



Syllabus - Biology 102 Environmental Biology

Section: _____

Meets: _____ at: _____ in Rickey _____

An introduction to biological science and the interactions of organisms, particularly humans, with environmental processes. Types of organisms, interactions between organisms, and biological processes, such as photosynthesis and respiration, will be examined in respect to ecological processes.

Credit: 3 hours (3)

Offered Spring semester

Biology 105, 106 or 107 are the lab courses that correspond to Biology 102. Most students will take Biology 105 followed by 106 (105 is the prerequisite for 106); education students may take Biology 107.

Course Structure:

Three hours of lecture per week. Lecture material will utilize topical concerns - global warming, water pollution, toxic wastes, ozone layer destruction, AIDS, biodiversity, etc., as discussion topics to introduce or summarize each subject.

Learning Objectives:

After taking this course, you should:

- be familiar with major ecosystem types
- understand basic biological processes, such as homeostasis, symbiosis, adaptation, etc.
- understand the organization of, and interactions within biological communities
- understand how biological and geological processes are interconnected
- understand how humans affect such processes
- understand photosynthesis and respiration as examples of global, biological processes
- understand how biologists investigate natural phenomena

Biology Faculty:

Dr. Peter Hogan	Office: Bartlett 105	Phone: 376-4745
Dr. Dave McShaffrey	Office: Rickey 242	Phone: 376-4743
Dr. Steve Spilatro (Dept. Chair)	Office: Bartlett 108	Phone: 376-4748
Dr. Almuth Tschunko	Office: Bartlett 208	Phone: 376-4747
Dr. David Brown	Office: Bartlett 207	Phone: 376-4916
Ms. Tanya Jarrell	Office: Bartlett 107	Phone: 376-4746
(adjunct)	Office: _____	Phone: _____

Texts:

Lewis, R. Parker, B. Gaffin, D. and Hoefnagels, M. 2007. *Life*. 6th ed.; Boston, Massachusetts. McGraw Hill. 972 pp.

Assignments, Attendance & Grading

Types of assignments:

Occasional written homework assignments.

Note: Late assignments will **not** be accepted.

Quizzes: About 10 quizzes (roughly every week); will cover all previous material and assigned reading for that date. No make-up on quizzes!

Exams: Two or three tests and a comprehensive final; make-up by **prior** arrangement or legitimate excuse, such as your own death or illness.

Class participation: You are expected to come to class prepared to discuss assigned reading material and reading assigned to that date. You may be called on in class and asked to discuss the material at hand; if you are not prepared, your grade may be lowered.

Attendance: You are expected to attend all class meetings. Absences will likely affect your grade, either directly or indirectly.

Grading Policy: 3 exams (600 pts.); Final exam (200 pts.); Quizzes (100 pts.); Homework (100 pts.). Note: If any of the assignments are not turned in, or are of particularly poor quality, a grade of 'F' may be assigned for the course. Plagiarism is grounds for failing the assignment or the course, at the discretion of the instructor.

Your final grade will be determined as follows:

A+	97%	B+	87%	C+	77%	D+	67%	F	< 60%
A	93%	B	83%	C	73%	D	63%		
A-	90%	B-	80%	C-	70%	D-	60%		

NOTE: You will be expected to do some outside reading on your own. This can take the form of library research or work on the internet. For some assignments, you may be required to submit your work in both printed and electronic formats.

Final Exam: _____

TTh 11:00-12:15 – Final Exam Wednesday May 9 @ 12:00 – 2:30 PM

Tentative Biology 102L Schedule

Topic 1: Biomes, Human Impacts: Overview and Biomagnification

Exam 1 - Week of February 5th

Topic 2: Temperate Forests and Succession

Exam 2 - Week of February 25

Topic 3: Tropical and Boreal Forests and Deforestation

Topic 4: Deserts, Desertification, Homeostasis & Survival

Topic 5: Grasslands, Plants and Agriculture

Topic 6. Wetlands, Lakes and Streams, Competition, Predation, Eutrophication

Topic 7. The Ocean & Symbiosis

Exam 3 - Week of April 16

Topic 8. Acid Rain and Air Pollution

Topic 9. Human Population Growth

TTh 11:00-12:15 – Final Exam Wednesday May 9 @ 12:00 – 2:30 PM

Note: This schedule is for reference only. Details on reading assignments, test dates, lecture notes etc. are listed on the course homepage:

