GIS 415 Spatial Analysis  
Spring 2018

Instructor: Dr. Daniel G. Scognamillo  
Office: Forestry 203E  
Phone: 468-5993  
Email: dgscognamillo@sfasu.edu

Office Hours:  
Mon 08:00 AM-11:00 AM  
Tue 09:00 AM-11:00 AM  
Wed 08:00-11:00 AM  
Thur 09:00 AM-12:00 PM  
Also by appointment

Lectures: Mon/Wed 11:00-11:50 classroom FOR 208  
Labs: Mon/Wed 12:00 - 2:50 lab FOR102  
Tue/Thu 8:00-8:50 classroom FOR208

Course Description
This course is intended to acquaint students with analytical techniques used in the identification and description of spatial patterns. The course offers a balance between theoretical sections and practicums with special emphasis on sampling design, statistics, visualization, computational methods, and interpretation.

Course Objectives

Upon completion of the course, students should:
- Understand concepts and application of statistical tools for the analysis of spatially referenced data.
- Be able to recognize and implement appropriate methodology and analysis to address research questions with a spatial component.
- Understand the scientific method as applied to scientific research in spatial sciences, including problem formulation, data collection, and data analysis and result interpretation.

Program Learning Outcomes
The course is designed to address the following Program Learning Outcomes, as given in the Bachelor of Science in Forestry Program Matrix:

1. Demonstrate understanding and competency of forest ecology and biology;
2. Demonstrate understanding and competency in the measurement of forest resources;
3. Demonstrate understanding and competency in managing forest resources;
4. Demonstrate understanding and competency of forest resource policy, economics, and administration.
5. Demonstrate understanding and competency in oral and written communication skills.

Items #1 - #4 above are required by the Society of American Foresters, the program’s accrediting agency.

B.S. Forestry Program Learning Outcomes  
Proficiency Levels

<table>
<thead>
<tr>
<th>Forestry Common Core</th>
</tr>
</thead>
<tbody>
<tr>
<td>GIS 415</td>
</tr>
</tbody>
</table>
**Student Learning Outcomes**

Upon completion of the course, students will:

a. Foundational knowledge.
   - understand the most current techniques in spatial analysis.
   - understand major concepts related to the design and implementation of scientific research.
   - formulate valid criteria for the selection of the appropriate techniques to address specific goals in the analysis of spatial data.

b. Application.
   - find information on and analyze current spatial science issues.
   - identify current knowledge gaps and needs in spatial science.

c. Integration.
   - identify the interactions between spatial science and other realms of knowledge.

d. Human dimension.
   - identify ways in which one's or someone else's personal life could affect or be affected by implementation of spatial analysis and description of spatial patterns.
   - intelligently discuss important issues in spatial science with other professionals.

e. Future learning.
   - be familiar with a number of popular spatial science journals and other sources of knowledge about spatial science analysis.
   - have some specific ideas about what other knowledge would be desirable to have about new spatial analyses or improvement for current ones.

**Grading**

Faculty members may use a variety of factors including assignments, oral and written quizzes, examinations, class attendance, and other course activities to determine course grades as listed in their course syllabi (SFASU Policy 5.5.). Your final grade for this course will be calculated as the percentage of the total points (600 pts) you obtained by completing all the course requirements during the semester (quizzes, lab reports, midterm exam and final exam). No other special assignment will be given to any student.

Grades should only be changed in cases of error or, in the case of WH, when the course requirements have been completed (SFASU Policy 5.5.). “A student may appeal a final grade if it can be demonstrated that the instructor did not adhere to stated procedures or grading standards, or if other compelling reasons exist to change the grade. A student may not appeal due to general dissatisfaction with a final grade or disagreement with the instructor’s professional judgement regarding the quality of the student’s work” (SFASU Policy 6.3.)

Grades in this class will be based on a combination of quizzes, exams, and lab reports.

<table>
<thead>
<tr>
<th>Weekly quizzes/lab reports</th>
<th>400</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mid-term exam</td>
<td>100</td>
</tr>
<tr>
<td>Final exam</td>
<td>100</td>
</tr>
</tbody>
</table>

**Total** 600

Course grades will be assigned according to the following scale:

- A = 90-100 %
- B = 80-89.99 %
- C = 70-79.99 %
- D = 60-69.99 %
- F = 0-59.99 %
Written Assignments
- Lab reports: students will be responsible for completing each lab and submitting a report by the due date each lab and turning in a report due at the beginning of the following lab. All reports must be typed and electronic submitted via D2L (dropbox) by the due date for full credit. Late submissions will not be accepted.
- Quizzes: comprehension of concepts developed in class will be assessed by weekly quizzes. Each quiz will focus on topics developed the previous week. Students will receive zero points for missed quizzes.

Exams
Two formal written exams (one midterm, one final) are scheduled for the semester. Each exam will cover concepts covered in lectures (theory) and applications in lab. Topics included in each exam will be announced by the faculty. Final exam is cumulative.

