

NR 151 - Ecological Basis for Natural Resource Management

Course Information - Spring 2008

Purpose: This course will introduce you to the principles of ecology that underlie the practice of natural resource management. It will provide you with a foundation that will run through all your introductory natural resources courses. Additionally, the lab exercises will give you hands-on experience with measurement and data collection, preparation of technical reports, use of library resources, use of computer models, and development of your critical thinking skills.

As faculty, our purpose is to help you learn and understand the material as far as possible. But regardless of how we offer it, the material is meaningless unless you actively engage in the learning process. Attendance in lecture and lab is important, but seeking to know and understand is more than just showing up. To do well in this course, you will need to be attentive, do assigned reading, think critically, and ask questions.

Lecture staff: Although both Drs. Anderson and Werner will share the lecture, Dr. Anderson will coordinate the course, so please contact him if you have questions or problems with logistics of the course.

Dr. Eric Anderson, Wildlife
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Dr. Les Werner, Forestry
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Office Hours: M 9-11, W 9-12

Lab staff: Dr. Mai Phillips Dr. Diane Lueck
 Dr. Ron Crunkilton Mr. Jeff Dimick

Grading: Your grade for the course is based on the following split between lecture and lab:

| LECTURE (65%) | LAB (35%) |
|-------------------------------------|-----------------------------------|
| Exam I 20% | Plant competition report..... 15% |
| Exam II 20% | Library exercise..... 5% |
| Final Exam (comprehensive)..... 25% | Lab final 15 |

Text: Ricklefs, R.E. 2000. The economy of nature. 5th ed. Freeman and Company, New York, N.Y. 550 pp.

Please do all readings prior to the scheduled lecture period. There will also be a lab manual provided to you on the first day of lab. There will be no labs during the first week of classes.

PowerPoint: We use PowerPoint for the lecture, and it can be a powerful tool, but unfortunately it has lead to a number of problems in the course (see **Attendance** below). We will post a skeletal version of our PowerPoint notes prior to lectures in D2L, but they should not be considered an adequate replacement for attending lecture nor for taking notes in class.

Lecture Reviews: We will try to do our best to help you learn the material in this class. We will post review questions for each lecture that you should review before coming to lecture for the next material. We plan to offer a review session just prior to each of the 3 scheduled exams.

Attendance: As with any course, attendance and all course materials are your responsibility. Hopefully, your attendance will be motivated by your desire to learn. If you miss an exam, you must have a doctor's note to verify your illness. Additionally, since all lecture notes will be published in the public folders, there may be a temptation to sometimes "skip" a lecture. Don't. It will be nearly impossible to get a good grade if you skip lectures or lab. You simply will not get the understanding of the material by just reviewing the notes.

Lab: We will be out in the field for at least 4 labs. Although we've scheduled them for the latter part of the semester, we could still have poor weather. Field trips will go regardless of the weather, so be sure to dress accordingly. Your lab instructor will provide additional information on lab reports and exams.

NR 151 - Tentative Lecture Schedule
Spring 2008

| Date | Topic | Text* | Lecturer |
|---------------------|---|----------------------------------|-----------------|
| T Jan 22 | Introduction. Key concepts and principles | Chap 1 | Anderson |
| Th Jan 24 | Species. Population growth and carrying capacity | Chap 14 (skip page 281) | Anderson |
| T Jan 29 | Natural selection and fitness | Chap 16 (Skip pages 315-321) | Anderson |
| Th Jan 31 | Abiotic adaptations | | Anderson |
| T Feb 5 | Co-evolution (biotic relationships): Predation | Chap 18 (skip 350-355 & 358-362) | Anderson |
| Th Feb 7 | Herbivory | Pages 340-344 | Anderson |
| T Feb 12 | Competition | Chap 19 | Anderson |
| Th Feb 14 | Parasitism | | Anderson |
| T Feb 19 | Mutualism | Pages 390-396 | Anderson |
| Th Feb 21 | Communities. Communities and landscapes | Chap 5, 403-405 | Anderson |
| T Feb 26 | Trophic levels and food webs | Pages 407-414 | Anderson |
| Th Feb 28 | EXAM I | | |
| T Mar 4 | Exam Review. Ecosystems. Ecosystem development: primary succession | Chap. 22 | Werner |
| Th Mar 6 | Ecosystem development: primary succession | Chap. 22 | Werner |
| T Mar 11 | Ecosystem maintenance: secondary succession | Chap. 22 | Werner |
| Th Mar 13 | Ecosystem development: secondary succession | Chap. 22 | Werner |
| SPRING BREAK | | | |
| T Mar 25 | Ecosystem development: Soil development | Chap. 4 | Werner |
| Th Mar 27 | Ecosystem development: Soil development | Chap. 4 | Werner |
| T Apr 1 | Biogeochemical Cycling | Chap. 7 | Werner |
| Th Apr 3 | Carbon Cycle | Chap. 7 | Werner |
| T Apr 8 | Carbon Cycle | Chap. 7 | Werner |
| Th Apr 10 | Nitrogen Cycle | Chap. 7 | Werner |
| T Apr 15 | Nitrogen Cycle | Chap. 7 | Werner |
| Th Apr 17 | Lake and Stream Ecosystems | Pages 118-122 | Werner |
| T Apr 22 | EXAM II | | |
| Th Apr 24 | Conservation Biology (plus review of Exam II) What's the problem? Why should we care? | Chap 23 | Anderson |
| T Apr 29 | Threats to biodiversity – habitat | Chap 25 | Anderson |
| Th May 1 | Threats to biodiversity - exotic spp. & overexploitation | Pages 500-505 | Anderson |
| T May 6 | Solutions | | Anderson |
| Th May 8 | Hope: restoration ecology and ecosystem management | | Both |
| W May 14 | FINAL EXAM –Rm 170 CNR – 12:30 – 14:30 pm | | |