<http://www.marietta.edu/~biol/102/index102.html>

LINKAGE IN THE Biology Courses

These courses do not assume that all students intend to be biology majors. The courses are designed to meet the needs of both biology majors and non-majors, and do not presuppose that students have a strong background in biology. We believe that a basic understanding of biology and science in general is appropriate and indispensable in a society so overwhelmingly shaped by their influence. Many of the problems that you will need to deal with during your life will directly involve the science of biology. Acid rain and environmental toxins, tropical deforestation and the greenhouse effect, genetic engineering and human gene therapy; from AIDS to global warming you will be called upon to make decisions about issues for which the scientific "authorities" cannot provide absolute right and wrong answers. We hope that when you complete this course you will be prepared to deal with such issues, and that you will have developed the intellectual skills necessary to handle new issues that we have not yet envisioned.

The linkage between the courses exist at a number of levels, and are outlined below.

Many concepts relating to ecosystems and environmental problems introduced in BIOL 101L or GEOL 101L will be reinforced in BIOL 102L.

In BIOL 102L, environmental processes introduced in GEOL 101L will be examined in terms of their biological impact. This will include discussion of current effects of geological processes on living ecosystems as well as consideration of how geological processes have affected evolution.

Communication of scientific ideas in lab reports and other writing assignments will be an integral component of both courses, and you will be expected to apply during the second semester skills learned during the first.

You should also expect to develop a more thorough understanding of the scientific method throughout the course.

SKILLS OBJECTIVES

At Marietta College, we believe that "understanding" science is essential to a person's ability to succeed in today's society. By "understanding" we mean more than just possessing knowledge about the physical and natural world. "Understanding" also implies comprehending how science is practiced, and how scientists employ certain intellectual skills in their pursuit of knowledge. Below are listed some of the skills that we think you will need to truly understand science, and that we will be endeavoring to teach to you during this course. Many of the skills listed below are introduced during BIOL 101L or GEOL 101L and will be enhanced through application to environmental problems in BIOL 102L.

1. To learn how scientists think about things. The practice of science requires curiosity, intellectual honesty, skepticism, tolerance of ambiguity, and openness to new ideas.

2. To understand the limits of scientific knowledge. Scientific knowledge is limited by the sensitivity of analytical instruments we use to study nature --such as the maximum magnification of a microscope. It is also limited by attitudes, beliefs and social constraints of scientists themselves. It is these beliefs that determine what scientists choose to study, and how they interpret their observations.

3. To use the scientific method as a tool by which observations can be reliably interpreted to yield an understanding of nature, and as a tool that can be used to solve problems in various spheres of human activity. Of particular importance will be learning how to develop a testable hypothesis, make predictions based upon sound experimental technique, and draw valid conclusions from experimental results.

4. To critically examine lecture notes and reading assignments, and from these to learn fundamental scientific concepts. These concepts should be structured into a mental framework into which supporting information and examples can be incorporated. Thus, that energy and nutrients in an ecosystem move through a food chain of predator-prey relationships is a primary concept, whereas the interactions occurring between specific organisms in a pond represent examples that illustrate predator-prey relationships.

5. To recognize how the fundamental biological concepts allow us to understand the effects of human activities upon nature. Thus, the concept of a food-chain is necessary to explain the effect of DDT in the environment.

6. To learn the importance of the precise vocabulary and terminology of science. Because scientists need to communicate information precisely and unambiguously, they often use "technical" terms, or attach specialized meanings to everyday words. The goal of this course is not that you memorize the jargon used in technical scientific writing, but that you can understand scientific information communicated in textbooks, popular scientific magazines, and the media.

