Course title and number  RENR 215  
Term                  Fall Spring 2013  
Meeting times and location  ANIN 115

Course Description and Prerequisites

This course will introduce students to the general principles, methods, and equipment for field-based investigation of the biotic and abiotic components of an ecosystem and their interactions, specifically:

(1) Introduce the design and procedure of field ecological investigation, data analysis and report writing for quantitative description of ecosystem consisting of biological communities (interacting plant, animal and microbial populations) and their abiotic environment.

(2) Acquaint students with the variety of ecosystems found in Texas, as well as a variety of species and some of their special adaptations to their environments.

Prerequisites: None

Learning Outcomes or Course Objectives

1. Describe the basic components of coupled socio-ecological systems and interpret processes at the organism, population, community, ecosystem, landscape and global levels.
   - Define the functions of the different levels
   - Describe how and why plants compete and how competition can be measured
   - Describe plant growth processes
   - Describe how and why plants compete and how competition can be measured
   - Discuss spatial and temporal scaling in ecosystems
   - Describe population dynamics and interactions between organisms, including competition, predation, mutualism, etc.
   - Explain the differences and similarities of organism, population, community, and ecosystem scales

2. Identify plants and other organisms in their genetic and evolutionary context.
   - Recognize and organize adaptations and functional relationships
   - Discuss the implications of genetic change in the environment
   - Discuss the importance genetic variation within species and populations
   - Describe how and why landscape fragmentation affects biodiversity and conservation (eg., endangered, invasive species)
   - Relate paleoecology to climate

3. Evaluate conceptual, statistical, and quantitative ecological models and systems thinking.
   - Draw a basic flow chart to represent ecological processes
• Describe key components of a model and the modeling process

4. Design management strategies for restoring and sustaining ecosystem goods and services and adaptive management concepts.
• Describe principles of ecosystem resilience

5. Illustrate critical thinking and demonstrate problem solving skills
• Apply critical thinking elements to demonstrate intellectual integrity
• Recognize problematic situations and predict possible outcomes
• Forecast a range of outcome that may arise from climate change

6. Demonstrate environmental stewardship and professional and ethical behavior.
• Demonstrate environmental stewardship
• Design a sound management plan that sustains natural resource uses
• Identify current and past practices and or policies that have led deleterious effects

7. Recognize the need for lifelong learning and exhibit the skills necessary to acquire, organize, and reorganize new knowledge.
• Desire to continue education and knowledge in your field, and discuss current topics with your peers
• Read professional literature and apply information to the solution of real world problems
• Read professional literature and apply information to the solution of real world problems
• Locate the research papers available on the (USDA, P-2 Southern) web site

Instructor Information

Name Jason West
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Office hours TBA
Office location ANIN 413

Textbook and/or Resource Material


Work Book – iBook, also available as an Adobe pdf on cLearning course page.

Grading Policies

(A: 90-100%; B: 80-89%; C: 70-79%; D: 60-69%; F: <60%)

Attendance* (1st absence-5 pts, 2nd-5 pts, 3rd-10 pts) 20 points
Quizzes (4 @ 10 pts each) 40 points
Lab Assignments (points vary by assignment) 85 points
Ecological Report (Final Draft) 60 points
Topic Review Presentation 20 points

Total (100%) 225 points

Extra Credit Assignment +15 points

No late work will be accepted, except in the case of a university excused absence.

*Missing a lab without a written excuse will be counted as an absence.

Attendance Policy

"The University views class attendance as the responsibility of an individual student. Attendance is essential to complete the course successfully. University rules related to excused and unexcused absences are located on-line at [http://student-rules.tamu.edu/rule07]."

