

Course Syllabus for Biology 141, Fall 2014

Investigations in Ecology and Environmental Science

Department of Biology, Lewis and Clark College, 5 Credit Hours

Lectures held in Olin 301, MWF, 9:10 - 10:10

Labs held in Biology Teaching Lab (Bodine 201): Tu & Th 9:30 - 12:00 & 12:40 - 3:10 and Th 3:30 - 6:00

Final Exam: Dec 17 (Wed), 8:30-11:30 AM

Text Book: [*Essentials of Ecology \(3rd ed\)*](#) by Townsend, Begon, and Harper

[Click here for a pdf version of this syllabus](#)

Instructor	General Information	Specific Information
Kenneth Clifton	Philosophy	Lectures
Office Hrs: M & W 10:30-11:30; T 1:00 - 2:00	Goals	Labs
Bio/Psych Room 211	Structure	Grading
email: clifton@lclark.edu	Staff	Points to Remember
Phone: 768 -7508	The Bio 141 Moodle Site	Honesty

Math Prerequisites: Biologists like all scientists rely heavily on mathematical tools. Mathematical models, statistical reasoning, graphs and equations are a routine part of Bio 141 lectures, exams, readings, and laboratories. Therefore your enrollment in this course is contingent upon having met the course's mathematics prerequisite. This can be done in one of the following ways:

- passing the computerized math proficiency exam, administered during New Student Orientation.
- receiving a passing grade in CS 102 or any higher level mathematics course at Lewis & Clark, or its equivalent at another college.
- having a SAT score (quantitative) of at least 630 or an ACT score of at least 30
- receiving a B or better in a high school calculus course.

There will be no exceptions to this rule. In fact, we strongly recommend that you have taken Math 115 or its equivalent before enrolling in Bio 141. Please discuss your options with Dr. Clifton during the first week of classes if your mathematical preparation is not yet complete.

Course Philosophy: This course is an introduction to the ways that biologists ask and answer scientific questions in the context of ecology and environmental science. We have three central goals for this course: (1) to introduce you to foundational concepts of ecology, (2) to illustrate how understanding these concepts is central for addressing modern environmental issues; (3) to give you a solid understanding of the scientific method as used by biologists.

We hope this course inspires you with an understanding of the power and importance of rigorous scientific analyses and introduces you to the intellectual tools that are needed for participating in this process.

There are three weekly lectures, which will contain the subject matter of the course (see detailed schedule), as well as a weekly laboratory, in which you will put what you learn into practice. In the laboratory you and your partners will conduct your own original ecological investigation. You will also collaborate on a project examining aspects of the ecology of Tryon Creek and some of the small creeks draining our campus.

Who should take this course: Bio 141 is one of the 3 courses that make up the core of the Biology [curriculum for majors](#) (the others are Bio 151, *Investigations in Genetics and Evolutionary Biology*, and Bio 200, *Investigations in Cell and Molecular Biology*). Bio 141 must be taken by all biology majors, and is also an ideal course to take if you are trying to decide whether you might like to major in biology. Biology 141 is also required for a major in Environmental Studies. Students enrolled in Bio 141 are presumed to have a serious interest in science (many have taken high school biology and chemistry and 4 years of high school mathematics). If you do not share this background, be prepared to work especially hard and to take advantage of the various kinds of support offered by the course staff. If you are looking for a course for non-science majors, Bio 100 might be a better course for you.

Course Goals:

By the end of the course you should have:

- a good understanding of the scientific method as biologists use it
- an understanding of the basic principles of ecology, and of how those principles can help us understand and address global environmental problems
- a better understanding of some environmental issues facing the Pacific Northwest
- some facility at analyzing scientific data and writing and reading scientific papers
- better knowledge of how to work productively as a member of a group.

Expected Learning Outcomes

By the end of the course you should be able to:

1. Demonstrate how and why scientists formulate and test hypotheses
2. Articulate the basic principles of ecology and provide real-life examples that relate to specific ecological concepts
3. Be familiar with and employ basic investigative methodologies to collect data that are relevant to specific hypotheses.
4. Use quantitative methods to solve problems and be able to analyze data to answer questions about the natural world.
5. Generate and interpret graphical representations of quantitative data
6. Effectively communicate scientific findings in written and oral form.

