

GEOSPATIAL TECHNIQUES FOR NATURAL RESOURCE ASSESSMENTS (GEOG 586)

New Mexico State University
Department of Geography

SPRING 2010

Class: Mon, 15:30 PM – 18:00 PM; Breland Hall 192

Instructor: **Dr. Michaela Buenemann**

Office: Breland Hall #108

☎ (575) 646-4087

✉ elabuen@nmsu.edu

Office Hours: Mon & Wed, 9:30 – 12:30 AM; by appointment

Course Description

“**Ensure environmental sustainability**” is one of eight Millennium Development Goals the **United Nations** formulated in 2008. “**Energy and Environment**” are central issues on the **national** agenda of our President, Barack Obama. **NMSU** declared 2009 its “**Year of Sustainability**”. From local to global levels, there is thus a concern about **human-environment relationships**, an inherently geographical theme. **Geographic Information Science and Technology** (GIS&T; e.g., Remote Sensing and Geographic Information Systems) have assisted in describing and explaining these relationships for quite some time now, but they also hold enormous unexplored potential to help tackle our **BIG ISSUES** (and those of future generations). And this is what this course is all about: the application of geospatial data and techniques for the monitoring and assessment of natural resources. At the beginning of the semester, we will focus on the analysis and evaluation of current uses, potentials, and challenges of GIS&T. After that, however, we will take action and design, implement, and communicate an original research project that integrates Remote Sensing and Geographic Information Systems to model some local or regional natural resource management issue.

Student Learning Outcomes

1. Evaluate current uses, challenges, and potentials of GIS&T in the context of natural resource assessment and management.
2. Acquire a series of new (to students) technical skills in remote sensing and geographic information systems.
3. Design and execute a research project that integrates remote sensing and geographic information systems for the purpose of monitoring and assessing a specific natural resource management issue.

Course Materials

Website

The website for this course can be found at <https://learn.nmsu.edu/>. To access course materials, simply log in to your Blackboard account and click the link for this course. On the website, you will find lecture slides, assignments, announcements, your grades, and more. The website is a key element of this course and you are required to review its contents regularly. If you encounter problems related to the website, please contact me immediately.

E-mail

Official communication to you will often come through your NMSU e-mail box, not through your Yahoo, Gmail, or other personal non-NMSU e-mail box). Please access your NMSU e-mail regularly, or forward it to your current use address, as your success in college may ride on your ability to respond quickly. I do NOT use the e-mail tool in Blackboard. All e-mail correspondence in this class will occur via NMSU email.

Readings

There is NO *required* textbook for this class. Required and optional readings will be available to you on Blackboard and in our course folder on Geography's Mapper drive in the lab.

Grading

Your final course grade is determined by the amount of points you accrue out of a total possible 1000 points.

LO-Responses (× 5)	75 points	7.5 %	} 1,000 Points (100 %)
Homework (× 3)	100 points	10 %	
Annotated Bibliography	100 points	10 %	
Project	600 points	60 %	
Participation	125 points	12.5 %	

Learning Outcomes (LOs): Many learning outcomes (i.e., descriptions of things you should be able to do) could be formulated for each class meeting, but some are particularly crucial to help you acquire the three overall learning outcomes of this course (p. 1). A set of these crucial learning outcomes will be provided to you on five occasions throughout the semester. Your task will be to show me that you have acquired these learning outcomes (e.g., define this or synthesize that) by submitting to me a response to them (e.g., spatial autocorrelation is "..."). The LO-Responses replace a series of tests and exams during the term and thus give you additional control over your final course grade. My hope is that the LO-Responses will serve as an incentive for you to prepare class materials and be engaged actively with your peers and me at all times. Due dates for the completed learning outcomes are provided in the tentative course schedule below. Late submissions will not be accepted, except in the case of prolonged illness that is documented in writing by your doctor. I will excuse you from class for documented University-sanctioned, work-related, or religious activities, but these activities cannot serve as excuses for late submissions of LO-Responses, which are to be submitted via email. Further details concerning the learning outcomes will be provided to you in class and on the course website.

Homework: There will be three hands-on homework assignments. Specific instructions for each will be made available to you in class and via the course website. The rules on due dates outlined for LO-Responses above apply equally to the homework assignments.

Annotated Bibliography: You will be expected to locate, read, and evaluate critically fifteen articles of particular relevance to your project and to document these in reasonable detail in an annotated bibliography. Further details concerning the annotated bibliography will be provided to you in class and on the course website. The rules on due dates outlined for LO-Responses above apply equally to this assignment.

Research Project: All students will be working on either a team research project this term. Details regarding the project will be made available to you on the course website. Note now, however, that the project will be divided into several tasks, each with its own due date. **Late submissions are unacceptable—the team’s progress on the project depends on your timely contributions!**

Peer Evaluation: Collaboration is an important component of most jobs and tends to be very rewarding. Once we are ready to begin work on our project(s), you will thus be divided into teams. Members of every individual team will complete project tasks as just that—a team. However, while each team member will initially receive the same grades as all other team members, adjustments of each team member’s grades (upward or downward) will be made based on peer evaluations that assess an individual’s contribution to the success of the team (e.g., preparedness, reliability, participation in discussions, ability to compromise). Results from the peer evaluations will be used to adjust team grades acquired throughout the term. It is thus in your own best interest to always be prepared and contribute as much as possible to teamwork and discussions. Further details regarding teamwork and peer evaluations will be provided to you in class and on the course website.

