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SYLLABUS

ECOLOGY Spring 2012
 course #34BIOL303-001
 MWF 11:00-11:50 am, T 2:00-4:50 pm

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(If I'm not in my office, then check the Lab area)

PREREQUISITE: Successful completion of 34BIOL103 and 34BIOL113 is a prerequisite for this course. Completion of 34BIOL301 and 34BIOL302 is recommended. 34CHEM101 is a pre- or corequisite. It is assumed that all students enrolled in Ecology have mastered the material and lab skills learned in the previous classes and that students have their lab notebooks from previous courses available for reference. Students who have not taken or have not passed the previous courses will have difficulty passing this course. It is recommended that students not set themselves up for failure by taking courses for which they do not have the prerequisites.

COURSE DESCRIPTION:

4 undergraduate credits. This lecture-lab course covers basic principles of ecology including evolution, natural selection, ecosystem components, biomes, population biology, and behavioral ecology. Current and historical research and etymology of terminology are discussed. Field work demonstrates ecological sampling techniques. Labs include water and soil analyses and use of computers for statistical analyses. Offered as a Web-assisted course. **PREREQ:** 34BIOL103, 34BIOL113, **PRE-ORCOREQ:** 34CHEM101, or permission of instructor.

COURSE OBJECTIVES:

1. To explore and develop one's understanding of the concepts, principles, and processes of ecology (the relationships between organisms and their environment), emphasizing an evolutionary perspective.
2. To study current issues in the major subdisciplines of modern ecology.
3. To become familiar with basic quantitative and statistical techniques used in ecological research.
4. To observe and analyze ecological principles in action in natural ecosystems.
5. To communicate in ways appropriate to the biological sciences about the processes studied and results obtained.
6. To become familiar with the use of computers to gather and analyze data.

METHODS OF REACHING THESE OBJECTIVES:

1. You will prepare for class by reading and thinking about the assigned readings, Web pages, and/or lab handout(s) provided

(related Web-based course materials may viewed/obtained by following the appropriate links from <http://biology.clc.uc.edu/>). From this introduction, you should have a basic understanding of the topic being discussed/investigated and any laboratory procedures to be followed.

2. Each class/lab period, you will participate in the scheduled activity for that day: field work, lab activity, note-taking, discussion, and/or test. In order to benefit maximally from the related lab activities, you need to plan to spend the whole lab period working on each lab, and not attempt to rush to finish early. Taking the time to observe closely, be thorough in your work, and take good notes will both yield better data and allow you to better absorb and learn the material, thereby improving your ability to perform well on tests.

3. You will prepare and maintain a laboratory notebook into which you will put all information and handouts as well as your own lab notes, data, and analyses. This notebook will be organized according to the format specified in Biology 111 Lab and will serve as a permanent record of your lab work.

4. Ecology involves the study of organisms interacting in their environment, and thus, you will be expected to participate in field hikes to see ecological concepts "in action" and to learn how to gather and analyze ecological data.

5. After completion of each laboratory exercise, you are expected to spend time analyzing the procedure and the significance of the results. These written analyses should be included in your lab notebook.

6. For many of the lab exercises, you will use Web pages to collect and analyze data.

7. You will complete the problems on the worksheet handouts in a timely manner.

8. Using a computer, you will prepare a final report summarizing and distilling the data collected in lab.

9. Several times during the quarter, you will be asked to summarize an article in the popular press and turn this in to be duplicated for class discussion.

10. You will be expected to accurately define key terms, translate pertinent wordstems, reproduce explanatory diagrams, and explain important concepts in your own words. Test structure will include short essays and will cover both lecture and lab.

Wordstems provide a fundamental tool to understanding language, thus etymology of major terms will be derived and tested.

More detailed explanations of these expectations and assignments will be given in a series of handouts and verbal instructions.

SCHEDULE: Note: Since most of the lab activities involve being outside, unless the weather is really bad, we will be going out, so please dress accordingly. Please wear/bring clothing suitable for hiking through brambles and/or mud and/or poison ivy. **Due to various safety regulations, long pants and sturdy boots/shoes are mandatory for field hikes. Inappropriately-dressed students will not be permitted to participate in lab activities** and will, thus, not have notes for any lab(s) missed. Some of the hikes may be mildly strenuous, so people with asthma,

diabetes, and/or hypoglycemia should plan ahead and come prepared to deal with any possible reactions they might have. In the event of uncooperative weather, the lab schedule may be altered. Tests, quizzes, and other due dates will be at the stated times unless an announcement to the contrary is specifically made beforehand.

