

BIOLOGY 111 ENVIRONMENTAL SCIENCE

PURPOSE

Biology 111 provides an introduction to (1) basic ecological concepts and (2) problems associated with human-induced environmental changes. The course is addressed to the general student regardless of the major field of interest. Biology 111 counts as the first course in the co-major, Human and Natural Ecology, which is offered at Emory College.

EXPECTED RESULTS

The student is expected to become familiar with (1) basic ecosystem structure and function, including trophic relationships, energy flow, biogeochemical cycles, and population biology, (2) principles of primary and secondary succession, (3) natural vegetative communities (terrestrial, aquatic, and wetland) of the Georgia Piedmont, (4) major problems associated with air and water pollution, (5) the recovery and utilization of both non-renewable and renewable energy sources, and (6) the life support systems of the urban environment with special emphasis on the treatment of (a) drinking water and (b) waste water.

EVALUATION PROCEDURES

Student evaluations are based on the following:

1. four (4) one-hour tests,
2. a laboratory practical,
3. a detailed journal regarding the laboratory exercises and the individual student's reaction to the various topics which are addressed in the laboratory experiences.
4. A comprehensive final examination over all readings, lectures, and laboratory exercises.

Tests include "short-answer", e.g. multiple choice and matching, and a more subjective part consisting of "fill in the blanks", "completion", definition of terms, and function(s) of various ecosystem components. Some of the questions require answers of a paragraph or so in length. Students are required to spell correctly, adhere to standard rules of grammar, and logically organize their answers.

The grade for the course is based on the following:

- 1/3 average of test grades
- 1/3 average of grades on practical and journal
- 1/3 final examination grade

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ABSENCE POLICY - Biology Department

All students are expected to attend all lecture and laboratory sessions. However, emergencies may arise which will necessitate absences from class. Students are allowed 4 cuts in lecture and NO CUTS in lab. Students may only miss lab without penalty in cases of illness, family emergency or a school sponsored event which is cleared in advance.

Students are responsible for all material which is covered in laboratory and lecture. When possible students will be allowed to make-up lab material missed due to an excused absence, however, most material in lab cannot be made-up.

PENALTIES

Students who exceed the 4 cut limit in lecture for whatever reasons or have unexcused absences in lab will have their final grade reduced 5 points per absence. Students who miss more than 2 labs without an excuse will fail the course.

EXCUSED ABSENCE - LABORATORY

If a student is absent for medical reasons, the College Nurse (even if treated by another medical person) must issue a statement of the instructor. The instructor must be notified by the student the day of the lab.

If an absence results from an emergency other than the student's health, the Associate Dean of Campus Life must be notified and issue a statement of explanation to the instructor. The instructor must be notified by the student the day of the lab.

If an absence is the result of a college-sponsored activity, a statement to that effect must be given to the instructor by the Dean of the College, the Associate Dean for Academic Affairs, the Associate Dean for Campus Life, or the appropriate coach. Arrangements must be made well in advance of the absence.

In all cases, the final decision regarding whether or not an absence is excused will be made by the instructor.

MISSED TESTS

Ordinarily, tests cannot be made up, however, this is up to the instructor. If a student misses a test, and the absence is excused (see EXCUSED ABSENCES above) the missed test will not count either for or against the student. If the absence is not excused the grade will be a zero. Students are cautioned that any excuse for missing an exam will come under severe scrutiny by the instructor. The instructor MUST BE NOTIFIED PRIOR TO THE TIME OF THE EXAM.

Laboratory tests which are missed for a reason that is excused MUST be made up. The instructor must be notified prior to the time of the test.

TARDINESS

Being late to class is rude and distracting. Continued tardiness by any student will result in the assignment of absences and ultimately a reduction in the student's grade. Three tardies equal an absence. The instructor reserves the option of excluding a person from further classroom or laboratory participation if the student is continuously tardy.

Falsification of information regarding absences from class or laboratory will be considered as a breach of academic integrity.

CLASSROOM AND LABORATORY GUIDELINES

Department of Biology

- I. Eating and drinking are not allowed in either classrooms or laboratories. Therefore, do not bring food items and beverages to class or laboratory. Remember that the use of tobacco in any form is forbidden in Pierce Hall.
- II. Students are expected to wear appropriate attire in classrooms and laboratories. This certainly includes the wearing of shoes.
- III. Students must be safety conscious at all times but especially in the laboratories. Special procedures will be reviewed during laboratory sessions as needed.
- IV. All students are requested to help with housekeeping in the classroom and laboratory.
- V. In Biology 142, 121, and 122 certain designated dissection specimens may be taken from the laboratory. The instructor will identify those specimens which may be removed for study elsewhere. These specimens must be returned on or before the date the instructor announces for their return.
- VI. Except for the exceptions noted above (V) materials may not be taken out of the laboratories. This includes microscopes, microscopic slides, demonstration notes and materials, charts, and all other items which are to be found in the laboratory.
- VII. Violation of any regulation noted in Sections V and VI above will be treated as a breach of academic integrity. Therefore, such violations will be immediately reported to the Honor Council.

