Instructor
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Office: FA 125
Office Hours: Mondays & Wednesdays
11 - Noon or by appointment

Class meets on Mondays and Wednesdays from 9:00-10:50 AM in KRC 104 unless otherwise indicated. Information about the course, handouts, and other documents for the course will be posted on the following web site: http://www.ag.unr.edu/nowak/EcophysFRP13.aspx.

Course Outline: (subject to change)

<table>
<thead>
<tr>
<th>Date</th>
<th>Topic</th>
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<tbody>
<tr>
<td>Jan 23</td>
<td>Introduction and Course Syllabus</td>
</tr>
<tr>
<td>23</td>
<td>1) Plant Growth and Development</td>
</tr>
<tr>
<td>28</td>
<td>a) Plant functional types</td>
</tr>
<tr>
<td>28</td>
<td>b) Herbaceous plants</td>
</tr>
<tr>
<td>Jan 30, Feb 4</td>
<td>c) Woody plants</td>
</tr>
<tr>
<td>6, 11</td>
<td>2) Plant Water Relations</td>
</tr>
<tr>
<td>13, 20</td>
<td>a) Functions of water in plants</td>
</tr>
<tr>
<td>20, 25</td>
<td>d) Responses to drought</td>
</tr>
<tr>
<td>Feb 27</td>
<td>FIRST EXAM (covers all material presented to date)</td>
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<tr>
<td>Mar 4</td>
<td>3) Nutrient Balance</td>
</tr>
<tr>
<td>4, 6</td>
<td>a) Plant macro- and micronutrients: Leo Hernandez, Guest Lecturer</td>
</tr>
<tr>
<td>11, 13</td>
<td>b) Ecophysiological responses to nutrient availability: Leo Hernandez, Guest Lecturer</td>
</tr>
<tr>
<td>Mar 18 &amp; 20</td>
<td>c) Growth and allocation responses to nutrient availability</td>
</tr>
<tr>
<td>Apr 1, 3</td>
<td>4) Photosynthesis</td>
</tr>
<tr>
<td>25</td>
<td>a) Photochemistry &amp; biochemistry</td>
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<tr>
<td>27</td>
<td>b) Photosynthetic pathways</td>
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<td>Date</td>
<td>Topic</td>
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<td>8</td>
<td>5) Ecophysiological Measurement Techniques: Leo Hernandez, Guest Lecturer</td>
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<tr>
<td>Apr 10</td>
<td>SECOND EXAM (Emphasizes material presented since last exam)</td>
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<tr>
<td>15, 17, 22</td>
<td>6) Abiotic &amp; Biotic Environmental Factors</td>
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<td></td>
<td>a) Energy balance and extreme temperature tolerance</td>
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<td></td>
<td>b) Plant diseases and pathogens</td>
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<td>c) Herbivory</td>
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<td>May 10</td>
<td>FINAL EXAM (Comprehensive, but emphasizes material presented since last exam)</td>
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Course Objectives:
By the end of the semester, students who successfully complete the course can expect the following outcomes:
1. Students will gain a working knowledge about the basic ecophysiological functions of plants that occur in forest and rangeland ecosystems, with emphasis at the tissue and whole plant levels and with emphasis on arid ecosystems in the western US.
2. Students will also examine issues of form and function in plants and discuss patterns of plant growth and development, with emphasis on how that may affect ecophysiological processes.
3. After examining basic ecophysiological functions and growth patterns, student will explore how plants modify these functions to tolerate abiotic and biotic stress in their environment, how these functions may vary among and within species, and how these functions may impact management practices.

Course Grading:
This course will have 3 exams. All exams will be taken during the class period assigned by the instructor; missed exams will not be rescheduled and will be scored as zero without a UNR-approved excuse. Exams that are rescheduled with the instructor’s approval will be oral exams. The first 2 exams will occur during regular class periods and will emphasize material presented since the previous exam. The third exam is the final exam, will occur during the scheduled time period for the final exam, and is comprehensive but will emphasize material presented since the previous exam.

Undergraduate student grading: The final grade for undergraduate students in the course will be determined from class attendance, homework assignments, and the 3 exams using the following percentages:
- Attendance = 5%
- Homework = 15%
- Exam 1 = 25%
- Exam 2 = 25%
- Final Exam = 30%
Attendance will be based on the percentage of times a student was present at the beginning of each lecture class meeting.