* Ricklefs, R. E. 2000. The economy of nature. 5th ed. W.H. Freeman and Company, New York, N.Y. 550 pp.

NR 151 – Tentative Laboratory Schedule
Spring 2008

A detailed lab syllabus will be distributed by each lab instructor at your first class meeting.

| Dates | Topic | Location |
|---------------------|---|--|
| Jan 21-25 | NO LAB | |
| Jan 28- Feb 1 | Introduction to lab. Set up greenhouse competition study. | Meet in lab |
| Feb 4-8 | Species concept. Review writing lab reports. | Meet in lab |
| Feb 11-15 | Population viability analysis and wolves in Yellowstone – Computer exercise | COMPUTER LAB Meet in lab first |
| Feb 18-22 | Keystone species investigation – Computer exercise | COMPUTER LAB Meet in lab first |
| Feb 25-29 | Library exercise | LIBRARY Meet in lab first |
| Mar 3-7 | Succession: a forest simulator | COMPUTER LAB Meet in lab first |
| Mar 10-14 | Urban ecology | FIELD TRIP (Library Assignment Due) |
| SPRING BREAK | | |
| Mar 24-28 | End greenhouse competition study. Learning to graph in Excel. | Meet in lab |
| Mar 31 - Apr 4 | Soil survey and community structure survey. Field trip to Schmeeckle Reserve | FIELD TRIP |
| Apr 7-11 | Diversity of shrub/tree layer and soil invertebrates. Field trip to Schmeeckle Reserve. | FIELD TRIP (Competition Lab Due) |
| Apr 14-18 | Invertebrate identification, data analysis and interpretation from Schmeeckle Reserve field trip. | Meet in lab |
| Apr 21-25 | Biotic index for assessing water quality. Field trip to Plover River. | FIELD TRIP |
| April 28- May 2 | Data analysis and interpretation from biotic index field trip. | Meet in lab |
| May 5-9 | Review. Laboratory final exam. | Meet in lab |

| Section | Time | Day | Room | Tentative Instructor |
|---------|-------------|-------|---------|----------------------|
| Sec 4 | 10:00-11:50 | Mon | CNR 252 | Dr. Diane Lueck |
| Sec 6 | 13:00-14:50 | Mon | CNR 252 | Dr. Ron Crunkilton |
| Sec 1 | 8:00-9:50 | Tues | CNR 252 | Dr. Mai Phillips |
| Sec 7 | 13:00-14:50 | Tues | CNR 252 | Dr. Diane Lueck |
| Sec 5 | 10:00-11:50 | Wed | CNR 252 | Mr. Jeff Dimick |
| Sec 8 | 13:00-14:50 | Wed | CNR 252 | Dr. Mai Phillips |
| Sec 3 | 9:00-10:50 | Thurs | CNR 252 | Dr. Mai Phillips |
| Sec 9 | 12:00-13:50 | Thurs | CNR 252 | Mr. Jeff Dimick |
| Sec 2 | 8:00-9:50 | Fri | CNR 252 | Dr. Diane Lueck |