Participation: Your participation in this class will be determined by both your instructor and peers. Your participation grade will largely be based on the following criteria: attendance; participation in class discussions and activities; and general behavior (e.g., assistance to other students; ability to compromise and respect other people’s ideas; ability to motivate others; etc.).

Policies, Codes, Etc.

CODE OF ACADEMIC INTEGRITY: Enrollment in this course and acceptance of this syllabus is your **CONTRACT** constituting acceptance of all University policies regarding academic integrity, including but not limited to cheating and plagiarism. You are expected to comply fully with the NMSU Honor Code as presented in the Student Handbook and on NMSU’s websites (e.g., <http://www.nmsu.edu/~vpsa/SCOC/intro.html>). Students who violate the NMSU Student Code of Conduct will be dealt with severely, at both the course and the University level. Please see me if you have any questions concerning this matter.

STUDENTS WITH DISABILITIES: If you have a documented physical, psychological, or learning disability and anticipate needing accommodations in this course, please meet with us immediately so that we can discuss ways to ensure your full participation in the course. If you determine that formal, disability-related accommodations are necessary, you must be registered with “Services for Students with Disabilities” (<http://www.nmsu.edu/~ssd/index.html>); 575-646-

6840) and notify us of your eligibility for reasonable accommodations. We can then plan how best to coordinate your accommodations.

ABSENCE POLICY: All holidays or special events observed by organized religions will be honored for those students who show affiliation with that particular religion. Absences pre-approved by the NSMU Dean of Students (or Dean's designee) will be honored. I don't really have any additional absence policies. Just keep the following three things in mind: (1) learning is your responsibility and, if you miss class, you will have to figure out how to "make it up" and (2) your peers will evaluate you in terms of your contributions to the success of your team and the class.

WITHDRAWALS AND INCOMPLETES: Withdrawals from this course are solely your responsibility; we will not withdraw or drop you from this class under any circumstances! If you no longer wish to be enrolled in this course, you must drop it. Students still on the class roll at the end of the semester will be issued grades based on work completed. Incomplete grades will not be given except in the case of extraordinary situations related to serious illness, bereavement, or personal crises; documentation will be required in these limited cases, and incompletes will be granted solely at our discretion.

GUIDELINES FOR CLASS DISCUSSIONS: During the semester, many opinions will be voiced in the class. You may strongly disagree with some of these, or you may find them amusing. Outbursts can be misinterpreted or counterproductive to meaningful and thoughtful debate. Therefore, it is important that you exercise self-discipline and self-control, and treat all members of the class with the courtesy that you are entitled to receive in turn. The key words are: respect and courtesy. Please turn off cell phones and beepers while in class. Thank you!

WHAT YOU CAN EXPECT FROM ME: I will be available in class, during office hours and scheduled appointments, and via email to respond to any questions or concerns you may have. Don't be shy and contact me as soon as ambiguities, problems, or concerns arise! I will take all of your concerns seriously and respond to you as soon and as specific as possible. I will address any issues that are of importance to all students in class and on Blackboard. I will do my very best to always be prepared for class, grade assignments fairly, and return your work promptly (within one week).

WHAT I EXPECT FROM YOU: Enrollment in this course and acceptance of this syllabus is your **CONTRACT** constituting acceptance of ALL New Mexico State University policies and codes (See above.) as well as ALL specific policies outlined in this syllabus. I expect you to be on time for all class-related activities, submit all tasks as instructed, and always show "good" behavior toward both your instructor and peers. Have fun!

SYLLABUS MODIFICATION: I reserve the right to modify this syllabus during the semester as considered necessary to enhance the quality of the instruction, to meet the needs of students in the class and to achieve the course objectives. Any changes to the syllabus (or to the course schedule) will be announced in class and on Blackboard and you are responsible for being aware of them.

Tentative Course Outline

PART I: CHALLENGES AND POTENTIALS OF GIS&T FOR NATURAL RESOURCE ASSESSMENTS

2	01/18	<i>Martin Luther King Holiday: No Classes</i>
3	01/25	A Warm Welcome & Syllabus Introduction - Sustainability & Natural Resources - GIS&T: Remote Sensing, Geographic Information Systems, Etc. - Challenges and Potentials of Geospatial Approaches
4	02/01	What's Been Happening? ✓ Homework #1 Due: Literature Review & Discussion
5	02/08	What's Been Happening? ✓ Homework #2 Due: Literature Review & Discussion ✓ LO #1 Due
6	02/15	Where to From Here? ✓ Homework #3 Due: Individual Research Proposals ✓ LO #2 Due

PART II: RESEARCH PROJECTS

7	02/22	To be determined based on discussions thus far
8	03/01	To be determined based on discussions thus far ✓ Annotated Bibliography, Task 1 Due
9	03/08	To be determined based on discussions thus far LO #3 Due
10	03/15	To be determined based on discussions thus far ✓ Annotated Bibliography, Task 2 Due
11	03/22	<i>Spring Break</i>
12	03/29	To be determined based on discussions thus far LO #4 Due
13	04/05	To be determined based on discussions thus far
14	04/12	To be determined based on discussions thus far LO #5 Due
15	04/19	To be determined based on discussions thus far ✓ Annotated Bibliography, Task 3 Due
16	04/26	To be determined based on discussions thus far
17	05/03	15:30 – 17:30 PM: Project Presentations (~ Final Exam)