

Syllabus BSC 201 Ecology

Spring 2014

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Syllabus, Lectures, Other Course materials: Available on Reggienet

Lecture: MWF 9:00 - 9:50AM, Moulton 214

Laboratory: Science Laboratory Bldg. 421 (see Laboratory Schedule)

Required Textbook: E-book – *SimUText Ecology*.
SimBiotic Software for Teaching& research Inc.
[**Details for acquiring this text will be given on day 1**]

Lab manual: *Ecology*. Phi Sigma Bookstore, Felmley Hall 101A

Tentative Examination Schedule (Dates may be adjusted):

In class examinations: **Mon. 10 Feb.; Fri; 7 Mar.; Wed. 9 Apr.**

Final examination: **Week of May 5** As scheduled by the university

Course goals: Ecology is a major's course designed to introduce the concepts, questions, facts, and methods of ecology, the scientific study of how organisms interact with their nonliving environment and with other organisms. Ecology is one of the subdisciplines (along with genetics, physiology, and cell biology) that constitute the science of biology, and which all biologists need to understand in order to merit the title of "biologist." This course is designed for people seeking a career in biology and biology education. After successfully completing this course, you should understand the basics of ecology as a science and know the major principles of the subdiscipline. The course emphasizes both concepts and facts (data). Although we will cover some applied aspects of ecology (i.e., applications of ecological principles to environmental problems), the emphasis of this course is on the general principles of basic ecology. You will also learn some ecological methods. Secondary goals of the course are to improve your ability to prepare written presentations of scientific material, and to enhance your ability to apply quantitative and mathematical skills to the science of biology.

Grades:

Lecture - 75%. There will be **three** in-class examinations during the semester (see above for tentative dates. These exams will be part multiple choice, part essay, part quantitative/graphical. There will also be a **cumulative final** given during final examination week, (Week of May 7; Schedule to be determined by the university). The three in-class examinations together are worth 50% of your grade and the final is worth 25% of your grade.

Laboratory - 25%. The laboratory grade will be based on written assignments and attendance and participation (see Laboratory Schedule, below). Assignments will be explained in the laboratory. Assignments turned in late will be penalized 5% per day up to five days, unless the TA is presented with a valid excuse (preferably in advance of the assignment due date).

Overall grading system: Lecture and laboratory grades will be combined and you will be graded based on the following scale: **90-100% -- A; 80-89% -- B; 70-79% -- C; 60-69% -- D; <60% -- F**

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Grading of essay exams: Essays on exams will rated on a 20-point scale as follows:

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| 18-20 | Excellent. All necessary information; well organized; good examples; no irrelevant material. |
| 16-17 | Adequate. All major points made; no major errors; good examples. |
| 14-15 | Mostly adequate, but some major point missing or wrong, or with inappropriate examples. |
| 12-13 | Inadequate. Major errors or omissions. |
| <12 | Complete lack of understanding, or did not answer the question that was asked. |

Questions about scores on examinations (essay or multiple choice) must be presented within one week after the exams are returned.

Academic Dishonesty

We, your instructors, have a professional and ethical obligation to prevent cheating and plagiarism during lecture examinations and in the preparation of laboratory reports. We take this obligation very seriously, and will maintain a zero-tolerance policy toward any academic dishonesty. If cheating occurs, the student will receive a zero on that examination or laboratory report, and the incident will be reported to the Director of the School of Biological Sciences and to the Student Dispute Resolution Services (SDRS). Your laboratory and lecture instructors assume that you understand your obligations concerning academic honesty and the consequences of not meeting those obligations. Indeed, we shouldn't even have to say these things ... honest effort should be the minimum expectation of university students. Because it is vital that you understand those responsibilities and the University's policies on academic honesty, we urge you to read the Academic Dishonesty portion of the Student Code of Conduct: <http://www.deanofstudents.ilstu.edu/downloads/crr/code-of-student-conduct.pdf>
- Read, in particular, pages 7,8,17, and 18

Any student needing to arrange a reasonable accommodation for a documented disability should contact Disability Concerns at 350 Fell Hall, 309-438-5853, or visit the website at disabilityconcerns.illinoisstate.edu .

The following tentative lecture outline indicates topics covered.

Lecture Outline

Topic

Introduction.

What is ecology, and what do ecologists do?
Ecology of populations
Demography: Schedules of birth & death
Life histories and reproductive value
Population growth & dynamics
Density dependent population dynamics
Harvesting natural populations

Exam #1

Ecology of communities
Species interactions and their effects
Competition
Predation
Disease ecology
Mutualism
Evolutionary responses
Food webs & Keystone species
Indirect effects

Topic

Exam #2

Basics of Evolution.
Evolution and Natural selection
Evolutionary ecology of infectious disease
Ecology of individuals.
Physiological ecology
Temperature & Moisture
Habitat selection
Behavioral ecology
Group living
Mate Choice

Exam #3

Ecology of ecosystems
Succession
Nutrient cycles
Applied ecology & Conservation
Climate change

