratory)**
Class meeting time:	**T/Th – 1:30-2:45 pm (BD 194 - Lecture) and Wednesday – 3:00-5:00 pm (BD 192 - Laboratory)**
Instructor:	**Dr. Christopher Brown**
Office/Office phone:	**Breland Hall, Room 149, 505-646-1892**
EMAIL:	**brownchr@nmsu.edu**
Office hours:	**Dr. Brown (BD 149), Monday , 1:30-3:00 pm, Tuesday, 3-4pm, Wednesday, 2-3pm & by appt.** **TA = Joel Cisneros (BD 140),** Tuesday 9:30 am - 11:30 am and Thursday 10:00 am - 11:00 am

Reading materials and class text: Required and recommended texts are available in the campus Barnes and Noble Bookstore, the off campus bookstore, and from online book vendors such as www.amazon.com and http://www.barnesandnoble.com/.

Required text: Past classes have argued for a traditional statistics text, and a solid book I have used in the past has been updated and re-issued in paperback at a very reasonable price. Used versions of these books are available at a range of outlets at very competitive prices.

- McGrew, J.C., A.J. Lembo, and C.B. Monroe. 2014. **An Introduction to Statistical Problem Solving in Geography.** Long Grove, IL: Waveland Press.

Recommended text: Latter laboratory exercises will parallel a very good book from ESRI Press that reviews basic statistical routines and also covers a range of spatial statistics that are coded into the ESRI Spatial Statistics Toolbox. The book is not terribly current, but it is an excellent resource I regularly consult. A copy is also available on reserve in Zuhl Library.

- Mitchell, Andy, 200. **The ESRI Guide to GIS Analysis: Vol. 2: Spatial Measurements & Statistics.** Redlands, CA: ESRI Press.

Course description and learning objectives - This course has a two-fold nature. First, the class is designed to introduce or reintroduce students to basic statistical methods used in geographic research. Second, the class explores in greater detail the field of geospatial statistics, techniques that explicitly examine how **values of variables vary spatially**. Within the Department, we are interested in seeing that students understand the basic concepts involved in spatial analysis, that students know how to actually perform select spatial analysis, and that students 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 and related technical skills 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. Numerous books in the NMSU Library collection are well suited for these more mechanical questions, and A STAT classes can also provide more technical information.

The class has several learning outcomes, as noted below. At the end of class, you will be able to:

- Describe a range of basic **aspatial** statistical tools and the questions they help us answer,
- Describe a range of basic **spatial** statistical tools and the questions they help us answer,
- Through a series of "hands on" laboratory exercises, demonstrate basic proficiency of a select set of **aspatial** and **spatial** statistical tools,
- Through focused library research and the writing of article reviews and an annotated bibliography, explore and discuss the specific statistical routine that you "adopt" in adequate detail to demonstrate a solid grasp on the tool and its usefulness in geographic research, and
- Through both written article reviews and a presentation you make to the class, **critically review** research articles deploying your tool of choice.

Course format - The class is designed in a combination of content sharing, discussion, laboratory, and seminar format. Content sharing and related presentations will cover the background of descriptive and inferential statistics and also introduce the basic assumptions of specific techniques, how they are applied, and how results should be interpreted. A goal of the class is that students understand how and why specific techniques are or should be applied and what the results mean. To build on this foundation, students will also examine a range of geographic literature concerning a specific tool through library research, focusing on critical review of this literature. Students will also share the results of their literature search with their peers in class by presenting the reviews of relevant articles during scheduled sessions as noted in the class schedule. More details will be provided below and in additional documents.

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, relevant literature, lab exercises, and other helpful material will be provided on the Web via Canvas (learn.nmsu.edu). Aside from this syllabus & schedule (which of course are 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 Canvas. **NOTE - I take all email at brownchr@nmsu.edu, NOT through CANVAS. Also, NMSU policy states that students should forward email received at their NMSU email address to any off-campus email addresses they routinely use.**

Exams - Two hourly 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 to demonstrate 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. These exams will be very similar to the diagnostic exercise you do the first day in class. Exam questions will ask you define specific routines, then demonstrate a riddle they can solve, or present you a riddle, and ask that you outline how to solve it. 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 take home final exam, which will be in the same format as the hourly exams.

