SYLLABUS
GIS 410/510 Landscape Modeling Syllabus and Policies, Spring 2020

Instructor: Dr. David L. Kulhavy, Laurence C. Walker Distinguished Professor
Office: Forestry Building, Room 203F; Phone: Work - 468-2141
Office Hours: 9:00 am to 10:30 am and 4:30 pm to 5:00 pm Daily or By Appointment

Meeting Times: M 5:00-8:45 Monday, For. 108

Course Description: 3 Credit Hours; modeling of natural resource ecosystems based using geospatial techniques in natural resources

Course Objectives: Application of landscape modeling to solving management of geospatial applications for natural and cultural resources. Principles from landscape ecology will be used to make management decisions for planning of natural resource management in a forested environment.

Program Learning Outcomes: GIS 410

The course shall meet the following BS Geospatial Science learning outcomes:
1. Demonstrate understanding and competency of landscape modeling;
2. Demonstrate understanding and competency in the use of landscape modeling in spatial analysis of industrial forest management;
3. Demonstrate understanding and competency in landscape modeling
4. Demonstrate understanding and competency of landscape modeling, geospatial measurements and geospatial modeling.
5. Demonstrate understanding and competency in oral and written communication skills.

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<th>Course</th>
<th>PLO 1 Landscape Modeling Competency</th>
<th>PLO2 Landscape Modeling Management</th>
<th>PLO3 Landscape Modeling Measurement</th>
<th>PLO4 Geospatial Outcomes, Products</th>
<th>PLO5 Oral &amp; Written Communication Skills</th>
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<td>GIS 410/510</td>
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1. A – Advanced – GIS 410 supports Program Learning Outcome by providing students with transitional, high level topic-specific information, activities, and opportunities that enable the students to apply their critical thinking and tactical skills to resolved increasingly challenging strategic situations.

Student Learning Outcomes: Basic competencies of landscape modeling will be reviewed (PLO1). Concepts and techniques in the landscape modeling of geospatial management will be presented (PLO2). Methods of landscape modeling and measurements of natural resources will be discussed (PLO3). Knowledge of landscape
modeling as the foundation for developing and implementing sound natural resource management will be emphasized throughout the course; this will be coupled with the use of Geographic Information Systems in landscape modeling (PLO4). Professional ethics as it relates to the practice of applied landscape modeling on forest industry lands will be discussed (PLO4). Oral and written laboratory reports will be assigned to improve communication skills (PLO5).

**Course Goal:** Landscape modeling for forest industry lands will be reviewed (PLO1). Concepts and techniques in the application of landscape modeling will be presented and applied. Methods to measure natural resource measurements of natural resources will be utilized. Course goals include a professional paper utilizing applied geospatial management techniques.

**Required Readings As Assigned**

**General Course Policies:**

**Assignments and Grades:** There are 400 points available in the course: 100-point journal and workbook of sources and timeline (25%), a 100 point landscape modeling plan (25%) and a power-point presentation of the applied geospatial application is worth 100 points (25%) and a final 40 x 40 inch poster (25%). Topics for evaluation: Forest ecology and change overtime from the Bastrop fire; geospatial analysis of the LaNana Creek Trail; forest cover type change in the Dallas metroplex; wetlands delineation and 3D analysis; impacts of soil erosion in an urban landscape; environmental and historical analysis of Nacogdoches city parks; geospatial analysis of the use of the Piney Woods Native Plant center for environmental education; impact on the landscape from disc golf; implementation of iNaturalist and Biodiversity using Unmanned Aerial Systems (UAS) in an urban landscape; evaluation of forest hazard in an urban landscape; evaluation of Firewise parameters for a university campus; UAS location accuracy assessment; and impact of hurricanes and tornadoes on the urban and rural landscape.

**Preparation of Applied Geospatial Management Plan:** You will be expected to show competency in a natural resource plan for applied geospatial analysis. The plan for each will be presented in a power point and professional journal. A handout will be provided that describes the data provided and the expectations of the geospatial management plan. At the completion of the term, a professional paper needs to be produced.