Responsible Use of Technology
It is expected that all students will only use cell phones, PDAs, laptop computers, MP3 players and other technology outside of class time or when appropriate in class. Answering a cell phone, texting, listening to music or using a laptop computer for matters unrelated to the course may be grounds for dismissal from class or other penalties.

Classroom Behavior
Disruptive, distracting, or disrespectful behavior will not be tolerated. Students who disrupt the learning environment may be asked to leave class and may be subject to judicial, academic, or other penalties. The instructor shall have full discretion over what behavior is appropriate/inappropriate in the classroom.

Other policies
All of the students in this class and in the Arthur Temple College of Forestry and Agriculture are expected to conduct themselves in an ethical and professional manner. For professionals in natural sciences, the Ecological Society of America has established a Code of Ethics to which these professionals are expected to adhere. I strongly encourage you to read and abide by these guidelines, available at http://www.esa.org/aboutesa/codeethics.php.

Academic Integrity (A-9.1)
Academic integrity is a responsibility of all university faculty and students. Faculty members promote academic integrity in multiple ways including instruction on the components of academic honesty, as well as abiding by university policy on penalties for cheating and plagiarism.

Student Academic Dishonesty Policy (4.1)
Academic integrity is a responsibility of all university faculty and students. Faculty members promote academic integrity in multiple ways including instruction on the components of academic honesty, as well as abiding by university policy on penalties for cheating and plagiarism. Definition of Academic Dishonesty: Academic dishonesty includes both cheating and plagiarism. Cheating includes but is not limited to (1) using or attempting to use unauthorized materials to aid in achieving a better grade on a component of a class; (2) the falsification or invention of any information, including citations, on an assigned exercise; and/or (3) helping or attempting to help another in an act of cheating or plagiarism. Plagiarism is presenting the words or ideas of another person as if they were your own. Examples of plagiarism are (1) submitting an assignment as if it were one's own work when, in fact, it is at least partly the work of another; (2) submitting a work that has been purchased or otherwise obtained
from an Internet source or another source; and (3) incorporating the words or ideas of an author into one’s paper without giving the author due credit. Please read the complete policy at http://www.sfasu.edu/policies/4.1-student-academic-dishonesty.pdf

**Penalties for Academic Dishonesty (Policy 4.1)**
Penalties may include, but are not limited to, reprimand, no credit for the assignment or exam, resubmission of the work, make-up exam, failure of the course, or expulsion from the university.

**Course Grades Policy (5.5)**
Ordinarily, at the discretion of the instructor of record and with the approval of the academic chair/director, a grade of WH will be assigned only if the student cannot complete the course work because of unavoidable circumstances. Students must complete the work within one calendar year from the end of the semester in which they receive a WH, or the grade automatically becomes an F. If students register for the same course in future terms the WH will automatically become an F and will be counted as a repeated course for the purpose of computing the grade point average. Please read the complete policy at http://www.sfasu.edu/policies/5.5_course-grades.pdf

**Academic Accommodation for Students with Disabilities Policy (6.1)**
To obtain disability related accommodations, alternate formats and/or auxiliary aids, students with disabilities must contact the Office of Disability Services (ODS), Human Services Building, and Room 325, 468-3004 / 468-1004 (TDD) as early as possible in the semester. Once verified, ODS will notify the course instructor and outline the accommodation and/or auxiliary aids to be provided. Failure to request services in a timely manner may delay your accommodations. For additional information, go to http://www.sfasu.edu/disabilityservices/

**Proposed lecture and lab topics**
These are proposed topics to be covered during the semester. In order to improve the learning experience of students in the class, and to increase the probability of achieving the Student Learning Outcomes, the professor reserves the right to modify the order in which topics are presented, and to modify this list by adding or deleting topics as the semester progresses.

<table>
<thead>
<tr>
<th>Week</th>
<th>Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Spatial data and spatial data analysis. Population and samples. Sampling and sampling design.</td>
</tr>
<tr>
<td>3</td>
<td>Descriptive and inferential statistics and interpretation. Hypothesis testing.</td>
</tr>
<tr>
<td>4</td>
<td>Examining the association between variables. Correlation and regression analyses. Simple linear regression and Geographically Weighted Regression.</td>
</tr>
<tr>
<td>8</td>
<td>Interpolation. Kriging methods.</td>
</tr>
</tbody>
</table>
COURSE ACADEMIC CODE OF HONOR

As a student in this course I commit myself to producing academic work of integrity – that is, work that adheres to the scholarly and intellectual standards of accurate attribution of sources, appropriate collection and use of data, and transparent acknowledgement of the contribution of others to their ideas, discoveries, interpretations, and conclusions. Cheating on exams or problem sets, plagiarizing or misrepresenting the ideas or language of someone else as my own, falsifying data, or any other instance of academic dishonesty violates the standards of our class, the Arthur Temple College of Forestry and Agriculture, the university, our community, as well as the standards of the wider world of learning and affairs.

PLEDGE TO ABIDE BY THE HONOR CODE

As a student in this course and a member of the SFA community,
I will not participate in or tolerate academic dishonesty.

__________________________________         _____________________________________
Name                                                                                                    Signature

COURSE:
GIS 415 Spatial Analysis
Spring 2018