Course Structure: This course has three lectures each week (MWF, 9:10 - 10:10). [Lecture outlines](#) will be available, on-line, usually around 12 hours prior to each lecture, at the course Moodle site. These are *not* intended as substitutes for your own lecture notes. Rather, they are intended to provide an organizational framework to lecture topics that may help guide your studies. Please contact professor Clifton, should you have any trouble accessing this information.

Course Staff

Instructors	
Kenneth Clifton, Course Coordinator, Lecturer, & Lab Instructor for Tues. 9:30 AM section Office: Bio-Psych, 2nd floor, Rm. 211 Phone: x7508 email: clifton@lclark.edu Office hours: M & W 10:30 - 11:30, T 1:00 - 2:00, or by appointment	Wendy McLennan, Lab Instructor for Thurs 9:30 AM and 12:40 PM sections Office: Bio-Psych 212 Phone: x7520 email: mclennan@lclark.edu Office hours: TBA
Bianca Breland, Lab Instructor for Tues 12:40 PM Office: Bodine, 2nd floor, Rm. 219B Phone: x7802 email: breland@lclark.edu Office hours: Mon 2:00 - 4:00 and Wed 3:30 - 4:30	Margaret Metz, Lab Instructor for Thurs 3:00 PM Office: Bio-Psych 221 Phone: xxxx email: mmetz@lclark.edu Office hours: TBA
Support Staff	
Ms. Rian Brennan, Biology-Psychology Administrative Assistant Office: Bio-Psych main office, 2nd floor. Phone: x7511 email: rianbrennan@lclark.edu	

Lectures in Bio 141 will be given by Prof. Clifton, who is also responsible for setting course policy and writing and grading examinations. See him during office hours or communicate via email to discuss any of these matters. Laboratory sections will be taught by Instructors Clifton, McLennan, and Breland, and Metz, with assistance from student teaching assistants. See your individual laboratory instructor during his or her office hours for questions about laboratory investigations or laboratory policy.

Group Study Sessions

After the first exam, group study sessions may be organized to meet on a weekly basis. These sessions will be

student-led, and will be scheduled at convenient times and locations, to be announced later. Group study sessions will be opportunities to review past exams, to prepare for upcoming exams, and to review lecture and lab material together with other students. It is also possible to arrange for individual tutoring; see Prof Clifton for details.

The BIO 141 "Moodle" site

Moodle is course management software that provides an efficient way for students and instructors to share information and ideas and you will be expected to use Moodle throughout the term. You can access the Moodle site from any location with a connection to the internet: the address is: <http://moodle.lclark.edu/>. Once at the site, scroll down the list of course categories and find Bio 141. Click on it, and follow the instructions to log in.

Visit the Moodle site regularly – ideally, before every lecture. You will find outlines of each day's class, reading assignments, important notices, reminders of exams, work assignments, etc.

Lectures

Attendance at every lecture is expected. Much of the information presented in lecture will not be available in any other form, and the examinations will be based heavily on lecture material. An outline for each day's lecture, along with copies of the graphical material presented in lectures, can be found on the course Moodle site, usually about 24 hrs in advance of the lecture. This outline is **NOT** an alternative to lecture notes, but instead should be used to help you organize your own notes. Bring this outline to lecture for a convenient way to organize your note-taking. It should also prove useful as you study for exams.

Reserve readings. In addition to reading assignments from the text, other readings will be available as PDFs. Lectures will assume that you have completed any assigned readings **in advance**. You can access these readings electronically from the course moodle website

We expect that you will help to create an environment in which everyone can learn without distractions. That means arriving on time, turning off cell phones when in class, eating and drinking discreetly if at all, and taking your trash with you when you leave. Please avoid conversations during class that distract the instructor and your fellow students. If the instructor or students repeatedly find your behavior disruptive you may be asked to leave the class.

Laboratories

The lab manual is available as a pdf download from the course moodle site. A few hard copies will also be available for reference in lab. You will need to begin reading your manual before the second lab meeting of the semester.

In laboratory, you will conduct two investigations, one in ecology and one in environmental science. You will be assigned to a laboratory group of 3-4 students during the 2nd week of lab, and you will work with these partners for both investigations. See the lab manual for more information about the laboratories.

Please arrive promptly for lab so that you do not miss important instructions, so you don't inconvenience your partners, and so that you have sufficient time to complete the day's activities. Be sure that you arrive prepared for each lab by having read the assigned sections of the lab manual.