The use of ArcScene and ArcGlobe for landscape modeling will be emphasized using either available data sets or data developed by the student. Emphasis will be placed on solving a spatial science application integrating spatial data, imagery, digital photographs and digital elevation models into a poster, power point and workbook. Each project will be presented as a class project.

**Topics:**
Landscape Modeling Plan, ArcGIS 10.6.1 or ArcOnline
Introduction to Geospatial Management Plan
Use of Pictometry with GIS Modeling
Project Planning and Implementation (10%)
Invasive Species and Endangered Species Mapping and Distribution (10%)
   *Hibiscus dasycalyx* Neches River Rose Mallow
   SFA Campus Landscape Ecology Concepts, Invasive Species
Pictometry and Water Resource Planning (10%)
   Rain Garden Evaluation
   SFA Campus Water Resources, Litter
   iTREE Hydro, iTREE Eco
Surveying and Mapping (10%)
   Pictometry and Urban Crowns
   Control Points
   Elevation and Contour Line Mapping
Nacogdoches and Lufkin Change Over Time (10%)
   Use of Landsat Imagery for Change Detection
Project Presentation, PowerPoint, Poster (50%)

**Attendance Policy:**

I expect you to attend all lectures and lab meetings. Do not be late getting to class; two late arrivals equates to one unexcused absence. Starting with the third unexcused absence from lecture or lab, you will lose 1 letter grade per absence off of your final semester grade. If you miss a scheduled lecture quiz or assignment, you must have a valid medical excuse from the Health Clinic or your family doctor. If you know beforehand that you will be absent from the scheduled exam then let me know ASAP. March 24 is the last day to drop from enrollment without a grade of WP or WF.

**Academic Integrity (SFA Policy 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.

**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/academic_integrity.asp](http://www.sfasu.edu/policies/academic_integrity.asp)

In regard to cheating and plagiarism, a first offense will result in a grade of zero (0) on that assignment. A second offense will result in a failing grade for the semester. In,
addition, the profession of forestry cannot embrace those that do not live by and adhere to the Society of American Foresters’ Code of Ethics. Please protect your own work. Do not let others copy or have access to your files or to hard copies of your reports.

**Withheld Grades Semester Grades Policy (A-54)**
A grade of WH will be assigned only if the student cannot complete the course work because of unavoidable circumstances and is done at the discretion of the instructor of record with the approval of the academic chair/director. 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.

**Students with Disabilities**
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/](http://www.sfasu.edu/disabilityservices/).

**Acceptable Classroom Behavior**
Classroom behavior should not interfere with the instructor’s ability to conduct the class or the ability of other students to learn from the instructional program. Unacceptable or disruptive behavior will not be tolerated. Students who disrupt the learning environment may be asked to leave the class and may be subject to judicial, academic or other penalties. The prohibition applies to all instructional forums, including electronic/ online forums, classroom meetings, labs, discussion groups, field trips, etc. The instructor will have full discretion over what behavior is appropriate/ inappropriate in the classroom. Students who do not attend class regularly or who perform poorly on class projects/exams may be referred to iCare Early Alert Program ([sfasu.edu/judicial/earlyalert.asp](http://www.sfasu.edu/judicial/earlyalert.asp)). This program provides students with recommendations for resources or other assistance that is available to help SFA students succeed. **Responsible use of technology:** It is expected that all students will only use cell phones, PDAs, laptop computers, MP3 players and related devices outside of class time or when appropriate in class. Answering a cell phone, texting, listening to music or using a laptop for matters unrelated to the course may be grounds for dismissal from class or other penalties.

**Miscellaneous Important Information:**
Please come to each lab prepared to go to the field unless otherwise instructed. This means that you must have your hardhat, field clothes, and field boots. If you show up for lab wearing any type of athletic (tennis, basketball, running, whatever!) shoes or without your hardhat, then you will not be allowed to participate in the lab (can't get on the van!). You will be given a lot of handouts. Buy a 3-ring binder in which you should keep all
handouts. Bring this binder with the handouts to each lecture and lab. No cell phone calls or text messaging in class.