Library Lunge - As a means of getting familiar with a broader scope of readings and digging into specific analyses in greater depth, you will do some focused library work to find, read in detail, critically review, and write-up **three** peer-reviewed research articles or book chapters that discuss geographic research that deploys a statistical technique **of your choice**. These assignments and due dates are posted in the course schedule and separate postings on Canvas, giving you adequate advance notice as to what is expected in these write-ups and when they are due. These write-ups will include a summary of the research conducted, diagnosis of the tool used, and critical review. Students will need to include a copy of the article being reviewed (or a URL where the article is available), and each write-up should be 3-4 pages, computer generated, double spaced, and written clearly and concisely in a form suitable for publication. The format of these is similar to that employed in research notes found in research journals, with an emphasis on critical analysis and synthesis. **NOTE** - in past discussions with former students from this class that have found "work in the field," students noted these reviews were "the thing that taught me the most about how certain techniques are used and how to interpret the results." Additional details of the Article Reviews and a rubric are provided in separate documents. Please note these reviews will turned in the "Assignments Tool" in Canvas.

Note on originality of work –Please review the portion of the syllabus that discusses academic integrity and plagiarism, and insure you are doing your own work and citing the sources of the information you are using to write your paper. **NMSU has recently purchased "Turn-It-In," a Web-based tool that allows instructors to detect and document plagiarism, and I will be using the tool to review your papers. Here is the drill on the use of TurnItIn:**

- If you chose to do so, you can turn in the paper via Canvas one week **PRIOR** to the due date. I have set TurnItIn to provide feedback at the time of submission, so you can see this feedback via Canvas shortly after you submit the paper.
- You then have one week to make any edits you feel are warranted to address any issues that TurnItIn raises.
- I will also review the final paper you turn in by the due date with TurnItIn, and any papers a generating overall Similarity Score of greater than 20% will be flagged as plagiarized, warranting a discussion and potential sanction. Please see me with any questions on these issues.

Annotated Bibliography - The final result of this "library lunge" is an annotated bibliography in which students dig more deeply into their specific statistical technique than the article reviews allow, and my hope is that this topic is related to a student's thesis or dissertation topic. This annotated bibliography should cover at least 15 pieces of literature in reasonable detail and could serve as the foundation of the methods section of a thesis or dissertation literature review – wouldn't this be helpful?! Additional details of the Annotated Bibliography are provided in a separate document.

Student lead presentations– In addition to doing the written reviews discussed above, students will also "walk us through" three articles they have reviewed, concisely summarizing the article, discussing the specifics of the tool or technique used, posing some discussion questions to explore with the class,

and providing some critical evaluation of the use of the tool. Student presentations will be evaluated in a general manner as to how well these points are covered, forming part of the class participation grade for the class. A rubric is provided in a separate document that has more details on these presentations and how I evaluate them.

Laboratory Exercises – To provide some opportunity for students to actually "crunch some numbers" and explore spatial analysis, students will do several laboratory exercises. The first of these will cover basic **spatial** and **aspatial** statistical routines, and we will then examine the explicit nature of geographic data and geoprocessing of surfaces and spatial statistical techniques in latter labs. Details of these exercises will be provided on separate documents that will be posted on Canvas.

Grading and evaluation – Exams will cover key concepts from lecture, article reviews, and discussions. All written assignments **must** be 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 any relevant 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.

NOTE - NMSU has moved to a differential grading system, whereby +/- grades earn more or less GPA points than a straight grade of A/B/C/D earned in the past. I deploy this grading model in my classes. The following link provides detail on how this grading system generates the GPA points students will receive for received:

- https://catalogs.nmsu.edu/nmsu/regulations-policies/#newitemtext

Final grades are based on a "09/80/70/60" classification of the percentage of total possible points earned by the student during the semester. Withdrawals from this course are your responsibility, and **I will not withdraw students from this class under any circumstances.** Incomplete grades will not be given except in the case of serious illness, bereavement, or personal crises. Documentation will be required in these limited cases, and granting of incomplete grades is solely at my discretion. The weights that each type of exercise will earn towards the final grade in the course are provided below:

Library Lunge - Reviews/write-ups (n=3)	20%
Hourly exams (n=2)	20%
Laboratory Exercises	20%
Take Home Final Exam **(Turn in on Tuesday, 7 May 2019, discuss in class same day, 1-3pm)**	15%
Annotated Bibliography	15%
Class participation and article presentation and 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 Code of Conduct, plagiarism is defined as follows:

> "Plagiarism is using another person's work without acknowledgment, making it appear to be one's own. Any ideas, words, pictures, or other source must be acknowledged in a citation that gives credit to the source. This is true no mater where the material comes from, including the Internet, other student's work, unpublished materials, or oral sources. Intentional and unintentional instances of plagiarism are considered instances of academic misconduct. It is the responsibility of the student submitting the work in question to know, understand, and comply with this policy." (NMSU Student Code of Conduct 2020).[1]

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://deanofstudents.nmsu.edu/student-handbook/1-student-code-of-conduct/3-academic-misconduct.html