Course Topics, Calendar of Activities, Major Assignment Dates

<table>
<thead>
<tr>
<th>Week</th>
<th>Topic</th>
<th>Quiz/Work due</th>
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<tbody>
<tr>
<td>Aug 29</td>
<td>Introduction; Natural regions of Texas</td>
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<tr>
<td>Sep 5</td>
<td>Plant and animal adaptations (lab)</td>
<td>Assign. 1 (PAA) due</td>
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<tr>
<td>Sep 12</td>
<td>Environmental factors (lab &amp; field)</td>
<td>Quiz 1 (NRT &amp; PAA) Assign. 2 (EF) due</td>
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<tr>
<td>Sep 19</td>
<td>Population studies (lab)</td>
<td>Quiz 2 (EF) Assign. 3 (PS) due</td>
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<td>Sep 26</td>
<td>Lentic Ecosystems (field)</td>
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<tr>
<td>Oct 3</td>
<td>Lotic Ecosystems (field)</td>
<td>Quiz 3 (L/L) Assign. 4 (L/L) due</td>
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<td>Oct 10</td>
<td>Oak Woodlands Ecosystems - I. Reconnaissance (field)</td>
<td>Assign. 5 (LCPT) due</td>
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<td>Oct 17</td>
<td>Introduction to sampling Community sampling methods (lab)</td>
<td>Assign. 6 (Intro) due Assign. 7 (SM) due</td>
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<td>Oct 24</td>
<td>Oak Woodlands Ecosystems - II. Plant community - savannah (field)</td>
<td>Quiz 4 (SM)</td>
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<tr>
<td>Oct 31</td>
<td>Oak Woodlands Ecosystems - III. Plant community - bottomland</td>
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forest (field)

Nov 7  Oak Woodlands Ecosystems - IV. Animal communities (lab/field)  Assign. 8 (PC) due

Nov 14 Oak Woodlands Ecosystems - V. Ecosystem restoration & mgt  Assign. 9 (ER) due
Topic Review Presentations  Presentations due

Nov 21  Thanksgiving week (no lab)

Other Pertinent Course Information

Much of the work done in RENR 215 is conducted in the field, regardless of weather conditions. Whenever field (outdoor) labs are scheduled, students should wear appropriate field clothing. If a field lab is scheduled and inclement weather occurs, the lab will move to a classroom. However, students should never assume a field lab would be moved indoors. A university van will be used for field trips.

If a university excused absence occurs, students should immediately make arrangements with their TA to make up the lab before the end of the week or make other arrangements if that is not possible. All excuses must be registered within a week after the student returns to class. For absences without proper written excuse, up to 20 attendance points will be taken off the grade total and no make-ups will be given.

Ecological Report

The series of labs on Oak Woodland Ecosystems is designed, through field investigation and data analysis, to characterize the structure of the ecosystems, and to understand how the interactions of biotic and abiotic components as well as human activities, shape the structure of these ecosystems. Detailed investigation will focus on the upland savannah and bottomland forest ecosystems. The findings, as well as approaches used, will be documented in an ecological report. Below is a general guideline for the structure and content of this report. The instructor will provide additional instructions throughout the semester.

I. Introduction and Study Area
   • Describe the general environmental and biotic characteristics of the study area.
   • State the general goal of the investigation and why it is important or relevant to understanding the ecology and management of the ecosystems
   • State the specific objective(s) of the study.

II. Methods
   • Accurately describe the materials and procedures used in field sampling and data analysis. The description should contain sufficient information for others to repeat the procedure.
III. Results and Discussion

- Present the results of field sampling and data analysis in summary tables and/or figures. Refer to the figures and tables explicitly in the text.

- Address key questions, such as:
  - What similarities/differences exist between the upland and bottomland areas?
  - What is the ecological meaning and significance of the results?
  - What patterns of ecosystem structures were revealed through comparison of the biotic and abiotic components of different ecosystems?
  - What are the influences of human activities on the structure of these ecosystems?

- Recommend future studies needed to better our understanding of the system, and management approaches needed for the conservation and/or restoration of the ecosystems.

IV. References

- List any references, such as our lab manual and other books and papers that you cited in any of the above sections in a standard reference format.

- The finished report should be 4-6 pages long (1 inch margins, 1.5 line-spaced, no larger than 12-point fonts), plus Tables and/or Figures.

- Individual sections of the ecological report will be written as weekly assignments and revised based on the feedback provided by the instructor. Revised sections must be turned in for grades.

