

INTRODUCTORY ECOLOGY - ZOO/BOT 260  
**COURSE SYLLABUS, SPRING 2008**

**Meets:** M W F 9:55 a.m., 132 Noland Hall

<b>Staff:</b>	<u>Instructor</u>	<u>Teaching Assistant</u>
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**Office Hours:** In the past we have found that, regardless of when office hours are scheduled, many students have conflicts. Therefore, we will make appointments on an individual basis. This is not to discourage you from seeing us – you should feel free to make appointments. You can contact us easily by email. If you email us, please put "Zoo 260" in the subject line so that we are sure to take notice.

**Optional Discussion:** T 4:35 115 Psychology  
**Honors Discussion:** M 4:35 447 Birge Hall (Honors students or students with permission only)  
(Discussions begin the second week of classes)

**Required Texts:** Wilson, E. O. 1992. **The diversity of life.** Belknap Press (hardback), W. W. Norton (paperback).  
Quammen, David. 1998. **The flight of the iguana.** Touchstone: Simon & Schuster.  
Leopold, Aldo. 1970. **A Sand County Almanac, with Essays on Conservation from Round River.** Balantine Books.

Texts are available at the University Bookstore.

### **Course Description and Goals**

This course will introduce you to a broad range of ecological ideas. My choice of topics is based on three criteria: (1) Is the topic so basic to ecology that any course in ecology must include it?; (2) Is the topic important for understanding current social and political issues?; and (3) Is the topic just plain neat? I hope that by the end of the course, you have a better appreciation for the complexity of ecosystems and the role that evolution has played in producing the biological diversity around us. Humans are causing many changes throughout the world which present many challenges for society. Almost every decision you make throughout your life, whether it be the foods you choose to buy or where you choose to live, has an ecological consequence. My aim in this course is not to convince you that there are any simple solutions to ecological problems, or even that we can agree on what the problems are. Instead, I want to help you build the tools to judge the science of ecology and give you basic information for making future decisions.

## Course Summary

**Evolution and the Diversity of Life** - This section addresses two main topics: what are living organisms like, and how did they get the way they are. I will spend a fair amount of time on evolution through natural selection. Modern ecology relies heavily on some basic ideas from natural selection, and because natural selection is poorly understood by the general public, it deserves careful attention.

**Global Biomes and Global Problems** - The core of this section is a survey of the earth's major biomes. I will begin by talking about climate, which is largely responsible for the distribution of the biomes over the globe. I will also discuss various ecological problems facing different biomes. I cannot possibly do a comprehensive review of all the environmental problems, so I will be selective. My goal is to illustrate how scientific knowledge is needed to identify and possibly mitigate environmental problems.

**The Ecology of Populations** - This section builds from the interactions between an organism and members of the same species to the ecological interactions among large numbers of species. The objective is to understand how the interactions among different organisms, and between organisms and the environment, determine the distribution and abundance of species.

## Lectures

Most of the material that I expect you to learn will be presented in lectures. Therefore, although attendance at lectures is not required, I strongly recommend that you come regularly. I want the lectures to be as interactive as possible, although the large size of the class makes group discussions difficult. To foster interactions, I will routinely ask questions to the class at large and ask you to discuss possible answers with each other. Be prepared to meet your neighbors.

Many of you may be curious about what I expect you to learn for the exams. As a rule of thumb, if I write something down on an overhead, you probably need to know something about it. Of course, you will also be responsible for things I don't write down; if you want to know if something is fair game for exams, ask.

There will be several guest lectures given by local experts on various topics, and I may show a video. In case you are wondering, I will expect you to know something about these for the exams.

## Optional and Honors Discussions

Tucker will give the optional discussions on Tuesdays; you do not need to register for these. On Mondays, Tucker will give the honors discussion that is for honors students or students with special permission only. For the honors section, you need to register, and attendance is required.

The optional and honors discussions have two purposes. The first purpose is to provide a venue for you to ask questions about the material covered in lectures. The second purpose is to allow you to let us know what you do and do not understand, and how we can explain things better. This is a large course, and it is difficult for us to interact with students during lectures. During the discussions, you can make suggestions and provide input into the course.