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Laboratory Schedule

| Week | Laboratory Topic ASSIGNMENT DUE | Lab takes place in: | OTHER |
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| Week 1 (13-17 Jan) | The literature of Ecology Labs do not meet – work on your literature assignment | | |
| Week 2 (20-24 Jan) | No labs | | |
| Week 3 (27-31 Jan) | Introduction & Statistics in Ecology Due: <i>The literature of ecology (Report 25 pts)</i> | SLB 121 | |
| Week 4 (03-07 Feb) | Life tables I Due: <i>Statistics in Ecology (Report 25 pts)</i> | Field* | |
| Week 5 (10-14 Feb) | Life tables II | SLB 421 | EXAM 1 10 Feb. |
| Week 6 (17-21 Feb) | Simulations: Isle Royal Moose (Exercises 1,2, & Extension) Due: <i>Life tables (Manuscript Rough draft 25 pts)</i> | SLB 121 | |
| Week 7 (24-28 Feb) | Simulations: Niche Wars (Competition & Coexistence) Due: <i>Isle Royal Moose (Workbook 25 pts)</i> | SLB 121 | |
| Week 8 (03-07 Mar) | Simulations: Keystone Predation | SLB 121 | EXAM 2 07 Mar. |
| Week 9 (10-14 Mar) | SPRING BREAK | | |
| Week 10 (17-21 Mar) | Species diversity I Due: <i>Niche wars (Workbook 25 pts)</i> | Field* | |
| Week 11 (24-28 Mar) | Species diversity II Due: <i>Life tables (Manuscript 100 pts)</i> | Field* | |
| Week 12 (31 Mar-04 Apr) | Species diversity III Due: <i>Keystone Predation (Workbook 25 pts)</i> | SLB 121 | |
| Week 13 (07-11 Apr) | Succession in Illinois forests I | Field* | EXAM 3 09 Apr. |
| Week 14 (14-18 Apr) | Succession in Illinois forests II Due: <i>Species diversity (Manuscript 100 pts)</i> | Field* | |
| Week 15 (21-25 Apr) | Succession in Illinois forests III | SLB 121 | |
| Week 16 (28 Apr-2 May) | Laboratory and TA Evaluations Due: <i>Succession in Illinois forests (Report 25 pts)</i> | SLB 121 | |

* Field laboratory. **Be on time & meet at the location indicated by your TA.** Dress appropriately – long pants, sturdy shoes, and clothes suitable for rooting around in vegetation. Waterproof clothes or warm clothes should be worn when the weather dictates. Central Illinois weather is very rarely bad enough to cause cancellation of a field laboratory, so show up for the laboratory regardless of the weather.

Laboratories meet in the Science Laboratory Building (SLB) 421 unless you are told to meet at another location by your TA (Teaching Assistant). **Attendance and participation in the laboratories are required** and count for about 16% of your laboratory grade, which, in turn, is worth 25% of your total grade.

Lab assignments consist of short **Reports** (25 pts each), a **mandatory rough draft** (25 pts), **Workbooks** (from SimUText labs; 25 pts each), and 2 full length **Manuscripts** (100 pts each). Your TA will explain the details of the requirements for each of these types of assignments. **Rough drafts, manuscripts, and reports** must be typed, with proper grammar, spelling, and punctuation. Tables and figures should meet publication standards (i.e., prepared with *MS Word* or *MS Excel*, or similar programs). Manuscripts should be written in the format for the

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journal *Ecology*, and have a **maximum** page limit of 10 pages of text (Abstract through Literature Cited) plus any tables and figures. Tables and figures should present summary results and analysis of your data. Do not include tables of raw, unanalyzed data. Failure to follow instructions to authors **will result in a lower grade on the laboratory report**. In particularly bad cases, the TA will return the paper without grading it. For the first manuscript (Life tables), turning in a **complete, typed** rough draft (Abstract through Tables/Figures) is **required**. Your TA will make editorial and content comments on the rough draft and return it within one week. The final draft is due one week later. Additional details on preparing reports and manuscripts can be found in the laboratory manual. **Workbooks** should be completed on the printed version of the PDFs included in the SimUText labs. They may be handwritten but must be neat and legible.

Read the exercise **The Literature of Ecology** in the laboratory manual. The worksheet in the laboratory manual should be completed and turned in to your TA during week 3 when the labs meet.

Late assignments will be accepted by your TA without penalty **only** if a valid excuse is presented to your TA, preferably before the assignment is due. Unexcused late manuscripts will be penalized 5% per day, up to five days (25%). Without an excuse, manuscripts more than five days late will not be accepted, and you will receive a zero for that assignment. Unexcused late reports will not be accepted.

Come to the laboratory prepared. You should read the relevant portions of your laboratory manual, and have a general understanding of what is to be done. You should also read any additional handouts or reading assignments.

Laboratory Grading

The laboratory (450 points) is worth 25% of your total grade. Points break down as follows:

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| Two manuscripts | 200 points |
| A rough draft and three reports | 100 points |
| Three workbooks | 75 points |
| Attendance and participation | 75 points. |

Plagiarism on any assignment will result in a zero for that assignment, and will be reported to the chair of Biological Sciences and to SCERB. Your TAs will discuss examples of plagiarism with you, in order to clarify what is, and is not, acceptable. You should make a point of reading the *Student code of conduct*, found in the *ISU Student Handbook*.