If you think you will continue on in Biology, we recommend that you purchase a copy of [*Successful Lab Reports: A Guide for Science Students by Lobban and Scheffer*](#). This inexpensive paperback provides valuable advice for preparing the laboratory reports that you will write in this course. Another book that you might find useful is *A Natural History Guide to the Lewis and Clark College Campus*, by Eric Wold and David Craig. Wold and Craig wrote this book while they were Lewis and Clark biology majors quite a few years ago, but it remains a very good guide to the common trees and birds that occur on campus. If you enjoy walking the paths on campus and would like to learn more about the organisms you see, you will appreciate this book. [David Craig](#) is now a biology professor at Willamette University

Grading

Performance in this course will be judged using three general criteria; examinations, e-quizzes, and performance in lab. This course is not graded on a "curve" (i.e., there is no set number of A's, B's, C's, etc.). Thus, the grade you receive will reflect individual, rather than relative, performance. Because of this grading scheme, we hope that you will feel comfortable working collaboratively. You can help yourself and your fellow students by working and studying together. The one danger of a fixed scale is that the instructor might write exams that are too difficult, and that no one will earn enough points for an A. If student performance suggests that the exams were unreasonably difficult, scores may be adjusted accordingly.

Exams should provide an incentive to learn the course material. For this reason, Bio 141 has, in addition to three midterms, a more heavily-weighted final exam. The final is cumulative. Perhaps your performance on one or more of the midterm exams was disappointing. You will have a chance to revisit this material for the final exam, and to demonstrate that you understand it better than you did the first time around. Since that exam is worth more points than the midterms were, doing well on the final will have a large payoff. Conversely, forgetting material from the earlier parts of the course will carry a high price!

Because of the size of the course, it is not possible for us to give you a make-up exam if, because of illness or a family emergency, you are unable to take an exam at its scheduled time. Instead, you will have the opportunity to show what you have learned at the time of the final exam. Be sure to notify Dr. Clifton of your situation before any midterm that you must miss; without his explicit permission, missed exams will receive a score of 0.

Examinations in Bio 141 will -- because of the size of the class -- necessarily involve some multiple-choice and other so-called "objective" style questions. You should also expect short essays, mathematical problems to solve, graphs to interpret or to draw, and experiments to design or data to analyze. Most of the exam questions will be based on lecture material, but others will be based on the text or reserve reading, and some will concern laboratory material. To familiarize you with the kinds of questions to expect, we will post some sample questions on the course website .

There will be a total of 300 points available in Bio 141. The different parts of the course will be weighted in the following ways:

Lecture (170 points):

Each of the three mid-terms will be worth 40 points, with the final worth 50 points. (Learning outcomes 1, 2, 4, 5)

Laboratory (130 points)

The ivy investigation will be worth 45 points, 15 points for design and execution of the project, 8 points for the oral report, 22 points for the written report. (Learning outcomes 1, 2, 3, 4, 5, 6)

The stream ecology investigation will be worth 35 points. Those individuals who make an oral exam presentation in lecture on behalf of their lab section will receive 5 additional extra credit points. (Learning outcomes 1, 3, 4, 5, 6)

The group lab notebook will be worth 10 points and an individual lab grade (instructor assessment of effort) will be worth 10 points. (Learning outcomes 3, 4, 6)

E-quizzes will be worth a total of 30 points. (Learning outcomes 1, 2, 3)

Bio 141 Grading Scale

total points earned	% of total	course grade
285-300	95-100	A
270-284	90-94	A-
255-269	85-89	B+
240-254	80-84	B
225-239	75-79	B-
210-224	70-74	C+
195-209	65-69	C
180-194	60-64	C-
165-179	55-59	D+
150-164	50-54	D
<150	< 50	F

SOME IMPORTANT POINTS AND REMINDERS:

Please don't be intimidated by the large size of Bio 141; we plan to get to know all of you. Please visit during office hours -- not only when you have specific questions about lecture material and/or your performance in the class, but also to talk about career or internship opportunities, planning your class schedule, choosing a major, etc. If you are not free during posted office hours, you may call, email, or talk before or after lectures to make an appointment. If you're feeling shy, bring a friend with similar concerns.