## Organism of the Day

I will begin each lecture with an "Organism of the Day", chosen because I think it is interesting. Because they will often relate to topics presented in lectures, you will be responsible for knowing about the "Organism of the Day" for exams.

## Readings

The course doesn't have a textbook. Instead, I have selected three books for required reading that discuss some of the topics I cover in class but from different perspectives. Much of the information I give in lectures will not be in the readings, and lots of information in the readings will only be touched on in lecture. For exams, I will assume that you have read the texts moderately carefully, although I will base the exams primarily on the lectures.

Although the course doesn't have a textbook, if you want additional information on any of the topics I discuss, please let me know.

## Learn@UW

Learn@UW is a web-based tool that you will use for practice quizzes and get your course grades. You can find it at

<https://learnuw.wisc.edu>

There are extensive instructions about how to use Learn@UW that you can access from this site. I suggest you do this early in the semester to make sure there are no glitches. Tucker is the course webmaster, so if you have problems, please contact him. **Warning:** Learn@UW might clog up if everybody tries to use it on the nights before exams. Therefore, it is in your best interest to try the quizzes several days before the exams.

## Extra Credit Quizzes

To help you study, I strongly recommend that you take the extra credit quizzes on Learn@UW. There are 6 quizzes covering material from the course sequentially. The questions were taken from exams from previous years, so you should expect your exams this year to be similar. To provide added incentive for you to take the quizzes, I will give an extra credit point for each quiz that you score above 90%. You can take the quizzes 5 times and after each time you learn which questions you got wrong, so scoring 90% should be easy. You can take these quizzes for extra credit up to the time of the exam. No credit will be given for quizzes taken after the corresponding exam, although we will post identical quizzes with the suffix "(not graded)" that can be taken at any time.

## Exams

If you have any special requirements for the exams, or if there is anything we should be aware of, please tell me. I can make special arrangements if, for example, English is not your first language or you are dyslexic.

I want to reduce your anxiety about exams as much as possible. Therefore, I will try to be clear about what I expect from you. If I am not clear enough, you should ask questions. However, in the interest of fairness to the entire class, I will only answer questions about what to expect on exams during class.

The evaluation for the course will consist of five in-term exams and a cumulative final exam. The in-term exams will each count 12.5% towards your final grade, and they will focus primarily (but not exclusively) on material since the previous in-term exam. All in-term exams will be given during the class period, and I will go over the exam immediately after you take it. Therefore, there will be no make-up exams. The final exam will count 37.5% towards your final grade. About 80% of the material on the exams will come from lectures, while about 20% will come from the readings. All exams will be multiple choice and will be graded by computer. Computers do not make mistakes, so all grades will be final. If you think that a clerical error has been made, please bring it to Tucker's attention.

## **Course Grading**

The five in-term exams will have 20 questions, and the final will have 60 questions. Your final grade will be based on the total number of questions you get correct on the six exams combined. Therefore, the questions on each exam weigh the same towards your final grade, and the total number of points for the course is 160.

Final grades will be determined by either an absolute scale or a curve. The absolute scale is: A > 88%, AB > 85%, B > 78%, BC > 72%, C > 55%, and D > 40%. Note that this is a pretty easy curve, and by doing quizzes and other exercises (described below) you can get extra credit. If this absolute scale is too severe, I will curve the grades up (i.e., give everybody higher grades) so the average is about a B.

I have given the dates of the exams below, and therefore none of the exams should take you by surprise. Some crises might make it impossible for you to take an exam when it is scheduled, such as severe illness or a death in the family. However, unless you are in a coma, there is no excuse for not telling me beforehand if you cannot take an exam at its scheduled time. If you miss an exam without telling Tucker or me beforehand, you will get an F on the exam. I will not re-schedule in-term exams, because I will go over them in class right after you have taken them. Therefore, if you miss an exam, we will have to negotiate an alternative assignment.