In the event that all classes are canceled due to inclement weather, UC will make that information available via the local media and via other means. If classes are not canceled, but I cannot make it in due to weather or illness, I will send an e-mail message to all students for whom I have e-mail addresses. If you wish to receive that notification, please provide me with an e-mail address for an account which you check regularly.

MONDAY	TUES LAB	WEDNESDAY	FRIDAY
26-III History & Background ch 1, 2; C: ch 46	27-III Intro to Lab, Mapping: Use of Compass (& Transit)	28-III Early Earth, Pangea C: ch 24	30-III Continental Drift and Evolution C: ch 23 (end of 30)
2-IV Evolution, cont.	3-IV Soil Analysis	4-IV Speciation, Natural Selection C: ch 20-22	6-IV WAFFLE BREAKFAST FIRST TEST
9-IV Return & Discuss Tests	10-IV Invertebrate Sampling Techniques App A,	11-IV Population Genetics ch 21 B	13-IV Ecosystem components & dynamics ch (3), 10-12
16-IV Limiting factors; cycles, energy ch 4-9, (29)	17-IV Tree Survey	18-IV Stratification & Ecotones ch 28 ECONEWS DUE	20-IV SECOND TEST
23-IV Return & Discuss Tests	24-IV Shrub & Herb Survey App A, B	25-IV Aquatic Biomes (Ecosystems) ch 15,16	27-IV Terrestrial Ecosystems/Biomes ch 13, 14
30-IV Discuss EcoNews	1-V Environmental Factors; NOTEBOOKS & 1ST DRAFTS DUE	2-V Populations: Natality & Mortality ch 17, 18	4-V Populations: Dispersal & Territory ch 17
7-V Populations: Fluctuations, etc. ch 18	8-V Pond & Stream Ecosystem, return NB App A, B	9-V Intraspecific Relations: Cooperative ch 20	11-V THIRD TEST
14-V Return & Discuss Tests	15-V Water Analysis	16-V Intraspecific Relations: Competition ch 19	18-V Interspecific Relations, Niche ch 22-27
21-V Coevolution & Pollination ch (24), 27	22-V Mark and Recapture PAPERS DUE	23-V Succession ch 30 ECONEWS DUE	25-V Human Impact: ch (29) NOTEBOOKS DUE
28-V MEMORIAL DAY NO CLASSES	29-V Succession, return NB	30-V Discuss Worksheets	1-VI Discuss EcoNews
FINAL EXAM — Week of 4-VI, Day & Time: TBA			

GRADES will be determined based on the total points from your three test scores (100 pt. each), final exam, (200 pt.), final lab report (200 pt.), two lab notebook gradings (200 pt. each), EcoNews summaries, and any homework assignments. A histogram (curve)

of total scores will be constructed and analyzed using statistical methods. In general, the class mean will serve as the dividing line between "B" and "C" scores, and only those students whose scores are above the mean plus one standard deviation

unit, thereby demonstrating superior mastery of the material covered, will receive an "A". An "F" will be given only in the rare instance in which an individual repeatedly scores at the bottom of the class and shows blatant disregard for good study habits. **Ten percent (10%) of the total possible points** will be deducted per class period for late assignments (notebooks, papers, etc.) or make-up tests or quizzes. As stated in the *Making and Keeping a Lab Notebook* protocol, "No books abandoned in my mailbox will be considered as turned in, nor will they be graded — your portion of the grade sheet must be filled out and turned in with the notebook." Any student who stops attending class and does not go through the official withdrawal process will be given the grade of "UW" — unofficial withdrawal — the equivalent of an "F." Grades will be awarded based on a straight A-B-C-D-F grading scale.

