PRINCIPLES OF ECOLOGY
BIOL 271, Spring 2007

Meets
Lecture Tues & Thurs 9:45-11:15, Schaibel Auditorium
Labs: Wed 2:15-5:15, 402 Bunnell (F02) or Thurs 2:00-5:00, 402 Bunnell (F03)

Instructor
Prof. Diane Wagner
diane.wagner@uaf.edu
Telephone for course-related issues 474-5622
http://mercury.bio.uaf.edu/~diane_wagner/
Office hours Tues 11:30 – 1 or by appointment in 403 Bunnell

TAs
Tumi Traustason, ftt@uaf.edu, 474-5404
Colin Tucker, ftclt@uaf.edu, 474-7603

TA office hours and locations will be posted on the website

Text

Prerequisites
Biology 105X and Biology 106X

Objectives
Upon successful completion of the course, students will have a basic understanding of the patterns, mechanisms and concepts underlying each of the major areas of ecology. Students will gain experience reading and interpreting the scientific literature. Lab exercises will provide experience designing and implementing ecological experiments and communicating the results effectively.

Websites
The course website is administered through Blackboard at http://classes.uaf.edu. Check the website for announcements and to obtain copies of handouts and assignments. Grades will be posted on Blackboard. When you enrolled in the course, you were automatically registered on the course website. To log on, enter your UAF username (the first part of your UAF email address, e.g. fsxyz) and your Blackboard password. If you have forgotten your password, follow the instructions on the Blackboard home page. (Note that your Blackboard password is not necessarily the same as your UAF email password.) If you have never logged on to Blackboard before, your password should be your student ID number followed by a capital U (e.g. 366888888U).

The Economy of Nature textbook has a useful website (www.whfreeman.com/ricklefs5e) that provides various resources, including self tests, data modules and text enrichment materials.
**Assessment**

- Midterm 1: 15%
- Midterm 2: 15%
- Final exam: 20%
- Lab assignments: 25%
- Term paper – reader’s draft: 5%
- Term paper – peer review: 5%
- Term paper – final draft: 10%
- Participation: 5%

**Grading**

Grades will be assigned based on the percentage of points you earn in class. Grades will not be assigned on a curve. No extra credit assignments are available.

<table>
<thead>
<tr>
<th>Grade</th>
<th>% of Total Points</th>
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<tbody>
<tr>
<td>A</td>
<td>90 - 100</td>
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<tr>
<td>B</td>
<td>80 - 89</td>
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<td>C</td>
<td>70 - 79</td>
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<td>D</td>
<td>60 - 69</td>
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<td>F</td>
<td>0 - 59</td>
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**Exams**

Exams emphasize reasoning, problem-solving, and clarity of expression. The format will include short-answer, essay, and math problems. The final exam will emphasize material presented since the last midterm, but will also incorporate earlier material.

**Missing exams**

If you need to miss an exam for a scheduled activity (e.g., sports event), you must schedule a makeup at least one week before the exam. If you are ill on the day of the exam, you must a) contact the instructor by email or phone before the exam begins, b) take a makeup exam within 48 hours, and c) bring a note from a medical professional explaining your absence to the makeup exam. If you miss the first exam and do not take a makeup within 2 days, you will be administratively dropped from the class.

**Labs**

Labs will illustrate concepts from lecture and allow students the opportunity to pursue their own questions about ecology by designing and implementing experiments. Lab attendance is required.

**Writing**

Students will be expected to turn in lab worksheets, lab reports, and produce a term paper. The purpose of the term paper is a) to give you an opportunity to investigate a particular area of ecology in depth, (b) to encourage you to become acquainted with the primary scientific literature, and (c) to improve your writing and editing skills. The paper should be 5 pages in length and must be based upon original research papers. Detailed instructions will follow. The term papers must be original and written specifically for this
course. If you wish to pursue a single theme in papers written for more than
one class, you must speak with both instructors before proceeding.

Students are encouraged to take advantage of the Writing Center on campus in
801 Gruening, 474-5314.

**Peer review**

Peer review is an important component of doing science. Papers describing
scientific results are read by several anonymous reviewers in the same field,
who comment upon the work, provide suggestions, and decide whether the
work is worthy of publication. You will write and anonymous review a
classmate's term paper several weeks before the final paper is due. The
purpose of this assignment is to (a) provide you with feedback on your work
(b) increase the audience for your paper, and - perhaps most importantly - (c)
provide you an editorial perspective, which will give you new and critical
insights about your own writing.

**Participation**

Participation will be evaluated from contributions to class during regular class
meetings.

**Academic dishonesty**

Acts of academic dishonesty include cheating on exams, helping others to
cheat, plagiarizing (see below), feigning illness to obtain an extension, and
turning in work that was written for another class without permission. Please
read the UAF Student Code of Conduct in the UAF Catalog. Students who
behave dishonestly will receive an F for the class and the case will be
presented to the University Disciplinary and Honor Code Committee for
review.