## **Optional Written Assignment**

I will give you the option to write a short review paper of readings that I will assign you; I will announce the readings and give you instructions after the first exam. If you get an "A" on the paper, I will add 6 points towards your final grade; this is equivalent to increasing the number of questions you get correct on an exam by 6. Grades of AB, B, BC, C, D, and F are worth 5, 4, 3, 2, 0, and -2 points. Note an F will reduce your exam score by 2 points.

## **Student Exam Questions**

Two weeks before each exam, I will ask you to submit questions to Tucker that could be used on the exam. The questions should be emailed to Tucker and have the same format as those on the practice quizzes on Learn@UW (multiple choice with 4 options). When you email questions to Tucker, please put "Zoo 260: questions for exam" in the subject line. For each question of yours that we use on the exam, you will receive 1 extra credit point (1 out of 160 for the course). We will limit you to 2 extra points (questions) per exam, but it is in your best interest to submit several (8-10) questions. Also, writing questions is a very good way to study for exams.

## **Extra Credit Attendance at Research Seminars**

There is a tremendous amount of ecological research conducted on campus. To encourage you to take advantage of this, I will give one extra credit point, up to a total of 3 for the semester, when you attend a seminar and write a short essay about it. Each week I will announce one or more acceptable seminars that you can attend. For the essay, use the following format. First, list your name and student number, the date of the seminar, the presenters name and the seminar title. Second, write a paragraph summarizing the topic of the seminar. Third, write a paragraph describing what you think was the most interesting argument made by the presenter. I don't expect these essays to be more than a page, single spaced. Then email your essays to Tucker with "Bot/Zoo 260 Seminar Essay" in the subject line. Tucker and I are likely to be at these seminars.

## **COURSE OUTLINE**

This is an outline for all of the topics I will talk about in the course. We will spend varying lengths of time on each of the topics, and because it is difficult to predict how long different topics will take, I have not given dates for the lectures. The week before each exam I will tell you what will be covered. I have also included the required and recommended readings for each topic. The readings will not necessarily correspond to the lectures, so the schedule is mainly intended to pace your reading.

### **Evolution and the Diversity of Life**

#### **1. What is Life?**

Wilson Chs. 1 and 2

#### **2. Darwin and evolution**

Wilson Ch. 3

#### **3. Natural selection**

Wilson Chs. 4 - 6

#### **4. Speciation**

Wilson Ch. 7

### **Global Biomes and Global Problems**

#### **5. Climate and world biomes**

Wilson Ch. 8

#### **6. Arctic and alpine tundra**

Wilson Ch. 9

#### **7. Coniferous forests**

Wilson Ch. 10

#### **8. Deciduous forests**

Wilson Ch. 11

#### **9. Tropical rain forests**

Quammen "Introduction" and pp. 1-60

#### **10. Grasslands and savanna**

Quammen pp. 61-89

#### **11. Chaparral and deserts**

Quammen pp. 105-175

#### **12. Oceans**

Quammen pp. 203-210

#### **13. The biomes of Wisconsin**

Quammen pp. 231-260, 270-278

## **The Ecology of Populations**

### **14. Population regulation and human population growth**

Leopold: Foreword - June

### **15. An endangered species: the Northern Spotted Owl**

Leopold: July - December

### **16. Competition**

Leopold: Wisconsin – New Mexico

### **17. Predation**

Leopold: Chihuahua - Manitoba

### **18. Energy and nutrient flow in ecosystems**

Leopold: Round River, Natural History, and The Upshot (note some essays in part III are not assigned)

### **19. Global climate change**

### **20. Course summary**

#### **Important Dates**

**exam 1:** Wednesday, 13 February

**exam 2:** Wednesday, 27 February

**exam 3:** Wednesday, 12 March

**exam 4:** Wednesday, 9 April

**exam 5:** Wednesday, 30 April

**final exam:** Thursday, 15 May, 2:45 pm

**spring recess:** 15 March – 23 March

**last day of class:** 9 May