I realize that there are some medical conditions which, legitimately, can preclude a student from having an equal chance to learn in this course. A very obvious example would be a student who had trouble hearing me speak, thus was at a great disadvantage because (s)he would miss what I was saying in lecture. However, other, more subtle, conditions such as ADD and dyslexia can also adversely affect an equally-intelligent student's opportunity to obtain information and/or communicate to me that (s)he has learned the needed material. It is not "unfair" to anyone to make arrangements to compensate for such medical conditions, but rather, this can help insure that such people have an *equal* chance at doing well in this course. Obviously, however, such students would still have to demonstrate that, given reasonable accommodations, they are capable of mastering the required material. Thus, students who need some type of accommodations in order to "level the playing field" and put them on a par with the rest of the class should speak with me **now, not after grades have suffered**.

TESTS: There will be three (3) tests worth 100 points each. These will include questions on meanings of Greek/Latin words used in forming biological terminology, definitions, concepts & processes, etc. as well as problems to solve. Lab procedures will also be covered. The final exam will be 200 points and will be comprehensive with emphasis on the material covered after the third test. (Note: A number of students have found it useful to make "flash cards" from which to study word stems and definitions.) Make-up tests will be given only in the event of a valid excuse, and must be taken promptly. There may also be pop quizzes to insure that you have read the lab we will be

doing, and these cannot be made up if missed. Tests will cover material from each lecture (& lab) session that is included, and grades will not be adjusted for any classes that you miss — "I wasn't there" is not a reason.

Students who miss a test should make arrangements with the instructor to **make it up BEFORE the next class period**. Requests to make up tests after the tests have been returned and discussed will be denied unless a student has a valid excuse (such as a doctor's note). Optionally, a more difficult make-up test may be written (but graded on the same curve as everyone else). **Only one test** may be made up late, and then only with a valid excuse. If more than one test is missed, subsequent tests will receive a "zero." This means that if you skip one test because you "don't feel like it," then miss a second test due to illness, you have used up your one chance and will receive a "zero" on the second test. It has been my experience that students who don't take a test on time because they think they need more time end up doing no better (if not worse) when they do finally take the test. **There will be a 10% per class period penalty for a late test.**

REQUIRED TEXT AND EQUIPMENT:

1. Smith, Robert Leo. 2001. *Ecology and Field Biology*, 6th. (or more recent) ed. Harper-Collins Publ. Co., Inc. New York. (available in bookstore)
2. A bound 10 × 7⁷/₈ inch composition notebook with graph rulings (available in the bookstore). All notes taken during lab should be entered directly into this notebook.
3. A **BLACK**, water- and solvent-proof pen, such as "Pilot Precise®, Extra-Fine tip" (available in the bookstore) or Rapidograph, which writes with indelible (waterproof) ink. Water-soluble markers, ballpoint pen (which is soluble in alcohol, etc.), and felt-tips which "bleed" through the page are NOT acceptable.
4. Clear contact paper to mount handouts, specimens, etc. into lab notebook (see protocol from Freshman Biology Lab).

OPTIONAL RESOURCES AND EQUIPMENT:

1. Borror, Donald J. 1960. *Dictionary of Root Words and Combining Forms*. Mayfield Publ. Co. (in bookstore)
2. Marchuk, William N. 1992. *A Life Science Lexicon*. Wm. C. Brown Publishers, Dubuque, IA. (available in bookstore)
3. Any field guides to local flora and/or fauna which you may have or wish to purchase. A number are available in the bookstore, the Cincinnati Nature Center, the Cincinnati Museum of Natural History, the Cincinnati Zoo, and local bookstores.
4. Pechenik, Jan. 1993. *A Short Guide to Writing about Biology*, 2nd ed..

- Harper-Collins. (in bookstore)
5. A scientific calculator with trigonometric and statistical functions would be helpful.
 6. Campbell, Neil A. et al. 2002. *Biology*, 6th ed. Benjamin Cummings Publ. Co., Inc. Menlo Park, Ca. (available in bookstore — other edition or other freshman Biol. textbook is OK)

ASSIGNED READINGS should be done prior to the class time for which they are listed. Extra reading ("literature research") on your own is encouraged. If you find a good reference on a topic to be covered, please share it with the rest of the class. Please read lab handouts prior to the lab period for which they are scheduled because we will need as much time as possible in the field.

