Prerequisites:
BOT 1404 or ZOOL 1604; SOIL 2124 preferred.

Objectives:
The objective of this course is to develop and apply critical thinking to conservation and land management issues through the application of ecological concepts and theory. Principles of population, community, ecosystem and landscape ecology will be taught through their application to in wildlife management, fisheries management and land management that includes forests and rangelands. The course will focus on developing critical thinking through the application of the scientific method and literature to natural resource ecology and management.

Class meeting:
This is a 3-hour course that meets twice weekly, Tuesday and Thursday at 1030-1145. It accompanied by a stand alone laboratory course (NREM 3012). NREM 3013 can be taken without the laboratory.

Office Hours:
Appointments to meet with Dr. Fuhlendorf are best made through email (@sam.fuhlendorf@okstate.edu). If you cannot reach Dr. Fuhlendorf, the departmental secretary (Melissa Dunn) is in Ag Hall, Room 008C (744-5438).

Required Text
No specific text but eekly readings will be assigned throughout the semester that can be accessed through the internet. Any ecology book could help with the course (let me know if you need help selecting one if you desire).

Drop Policy:
This course will follow university regulations for grade assignments corresponding to dropping courses within the respective weeks of the semester.

Class Attendance Policy:
Absences from class are either excused or unexcused. To receive an excused absence from lecture, place your name and calendar date of absence (month and day) on a slip of paper and give it to the instructor before the absence. Only in rare emergency situations (such as death in the family, serious illness, broken bones) will an excuse be accepted after the absence. Telephone excuses will be accepted in emergency situations.

Examination Schedule:
Examinations will cover lecture materials, discussions, as well as readings. Readings may or may not be discussed in class but you will be responsible for the material and it will be covered on exams.
Exam 1: Tuesday, September 30
Exam 2: Tuesday, October 28
Exam 3: Tuesday, November 25

**FINAL EXAM**: Thursday, December 11, 10:00 am

Make-up examinations: Friday May 6 at 4:00-5:50 p.m

The tentative schedule of examinations shown here may be modified during the first two weeks of the semester, but not thereafter because of problems with coordinating schedules. Should a student miss a scheduled exam because of a schedule conflict arising after the second week of the semester, the student may elect to take a make-up exam.

**Make-up examinations will be administered on Friday May 2 from 4:00 to 5:50 p.m., which is during finals week.** These exams will be similar to other regular exams. No other times for make-up exams are available.

**If you believe an exam question was scored incorrectly.....**

You may submit a written appeal within a week of the return of the exam. The appeal must be written and include: 1) identify the question, 2) give your preferred correct answer, 3) explain the basis for the appeal, and 4) give evidence that supports your appeal (i.e., quote from literature; include page number, or date and quote from a lecture). The marked exam must accompany the appeal materials. All of these materials must be turned in within one week from the day the exam was returned.

**Personal Interview:** Anyone with an examination score below 60% on the first examination must schedule an informal personal interview session with the instructor before the second examination is administered. Failure to schedule and attend a personal interview session may result in a loss of grade on the second examination. The purpose of this brief interview is to help the student resolve problems experienced with the course and to improve the student's exam scores. **It is the responsibility of the student to schedule this meeting.**

**Grading:**
The following is a summary of the format for which the grade will be calculated for the course.

<table>
<thead>
<tr>
<th>Grade</th>
<th>Points</th>
</tr>
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<tbody>
<tr>
<td>A</td>
<td>&gt; 360</td>
</tr>
<tr>
<td>B</td>
<td>320-359</td>
</tr>
<tr>
<td>C</td>
<td>280-319</td>
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<tr>
<td>D</td>
<td>240-279</td>
</tr>
<tr>
<td>F</td>
<td>&lt; 240</td>
</tr>
</tbody>
</table>

Three examinations and a final will be administered, with the lowest grade dropped in computation of the course grade. The remaining three exam scores, and the homework assignment/pop quizzes that you have earned will make up your entire grade. **Final exam will be comprehensive.**

**There will be no curve!!!**
1. Introduction

**Important Questions for this section:**

a. What is ecology?
b. What does it mean to make science-based decisions?

**Ecological Principles covered for this section**

i. Scientific method

ii. Guiding principles for science-based decisions

1. Information available
2. Quality of information - Peer-reviewed vs. non-peer reviewed literature
3. Scaling up data
4. Data-based conclusions vs. inferences
5. Assumptions of the design and interpretation
6. Exceptional conditions during the study

2. Distribution of populations in space and time

**Important Questions for this section:**

a. What factors determine the distribution of plant and animal species?
b. What factors contribute to the decline in bobwhite quail?
c. What factors contribute to the decline in Lesser Prairie-chickens?
d. How does understanding carrying capacity influence natural resource management?
e. Why are woody plants increasing throughout the world?
f. How does fire benefit some species?

**Ecological Principles covered for this section**

i. What is habitat

ii. Conditions and resources

iii. Biomes and land types

iv. Ecological niches

v. Disturbance

vi. Importance of large scale patterns and fragmentation

vii. Population models

1. Growth rates and reproduction
2. Classifications of species

viii. Intras-pacific competition

ix. Density dependence/independence

x. Human population dynamics

xi. Grazing capacity

3. Community and Ecosystem dynamics - interactions, biodiversity, disturbance and succession.

**Important Questions for this section:**

a. How effective is weed control for ecosystem management?
b. How does hunting effect wildlife populations?
c. Is predator control an effective way to manage wildlife species?
d. From an ecosystem stand point, should we eat meat?
e. Does biodiversity matter to ecosystem management?
f. Why are there so many species?
g. Can farmland be recovered as forest or prairie?
h. Are ecosystems in balance with their environment?
i. Can juniper woodland be recovered as prairie or oak woodland?
j. How do we understand long term dynamics of ecosystems?
k. What effects do fires have in the southern Great Plains?
l. What is different about species extinctions that occurred through long history vs. those occurring today?
m. What are the common causes of pollution?

Ecological Principles covered for this section
  i. Native vs. Invasive species
  ii. Biodiversity
  iii. Competition
  iv. Other interactions
  v. Challenges in scaling up local studies
  vi. Predator prey relationships
  vii. Energy flow
  viii. Food webs
  ix. Trophic levels
  x. Direction vs. non-directional dynamics
  xi. Primary vs. secondary succession
  xii. Disturbance ecology

4. Large scale conservation planning

Important Questions for this section:
  a. Is climate change real?
  b. What happens when populations become isolated?
  c. How do we prioritize conservation issues in our region?
  d. How does managing vegetation influence the hydrologic and nutrient cycles?
  e. How do animals move across complex landscapes?
  f. What is the role of heterogeneity in conservation?
  g. How can large scale conservation plans be developed for multiple objectives?

Ecological Principles covered for this section
  i. Nutrient and water cycles
  ii. Carbon Cycle/sequestration
  iii. Climate change predictions
  iv. Landscape ecology
  v. Fragmentation
  vi. Trade-offs in land use