Course Description
This course is intended to acquaint students with analytical techniques used in the identification and description of spatial patterns. The course emphasizes sampling design, visualization, computational methods, and output interpretation.

Course Objectives
Upon completion of the course, students should:

- Understand concepts and application of sampling theory and analyses used in the study of animal populations.
- Be able to recognize and implement appropriate methodology and analysis to address research questions animal populations.
- Understand the scientific method as applied to scientific research of animal populations, 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 BS degree Program Matrix:

PLO1. The student will demonstrate a good knowledge base in biological concepts (Knowledge).
PLO4. The student will be able to design, carry out, and analyze experiments to answer biological questions using the scientific method (Methods).
PLO6. The student will demonstrate preparation for future career and educational goals (Career Preparation).

<table>
<thead>
<tr>
<th>B.S. Biology Program Learning Outcomes</th>
<th>Proficiency Levels</th>
</tr>
</thead>
<tbody>
<tr>
<td>Course</td>
<td>PLO 1 Knowledge</td>
</tr>
<tr>
<td>BIO 436</td>
<td>A</td>
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</tbody>
</table>

Student Learning Outcomes
Upon completion of the course, students will:

a. Foundational knowledge.
   - understand main components of sampling theory.
   - 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 sampling and data analysis of animal populations.

b. Application.
- find information on and analyze current animal population conservation and management issues.
- identify current knowledge gaps and needs in the study of animal populations.

c. Integration.
- identify the interactions between animal ecology 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 studies of animal populations.
- intelligently discuss important issues in animal ecology with other professionals.

e. Future learning.
- be familiar with animal ecology journals and other sources of knowledge on animal populations.

**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 (400 pts) you obtained by completing all the course requirements during the semester. Besides the lab reports, poster, midterm exam and final exam mentioned in this syllabus, no other special assignment will be given to any particular student to improve final grade in the course.

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 exams and lab reports.

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<thead>
<tr>
<th>Assignment</th>
<th>Points</th>
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<tbody>
<tr>
<td>Discussion reports</td>
<td>100</td>
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<tr>
<td>Poster</td>
<td>100</td>
</tr>
<tr>
<td>Project Proposal</td>
<td>200</td>
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<tr>
<td><strong>TOTAL</strong></td>
<td><strong>400</strong></td>
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</table>

Course grades will be assigned according to the following scale:

- **A** = 90-100 %
- **B** = 80-89 %
- **C** = 70-79 %
- **D** = 60-69 %
- **F** = 0-59 %

**Course requirements**

Knowing and understanding the material presented and discussed in lectures/discussions are the keystone for successfully completing this course. As the instructor of this course I commit myself to being knowledgeable on all the topics that we will cover in class and being well prepared to lecture about them. I expect all students to have perfect attendance and be well prepared for class as well (i.e. read all assignments and review notes from lectures).
**Reading material**
Reading material will be assigned weekly in the form of printed copies or electronic files (dpf).

**Discussion reports**
Students will be responsible for completing a one-page report on the assigned readings. All reports must be typed and electronically submitted via D2L (Dropbox) by the due date for full credit. Late submissions will not be accepted.

**Poster**
During the semester you will outline a research project on any animal population of your preference. This outline will be presented to the class as a poster at the end of the semester. More details about this task will be mentioned in class.

**Project proposal**
During the semester, students will complete all the required steps for the development of a research proposal focusing on an animal species found in East Texas. Details about the structure and content of the proposal will be discussed in class.

**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.

**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
Withheld Grades Semester Grades Policy (A-54)
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.

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/

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 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.

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<thead>
<tr>
<th>Week</th>
<th>Lecture Topic</th>
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<tbody>
<tr>
<td>2</td>
<td>Hypothesis testing. Assumptions and computations. Statistical conclusions and interpretation.</td>
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<tr>
<td>5</td>
<td>Estimation of population parameters using marked animals.</td>
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<tr>
<td>6</td>
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<tr>
<td>7</td>
<td>Distance sampling.</td>
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<td>8</td>
<td>Distance sampling.</td>
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<tr>
<td>9</td>
<td>Occupancy modeling.</td>
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<tr>
<td>10</td>
<td>Occupancy modeling.</td>
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<tr>
<td>11</td>
<td>Spatially Explicit Capture-Recapture models (SECR models).</td>
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<tr>
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<tr>
<td>13</td>
<td>Resource selection analysis.</td>
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<tr>
<td>14</td>
<td>Resource selection analysis.</td>
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<tr>
<td>15</td>
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