1. Performance in Laboratory: The student's laboratory performance will be evaluated on the following:
 - a. A laboratory practical will be given subsequent to the last exercise.
 - b. Each student will record laboratory exercises and procedures in a journal. The journal must be kept in a proper composition book which will be identified by the instructor. Students may use a word processor if the print-out is of letter quality and if a suitable binder is provided. A student must get prior approval from the instructor, if a word processor is to be utilized. Each entry must include, at the very minimum, the following:
 1. A statement concerning the objective of each particular laboratory exercise and the date of each laboratory.
 2. Notes which may have been taken during the exercise.
 3. Relevant "handouts".
 4. A detailed summary of the exercise, including personal comments relevant to each laboratory.
 5. The entries must be written in ink and in a most legible manner. Proper sentence structure, grammar, and spelling are expected.

The preferred outline for the journal is as follows:

- I. Title - Date
- II. Objective
- III. Notes
- IV. Methods
- V. Results
- VI. Summary and Discussion

The journal must be accurate. The goal is to create a document from which the series of laboratory exercises could be replicated by a reader who had no instructions other than those in the journal.

Students are encouraged to record personal reactions to the exercises in the Summary and Discussion section.

Biol/Chem/Geol 111
Spring 1993
H.F. Sharp, Jr.

I. TEXT: Odum, E.P. Ecology And Our Endangered Life-Support Systems. 1989. Sinauer Associates, Sunderland, MA

II. TESTS: A. Hour quizzes will include appropriate material from both lecture and laboratory.

- 1) February 2
- 2) February 23
- 3) March 25
- 4) April 20

B. Laboratory Practical

III. FINAL EXAMINATION: A comprehensive examination over all of the material covered in lecture, the readings, and laboratory exercises will be given on the date announced by the office of Records and Registration.

IV. During the semester the following topics will be considered in more or less the following order:

Lecture: (Readings: Prologue through Chapter 6, Odum)

- A. Ecosystem Structure
 1. Trophic Relationships
 2. Habitat vs Niche
- B. Energy Flow
 1. Ecological Pyramids
- C. Biogeochemical Cycles
- D. Population Ecology and Evolution
- E. Human Ecology and the Economics of Nature
 1. Energy Utilization
 2. Pollution:
 - a. water
 - b. land
 - c. air

Laboratory (Readings: Chapters 7 & 8, Odum)

- A. Primary Succession or What Lives on This Very Hot/Cold Rock?
- B. Secondary Succession or Why Do I Have to Mow the Pasture?
- C. Terrestrial Ecosystem Structure or What and How Many Organisms Live Here?
- D. Aquatic Ecosystem Structure or Who Put This Stuff in This Stream?

Note: Lecture material presented during laboratory sessions should be incorporated into the class notes.

- V. A. Student Evaluation: Lecture sessions and laboratory exercises are complementary components of this course. Therefore, as noted above, material from lectures and laboratories will be included on all tests. Grades will be determined by scores on the various tests, reports and participation in the laboratory activities. Final grades will be determined by approximately the following system: 1/3 hour quizzes, 1/3 performance in laboratory, and 1/3 final exam.

Biology 111
Lab Schedule - Spring 1993
H.F. Sharp, Jr.

<u>Lab No.</u>	<u>Date</u>	<u>Exercise</u>
1*	Jan. 14	<u>Municipal Water Supply</u> A. Cornish Creek Reservoir B. Filtration/Purification Plant
2*	Jan. 21	<u>Municipal Waste Water Treatment</u> A. Sewage Treatment Plant B. Land-Application Site
3	Jan. 28	<u>Wetland Ecology</u> Lecture, Slide, Video
4*	Feb. 4	<u>Wetland Ecology Field Trip</u> Local Wetlands
5*	Feb. 11	<u>Stream Ecology</u> Collection of macrobenthic invertebrates and water samples.
6	Feb. 18	<u>Stream Ecology</u> A. Sorting, identification, counting, analysis of macrobenthic invertebrate communities B. Analysis of water samples C. Compilation of all data
7	Feb. 25	<u>Secondary Succession</u> A. Lecture & Slides B. Woody Plant List
8	March 4*	<u>Secondary Succession Field Trip</u> Local Plant Communities
(March 8 - March 12)		SPRING BREAK
9	March 18	<u>Primary Succession</u> Lecture Slides
10	March 25	<u>Primary Succession Field Trip</u> Local Rock Outcrop Communities
11	April 1*	<u>Terrestrial Ecology</u> Plant Plot Studies - Oxhouse
12	April 8	<u>Terrestrial Ecology</u> Analysis and Compilation of data obtained from plot studies

* = Field Trips