Attendance at labs and at exams is required. If circumstances beyond your control force you to miss a lab, contact Prof Clifton or your lab instructor as soon as possible, and preferably before the scheduled class, to explain your absence and arrange a way to make it up. Remember, attendance at lectures is expected, as is the taking of careful,

thorough lecture notes. The information presented in lecture will often not be available in any other form, and the examinations will be based primarily on lecture material. As a courtesy to the instructor and your fellow students, please arrive for lectures on time.

Policy on late work:

Deadlines for all work in this course are firm and are announced well in advance: all of them are published in the syllabus and lab manual. If you attend to this information and plan ahead, there should be no need to turn work in late. If you know that you will have work in more than one course due at the same time, you should plan accordingly. When a deadline is announced as "in lecture" or "in laboratory", then the deadline time is considered to be the *beginning* of that scheduled period. Any work turned in beyond that time is considered late.

Any work that is turned in late will have its grade lowered by 10% for each day that it is late. For this purpose, any part of a 24 hour period is considered one day. So a paper that would have received a score of 85%, turned in at 1 PM instead of at 9 AM, will instead receive a score of 76.5% (85 - 8.5). If the particular piece of work was jointly authored, all authors will be penalized the same way.

This policy is intended to encourage you to plan ahead, and to keep in mind the possibility of computer and printer glitches, etc. These are not valid reasons for voiding the penalty. This policy may seem harsh to some of you. In a large course like this one, it is the only way to be fair to the majority of students, who plan their time well and are careful to meet deadlines. You may choose to work in haste if you like, but you must recognize that there may be adverse consequences to such decisions.

The course staff promises that they, too, will abide by deadlines, returning graded work as promptly as is reasonable, given the size of the course.

Success in Bio 141 Here are some tips on how to succeed in Bio 141:

1. **Set aside enough time to do good work.** You should expect to spend at least two hours outside of class, reading, studying, and working with your lab group, for every hour you spend in class.
2. **Keep up with the reading.** If you fall behind, you will have too much to try to absorb before the exams, and you will have a difficult time retaining so much information.
3. **Attend every lecture.** Lectures contain material not found in the reading, and will help you to determine which parts of the reading are especially important.
4. **Take good notes.** Your notes will be an important resource when you study for exams, and the act of writing them down helps you stay alert and attentive in class.
5. **Visit the course Moodle website frequently.** Downloading a copy of each day's lecture outline and bringing it to class will help you to take complete, well-organized notes. The website will contain tips on how to prepare lab assignments as well.
6. **Work collaboratively with other students.** Finding a congenial group of study partners will help you to stay on track and make studying easier. Also, talking about the material out loud with others is an excellent way to test your own understanding and to retain information better.
7. **Get help when you need it;** don't wait until you fall too far behind. If you are finding it hard to keep up, talk to Prof Clifton, as soon as possible. There will be study groups that you can attend, tutors who can work with you, and you can also arrange individual review sessions with Prof. Clifton.

An important note regarding exams:

Time limits for exams will be strictly enforced (60 min for midterms, 3 hr for the final). Diagnosis of a learning disability may entitle you to additional time or other accommodation, however, to receive this accommodation, you must provide a learning diagnosis form to Professor Clifton early in the semester. This information will be strictly confidential. To ensure fairness, college policy prevents the provision of special accommodation to anyone who does not submit the required forms in a timely fashion. Please talk with Professor Clifton if you anticipate any difficulties with meeting course assignments.

All students are presumed to be familiar with Departmental Policies regarding academic integrity. Refer to the College Code of Conduct relating this topic for additional information. Students should not tolerate instances of

dishonesty among their peers, and you are strongly encouraged to discuss any instances you may know about with a member of the course staff. Such information will be treated confidentially. For more on this subject, read "Honesty in Science" in your lab manual.

Support

SAAB provides free tutors for Bio 141 students; Contact SAAB or see Prof. Clifton for details. After the first exam, student-led group study sessions will meet before each of the subsequent exams. These sessions will be opportunities to review lecture and lab material with others.

Students with learning disabilities : If you have a disability that may impact your academic performance, you may request accommodations by submitting documentation to the [Student Support Services](#) Office in Albany Quadrangle (x 7156). Staff in that office will notify your professors of the accommodations for which you are eligible.

Now that you have read this syllabus, please sent an [e-mail to Professor Clifton](#) with a brief statement about why Bio 141 interests you. Do this by 9 AM on Sept. 5 to earn your first point in the course!

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