7. To develop written communication skills. Part of learning the "language" of science includes being able to communicate ideas in a concise and accurate written form. We have this objective specifically in mind when making writing assignments during the semester.

8. To understand how mathematics contributes to the understanding of the natural world. Mathematics is an essential component of scientific learning. Scientists use mathematics to manage and interpret data, to express formal relationships between ideas, and to devise mathematical models of natural systems.

There are also certain abstractions that transcend all of science and mold a modern understanding of the universe and humanity's place within it. Awareness of these concepts will allow you to recognize affinities that extend across disciplinary boundaries and will facilitate learning of new ideas. Some of these unifying concepts are given below:

1. Scale and Proportion. Understanding the scale of the universe --from the size of the cosmos to that of an atom, from a geologic time frame to the daily events of human lives, from the speed of light to that of a snail --expands the human mind and places human existence in new perspective.

2. Change and Evolution. Evolution of new organisms, development from child to adult, chemical interconversions, and geologic plate tectonics, reveal the transient nature of the natural world. Knowing that the natural world undergoes systematic change over time is essential to scientific understanding.

3. Dynamic Equilibrium. Many natural phenomena are in a state of "dynamic equilibrium." This means that although the individual components of complex systems such as ecosystems and cells are in constant activity and change, the overall system remains constant. Recognition of this property illuminates the essential interdependence between individual components of nature.

4. Scientific "Modeling". Science will never reveal absolute knowledge of any aspect of nature. Thus, all scientific knowledge should be viewed as "models" of particular facets of nature. These models allow scientists to make predictions of the real world, but the models may also be modified in the future to accommodate new observations.

WHERE DO YOU GO FOR HELP?

You are asked to make many adjustments in your transition to life at college, and the adjustment to the educational and social environment of college can be very stressful. You may, sometime during this course, or in other courses, feel overwhelmed or distraught. It is of great importance that you learn to recognize and use the support system that is available at Marietta College. Foremost is remembering that you are not alone in your anxiety; many of your classmates also are feeling the same way. The secret is not to merely commiserate about the situation, but rather to seek out those resources that can help you. I believe that you will find all of the following resources helpful.

1. **Your professor** for BIOL 102L. We are always willing to devote time to helping students having difficulties with the course material.
2. **Help sessions.** Many courses, including BIOL 102L, offer help sessions during the semester. These are excellent opportunities to obtain a new explanation, or just to review material covered previously during the semester.
3. **Your advisor.** Advisors are provided to assist you, and are excellent resources for solving all sorts of problems.
4. The **student counseling center** is in Andrews Hall, room 102 (ext. 4477). The college counselor has great experience in helping students that are feeling overwhelmed with their course load or other activities.
5. **The Campus Writing Center.** This facility (in Thomas 217, ext. 4658) specializes in helping students with writing difficulties. On some occasions a professor may request that you seek help here. <http://www.marietta.edu/~mcwrite>
6. **A student tutor.** Many departments, including Biology and Chemistry, can arrange for an upperclass major to help students having difficulty with a particular course.
7. **The Academic Resource Center** is located on the 3rd floor of Andrews Hall. ARC offers services to help students achieve their academic potential. These services include study skills assistance and tutoring services as well as individualized support. (ext. 4700) <http://www.marietta.edu/~arc>
8. **Students with disabilities.** Students who believe they need accommodations due to a documented disability must contact me AND the academic resource center as soon as possible to discuss possible accommodations. Any eligibility for accommodations must be verified by the ARC staff.
9. **Web Pages.** A number of web-based study guides are available, especially for the introductory material. The web pages are located at: <http://www.marietta.edu/~biol/102/index102.html>

ASSORTED KEYS TO SUCCESS

- 1) Read the textbook assignments. **Read the chapter summary and try the questions at the end of the chapters in Lewis et al.** Go to the online help.
- 2) Outline, rewrite or otherwise reorganize your lecture notes.
- 3) Ask lots of questions -- "stupid" questions are rarely encountered in classes. If you have a question, most likely many other students in the class are wondering about the very same thing.
- 4) Study with a classmate; quiz yourself and each other. "Self-examination" is one of the most effective learning skills.