VARIOUS ACADEMIC POLICIES: (Supplement to Course Syllabi)

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COURSE ATTENDANCE AND MAKE-

UP POLICY: Missing even one class will put you behind. Thus, it is to your advantage to attend class. Because many of these labs involve cooperative data gathering and due to the heavy use of the lab room, it is impossible to arrange make-up time if you miss a lab. Students will, however, be responsible for all material covered in all lectures and all lab sessions, and it is your responsibility to know what happened in a lecture or lab you missed. No late EcoNews summaries will be accepted. Students who miss a test should make arrangements with the instructor to **make it up before the next class period** unless there are very unusual circumstances. Only one test may be made up late; if more than one test is missed, subsequent tests will receive a "zero." For your own health and safety and in consideration of the health and safety of others around you, no smoking will be permitted during the lecture or the lab period (including while on hikes). Also, because of possible contamination by toxic chemicals or pathogenic bacteria, it is unwise to consume food or beverages during lab. For lab, please wear/bring long pants and sturdy boots/shoes suitable for hiking through brambles and/or mud and/or poison ivy. Some of the hikes may be mildly strenuous, so if you have diabetes, hypoglycemia, or allergies, make sure you carry appropriate medication with you. While hiking, drinking water in non-breakable containers is permissible and is especially encouraged in very hot weather. Smoking and littering are prohibited.

POLICY ON CELLULAR PHONES AND

BEEPERS: ALL cellular phones and beepers will please be **TURNED OFF** during class. Ringing cellular phones or beepers and/or people answering calls and talking on the phone during class are extremely rude and inconsiderate of your classmates who are trying to hear what the instructor has to say and very disruptive of the class. Please give the number of the college switchboard (732-5200) to any family members who may need to reach you, and in an emergency, the college security guard or receptionist will notify you. Lab students who own a cell phone may, optionally, wish to bring that cell phone (turned off, please) along on hikes in case of emergency.

WITHDRAWAL POLICY: The University has set up time limits within which you may withdraw at first without the instructor's signature (through the second week of classes), and later, only with the

ECONEWS: Outside reading on ecological issues is encouraged. So that you may share your most interesting or exciting recent "discoveries" in these areas, lecture sessions have been designated as "EcoNews" discussion times. On the specified due dates, you are asked to turn in an abstract in your own words of an article pertaining to some aspect of ecology. You should include some analysis of the topic: what was the article about, why is this significant — what consequences will result from this, and what questions do you have — what was unclear in the article? Also include the citation in proper bibliographic form at the top of your page. These will be photocopied for distribution to your classmates. These will potentially be worth 10 points each.

instructor's signature (through the eighth week of classes). The registration office can supply you with the actual dates for each quarter. If you need to drop a course, it is your responsibility to do so by the appropriate deadline. Be advised that if you decide to withdraw and choose to leave your withdrawal slip in my mailbox the last day, you run the risk that I will not get it until after the deadline. If you wish to withdraw, see me in person to get my signature. Any student who stops attending class and does not go through the official withdrawal process will be given the grade of "UW" — unofficial withdrawal — the equivalent of an "F".

UNIVERSITY OF CINCINNATI ACADEMIC DISHONESTY POLICY:

The following prohibitions against cheating and plagiarism are from the University of Cincinnati Student Code of Conduct. All students are expected to adhere to these policies. Failure to do so will result in appropriate disciplinary action.

CHEATING is defined as any dishonesty or deception in fulfilling an academic requirement such as:

1. Using unauthorized material during an examination such as tape cassettes, notes, tests,
2. Obtaining assistance with or answers to examination questions from another person with or without that person's knowledge,
3. Furnishing answers to examinations questions to another person,
4. Possessing, using, distributing or selling unauthorized copies of an examination,
5. Representing as one's own an examination taken by another person, or
6. Taking as one's own an examination in place of another person.

PLAGIARISM is defined as:

1. Submitting another's published or unpublished work, in whole, in part, or in a paraphrase, as one's own without fully and properly crediting the author with footnotes, citations or bibliographical reference, or
2. Submitting as one's own, original work, materials that have been produced through unacknowledged collaboration with others.

NOTE: if you include a copy of someone else's work in your lab notebook and do not state from where it was obtained, you are in violation of this portion of the student code of conduct!