Plagiarism means presenting someone else's ideas, words, or graphics –
published or unpublished – as if they were your own. Instances of plagiarism
include failing to cite the literature properly, purchasing a term paper, and
copying even a portion of another student's work. (Note that making small
alterations to someone else’s text to obscure the resemblance still constitutes
copying.) Students are encouraged to work groups on lab exercises, but
unless otherwise specified, each student must turn in his or her own written
assignment.

**Disabilities**

Students with disabilities are encouraged to inform the instructor in the first 2
weeks of class so accommodations can be made. Please do not wait until after
an exam to make me aware of the issue. If you suspect that you have a
learning disability, contact UAF's Center for Health & Counseling (474-
7043). If you do not have a documented learning disability but feel that time
pressure or cramped quarters has a negative effect on your exam performance,
please discuss this with the instructor.
### Principles of Ecology, BIOL 271
### Spring 2007 Course Schedule

<table>
<thead>
<tr>
<th>Week</th>
<th>Introductions</th>
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<tbody>
<tr>
<td>T Jan 16</td>
<td>Introduction to Ecology</td>
</tr>
<tr>
<td>R Jan 18</td>
<td>Physical Environment</td>
</tr>
<tr>
<td>No lab</td>
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<table>
<thead>
<tr>
<th>Week</th>
<th>Physical Challenges</th>
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<tbody>
<tr>
<td>T Jan 23</td>
<td>Physiological Ecology - Plants</td>
</tr>
<tr>
<td>R Jan 25</td>
<td>Physiological Ecology - Animals</td>
</tr>
<tr>
<td>LAB: Ecological data – using Excel to graph and analyze data</td>
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<table>
<thead>
<tr>
<th>Week</th>
<th>Global Patterns of Variation</th>
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<tbody>
<tr>
<td>T Jan 30</td>
<td>Climate Patterns &amp; Mechanisms</td>
</tr>
<tr>
<td>R Feb 1</td>
<td>Biomes</td>
</tr>
<tr>
<td>LAB: Begin competition experiment</td>
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<table>
<thead>
<tr>
<th>Week</th>
<th>Energy &amp; Nutrients</th>
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<tbody>
<tr>
<td>T Feb 6</td>
<td>Energy in Ecosystems</td>
</tr>
<tr>
<td>R Feb 8</td>
<td>Nutrient Cycling</td>
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<tr>
<td>LAB: Ecosystem Productivity</td>
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<thead>
<tr>
<th>Week</th>
<th>Nutrient cycling</th>
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<tbody>
<tr>
<td>T Feb 13</td>
<td>Nutrient Cycling &amp; Regeneration</td>
</tr>
<tr>
<td>R Feb 15</td>
<td>Midterm 1</td>
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<tr>
<td>LAB: Winter ecology</td>
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<thead>
<tr>
<th>Week</th>
<th>Evolutionary Ecology</th>
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<tbody>
<tr>
<td>T Feb 20</td>
<td>Adaptation to Variation in Environment</td>
</tr>
<tr>
<td>R Feb 22</td>
<td>Life History</td>
</tr>
<tr>
<td>LAB: Competition experiment – score results</td>
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<tr>
<td>Begin population growth experiment</td>
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<thead>
<tr>
<th>Week</th>
<th>Behavioral ecology</th>
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<tbody>
<tr>
<td>T Feb 27</td>
<td>Sex and Evolution</td>
</tr>
<tr>
<td>R Mar 1</td>
<td>Group living</td>
</tr>
<tr>
<td>LAB: Behavioral ecology</td>
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<table>
<thead>
<tr>
<th>Week</th>
<th>Population Biology</th>
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<tbody>
<tr>
<td>T Mar 6</td>
<td>Population density, distribution</td>
</tr>
<tr>
<td>R Mar 8</td>
<td>Population growth, regulation</td>
</tr>
<tr>
<td>LAB: Population growth experiment – score results and analyze</td>
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| Week | Spring Break |
Week 10 - Population Biology
T Mar 20 Population Dynamics Chap 15
R Mar 22 Population Dynamics Chap 15
LAB: Accessing the scientific literature

Week 11 - Population Genetics
T Mar 27 Midterm 2
R Mar 29 Population Genetics Chap 16
LAB: Population biology: abundance, density, dispersion

Week 12 - Ecological Interactions
T Apr 3 Herbivory Chap 17
R Apr 5 Predation Chap 17&18
LAB: Endangered species population biology

Week 13
T Apr 10 Competition Chap 19
R Apr 12 Mutualism Chap 20
LAB: Peer review of term paper

Week 14
T Apr 17 Community Structure Chap 21
R Apr 19 Community Development Chap 22
LAB: Forest ecology

Week 15
T Apr 24 Biodiversity - Term paper due - Chap 23
R Apr 26 Biogeography Chap 24
LAB: Permafrost tunnel

Week 16
T May 1 Conservation Biology Chap 25
R May 3 Conservation Biology & Global Ecology Chap 25&26
LAB: Review

Sat May 12 FINAL EXAM 8 – 10 am