Further information on plagiarism can be found at the following NMSU Library website:

- http://lib.nmsu.edu/plagiarism

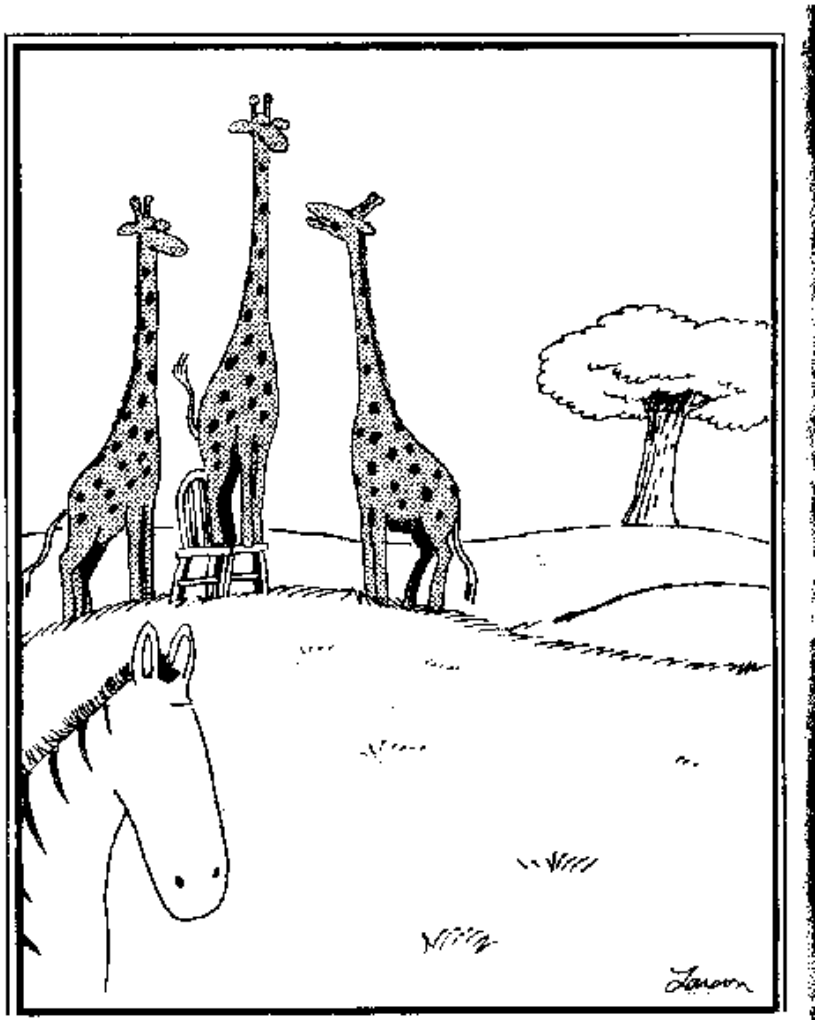
Students with disabilities and discrimination issues - I subscribe to and fully support university policy on students with disabilities and special needs in meeting class requirements. Students with physical, psychological, or learning disabilities are encouraged to contact the office of Student Accessibility Services (SAS) concerning issues related to the Americans with Disabilities Act and/or Section 504 of the Rehabilitation Act of 1973. 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 SAS, at 646-6840, sas@nmsu.edu, or at http://sas.nmsu.edu/. If you have a condition which may affect your ability to exit safely from class in an emergency or which may cause an emergency during class, please discuss this with me at the earliest opportunity. All information shared with me in this area will be treated confidentially.

NMSU policy prohibits discrimination on the basis of age, ancestry, disability, gender identity, genetic information, national origin, race, religion, retaliation, serious medical condition, gender, spousal affiliation, and protected veteran's status. Furthermore, Title IX of the Civil Rights Act of 1964 prohibits sex discrimination, including sexual misconduct, sexual violence, sexual harassment, and retaliation. I fully support and abide by these policies to support a work and study environment free of harassment and discrimination. Laura Castille, Director of NMSU's of the Office of Institutional Equity, can also be contacted at 575-646-2446, or castille@nmsu.edu, with any questions you may have about NMSU's Non-Discrimination Policy or concerns you have related to discrimination or harassment.

[1] http://deanofstudents.nmsu.edu/student-handbook/1-student-code-of-conduct/3-academic-misconduct.html

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. Also, please contact me in advance if you are going to miss a given class session. 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!** I want students to do well in this class, and I am willing to work with you as needed to make this a successful class that will support your thesis or dissertation research. 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 phone or EMAIL to make an appointment. I hope you all find the things we will learn to be of interest and of use to you in your graduate work at NMSU.



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