- Each of these writing assignments, for individual sections as well as the complete Ecological Report, must be emailed to your TA. In sending the files, the following formats should be followed:
  - The report must be saved in Microsoft Word, Open Office, or Adobe pdf format.
  - File names should include the initials of your first and last name and the last 4 digits of your UID number, plus the letter “A” and assignment number (without the “A#” for the complete Ecological Report).
  - Example – for Assignment 5 (Introduction section), the file name should be JD9944A5 for student John Doe whose UID is 454459944 (just JD9944 for the complete Ecological Report). Note there are no dashes or spaces. Follow this format exactly.
  - Files will be stored in a central database and may be checked for plagiarism (e.g., with resources such as Turnitin.com). Use of old reports or reports from other RENR 215 students will result in pursuit of an immediate grade of “F” for the class. See also the Aggie Honor Code discussed above.
Ecological Report Grading Sheet

Correct format: all parts with headings 10 pts
Word usage (correct grammar, complete sentences) 5 pts
Overall neatness and legibility 5 pts
Introduction and Study Area 15 pts
Methods 15 pts
Results & Discussion 10+20 pts
Total 80 pts

How to cite References

by Tamara McGuire

When you use a quote, fact, or idea that is not your own, you need to reference the source of that information. If not, you are plagiarizing someone else’s work, regardless of your intention. Referencing gives credit where credit is due, and provides your readers with a way to learn more about your subject and to verify your facts. Sometimes it is difficult to know when to reference something. If in doubt, go ahead and reference. It is not necessary to reference information that is common knowledge. For example, if you were to say in a report, “elephants are very large mammals”, there is no need to reference this. However, if you were to write, “Elephants in the country of Gabon weigh a maximum of 500 kg and can reach 3.5 m in height”, you should refer to the source of this information, as it is doubtful that you measured this yourself.

When you research your paper, it is a good idea to get into the habit of writing down the reference information in addition to the facts. It will help you later in making your list of references if you decide to use the information in your paper, and will give you a paper trail to follow if you need to go back and re-check something. It may also save you the embarrassment of mistaking an idea as your own, when it was actually already “claimed” by someone else (there is nothing wrong with agreeing, disagreeing, or expanding on someone else’s idea, just be sure to reference).

In order to reference, you will need to note the author(s), title of the article or book, the name of the journal in which it is published, the page numbers of the article, the year of publication, and the publisher. If you are citing a chapter in a book that has many contributors, you will have to list the editor of the book. There are different styles of referencing literature; in this class, we will only discuss one. This system is often called the Harvard system (Day 1988).

In the body of your paper, list the author’s last name and year of publication in parentheses after the item you are referencing. If there are two authors, list them both.

Ex. River dolphins are listed as a vulnerable species (Klinowska 1991).

Ex. River dolphins weigh 150 kg (Leatherwood and Reeves 1983).

If there are more than two authors, use only the last name of the first author, followed by the words “et al.” (which basically means “and others”), then the year of publication.

Ex. Dolphin populations were clustered along the Amazon River (Magnusson et al. 1980).

You will give the full reference citation at the end of your paper, in the part called
“References” or “Literature Cited”. Citations should be arranged alphabetically, according to the first letter of the last name of the first author (confused yet?). All this means is that a list of the following authors would look like this:


Magnusson, W. E., R. C. Best, and V. M. F. da Silva. 1980. Number and behavior of Amazon dolphins, Inia geoffroisi and Sotalia fluviatilis in the Rio Solimoes, Brazil. Aquatic Mammals. 8:27-32. (These numbers indicate that the article was found in volume 8, pages 27-32).

Double check that any reference you used in your paper is in the “References” section, and that you didn’t list any papers in the “References” section that you didn’t actually refer to in your paper.

**Recommended Readings (Evans library has both of them):**


**Americans with Disabilities Act (ADA)**

The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please contact Disability Services, in Cain Hall, Room B118, or call 845-1637. For additional information visit [http://disability.tamu.edu](http://disability.tamu.edu)

**Academic Integrity**

For additional information please visit: [http://aggiehonor.tamu.edu](http://aggiehonor.tamu.edu)

"An Aggie does not lie, cheat, or steal, or tolerate those who do."