5) Because of its breadth, a general biology course may be one of the most difficult you ever take. Be prepared for this, and spend adequate time studying. You cannot cram for tests in a course such as this. You must understand the material, and this understanding only comes with time and effort. Remember, as a general rule, for a 3-hour class you should be spending at least 12 hours per week studying for this class — maybe even more before a test. If you find the tests too difficult, ask yourself if you are really putting in the effort you need to.

6) The real key to success in anything is to enjoy what you are doing. You are embarking on the study of the most amazing miracle - life. Enjoy it. Quest for knowledge. Remember that the study of biology is at the heart of everything in your life, and mastering the subject will enrich you in ways you can not foresee at the outset.

CO-CURRICULAR PROBATION

At the end of the fall semester, any student (with the exception of first year students) on academic probation will also be placed on co-curricular probation effective for the spring semester. At the end of spring semester first year students can be placed on co-curricular probation effective for the fall semester. You should refer to p. 147 of the Marietta College Undergraduate Programs, 2007-2008 Catalog where it says: "A student on academic probation may enroll in no more than 14 credit hours each semester. The following co-curricular restrictions will apply to a student on academic probation:

- a) They are ineligible to participate in any college athletic team or club sport;
- b) They may not hold office in any campus organization or social fraternity or sorority.
- c) They may not travel off campus to a meeting or trip with any college organization or club unless required to do so for an academic program.
- d) They may not represent the college in any on campus or off campus public events or other co-curricular activities (e.g. plays, musical performances, student newspaper) unless required to do so for an academic course.
- e) They may not register for courses that require co-curricular participation unless required by their major.

The restrictions continue in force until the student has returned to "good academic standing", with the exception that when a student on academic probation earns a semester grade point average of 2.0, or better, co-curricular restrictions will be removed for the following semester."

EARLY ALERT PROGRAM

In the fall 2003 semester, an early alert program was implemented and involves faculty indicating in the first two weeks any student who is not attending class or is showing early signs of academic failure to the early alert team. The goal is to identify students who are having trouble and to provide them with the necessary support and referral.

Because academic success is directly linked to establishing a pattern of attendance early in your academic career, attendance is required in this class. Several assignments are due early in the semester to provide early evidence of any difficulty you may be likely to have in your academic career.

Plagiarism is one of many forms of academic dishonesty – Academic dishonesty is not allowed at Marietta College and will be dealt with appropriately. Sanctions may include a lowered grade (including a 0) for an assignment, failing the course, or even expulsion from the college. While you may discuss and help each other with your homework, once you start writing ALL of the work must be your own, NONE may be copied from another student, current or past. **Note: If you copy another student's work, I will flunk you for the course and you could be expelled. Really. Likewise, if you fail to complete any of the lab reports to my satisfaction, you might receive a failing grade for the course.**

"Academic dishonesty within the academic community is a very serious matter, because dishonesty destroys the basic trust necessary for a healthy education environment. Academic dishonesty is any treatment or representation of work as if one were fully responsible for it, when it is in fact the work of another person. Academic dishonesty includes cheating, plagiarism, theft, or improper manipulation of laboratory or research data or theft of services. A substantiated case of academic dishonesty may result in disciplinary action, including a failing grade on the project, a failing grade in the course, or expulsion from the College" (Marietta College Undergraduate Programs, 2007-2008 Catalog, p. 141).

Notes: Dr. McShaffrey's Sections:

Come in and see me in MY OFFICE, ROOM 242, EXT. 4743. email: mcshaffd

I maintain an "open door" policy toward consultations. Feel free to see me after class or just drop by my office; I can almost always spare some time, but if not, we will find a time when we can meet. If I am not there, a schedule near the door will help you find a good time to catch me in my office. If it's really important, call me at home, 374-8687.