Homework will consist of providing relevant descriptions and definitions of terms that are used during the course. The purpose of these assignments is primarily to help students understand the concepts presented during the course. Approximately every two weeks during the semester, a list of terms will be handed out. Students will have approximately 2 weeks to prepare descriptions and definitions of each term using their class notes from lectures, and published reference materials, and appropriate web sites. Note that Wikipedia is not very reliable for definitions that are relevant to this course and thus should be avoided; more appropriate web sites include Biology Online (http://www.biology-online.org/), “.edu” web sites (see http://biology.duke.edu/jackson/ecophys/ for some links), and the on-line books given below in the “Required Textbook” section. Homework assignments are due at the date and time indicated on each homework assignment; assignments that are not turned in by the indicated date and time will be given a score of zero for that assignment.

**Graduate student grading:** Graduate students will take the same exams as undergraduate students but will be expected to give a better synthesis of information required in the exams. Graduate students will also complete a **term paper**. The term paper will be a literature review of a plant species that covers 4 of the 5 major topics covered in the course (photosynthesis, water relations, nutrient balance, growth and development, and environmental factors). Details on the guidelines and expectations for the term paper are covered in a separate handout. The grade for graduate students in the course will be determined by the following percentages:

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Attendance</td>
<td>5%</td>
</tr>
<tr>
<td>Homework</td>
<td>5%</td>
</tr>
<tr>
<td>Exam 1</td>
<td>20%</td>
</tr>
<tr>
<td>Exam 2</td>
<td>20%</td>
</tr>
<tr>
<td>Final Exam</td>
<td>25%</td>
</tr>
<tr>
<td>Term paper</td>
<td>25%</td>
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**All students:** Final grades for the course will be assigned as follows:

- A = >93%
- A- = 90-93%
- B+ = 87-90%
- B = 83-87%
- B- = 80-83%
- C+ = 77-80%
- C = 73-77%
- C- = 70-73%
- D+ = 67-70%
- D = 63-67%
- D- = 60-63%
- F = <60%

**Required Textbook:**
This course does not require a textbook. However, the following books provide useful reference
and supplemental materials that increase understanding of the processes and concepts discussed during the course (call numbers are listed after the citation):


In addition, the following books are available on-line through UNR’s library:


**Reference Journals:**

Many journals have articles that relate to issues that are covered in class. These include (but are not restricted to) the following journals. Most are found in the Library or are available on-line through the UNR library web site.

- American Journal of Botany
- Ann Rev Ecology & Systematics
- Ann Rev Plant Phys & Mol Biol
- Agricultural & Forest Meteorology
- Australian J Plant Physiology
- Biogeochemistry
- Ecological Applications
- Ecological Modeling
- Ecological Monographs
- Ecology
- Ecosystems
- Forest Ecology and Management
- Functional Ecology
- Global Change Biology
- International J Biometeorology
- International J Plant Sciences
- Journal of Applied Ecology
- Journal of Arid Environments
- Journal of Ecology
- Journal of Vegetation Science
- Microbial Ecology
- Nature
- New Phytologist
- Oecologia
- Oikos
- Photosynthetica
Academic Dishonesty Policy:
Students are expected to adhere to the ethical code as described in the UNR Student Handbook. This code specifies that with enrollment, an individual commits to the principles embodied in the code. Academic dishonesty in any form is unacceptable. In the event of an academic dishonesty issue, the procedures for addressing the issue are outlined in the University’s “Academic Dishonesty Procedures”, which can be obtained from the Director of Student Judicial Affairs in the Jones Visitor Center.

University Recording Policy:
Surreptitious or covert video-taping of class or unauthorized audio recording of class is prohibited by law and by Board of Regents policy. This class may be videotaped or audio recorded only with the written permission of the instructor. In order to accommodate students with disabilities, some students may have been given permission to record class lectures and discussions. Therefore, students should understand that their comments during class may be recorded.

Disability Services:
Any student with a disability needing academic adjustments or accommodations is requested to speak with me or the Disability Resource Center (Thompson Building Suite 101) as soon as possible to arrange for appropriate accommodations.

Academic Success Services:
Student fees cover usage of the Math Center (784-4433 or www.unr.edu/mathcenter/), Tutoring Center (784-6801 or www.unr.edu/tutoring/), and University Writing Center (784-6030 or www.unr.edu/writing_center). These centers support student’s classroom learning; it is the student’s responsibility to take advantage of their services. Keep in mind that seeking help outside of class is the sign of a responsible and successful student.