

**WIP: GENERAL ECOLOGY SYLLABUS - LECTURE AND LAB**  
**BIO 305, Section 4, Fall 2014**

**Instructor:** Dr. Aaron Howard

**E-mail:** A-Howard5@neiu.edu

**Office hrs:** TR 1:45 P.M. – 3:00 P.M., W 1:30 P.M. – 3:15 P.M., or by appointment in room BBH 358C

**Class meets:** TR 10:50 A.M. – 1:40 P.M. in BBH 354 (unless specified otherwise)

**Textbooks:**

- Ricklefs, R. E and R. Relyea. 2014. The Economy of Nature, 7th ed. W. H. Freeman and Company: New York (ISBN 9781429249959).
- Hofmann, A. H. 2012. Writing in the Biological Sciences. Oxford University Press: Oxford (ISBN: 9780199765287)
- A lab notebook that has carbon copies that can be torn out. For example, Chemistry-Spiral Side Bound 100 set- Hayden McNeil. ISBN 9781930882744 (You can use a similar lab notebook from another class if there are empty pages.)

**Course description:** An introduction to the basic concepts of ecology. Study of the factors/interactions that determine the distribution and abundance of species at the individual, population, community, and ecosystem levels. You will satisfy the writing intensive requirement by writing in a variety of discipline-specific formats. Lecture, laboratory, and fieldwork, with field trips potentially scheduled on a Friday, Saturday, or Sunday. Prerequisites: BIO 150, BIO 202, and ENGL 101. Recommended: ENGL 102. *This course has been approved as a Writing Intensive course as part of the Writing Intensive Program (WIP). Successful completion of this course fulfills the Writing Intensive graduation requirement for biology majors who entered the university in Fall 2008 or later. Speak to your advisor or visit <http://www.neiu.edu/~wip> for more information.*

**Learning outcomes:**

- 1) Understand major ecological theories and the questions from which they were developed. Critique data that support and contradict those ecological theories.
- 2) Propose solutions to today's environmental problems based on ecological data. Be able to identify ecological theories from examples from natural ecosystems or laboratory experiments and draw conclusions or propose a course of action based on those theories.
- 3) Use mathematical models to provide information about and predictions about ecological data.
- 4) Based on observations and theories, develop an ecological question and design an appropriate protocol to collect data to address that question.
- 5) Collect and graph data; use basic statistics to analyze data.
- 6) Search the primary literature, read and evaluate primary research articles, and compare data from those research articles to data obtained during field and laboratory exercises.
- 7) Write proficiently in a variety of discipline-specific formats, including field/lab notebook, graphs in multiple formats, and a primary research paper with abstract, introduction, methods, results, discussion, acknowledgements, and literature cited sections.

**Note:** Students are invited to meet with me to discuss problems, concerns, personal needs, or accommodations for those with disabilities in connection with this course. Discussions early in the term are encouraged. All discussions are conducted on a confidential basis.

**Attendance:** You are expected to be at all class sessions. If you miss a lecture it is your responsibility to get lecture notes from other students. I will **NOT** post lectures on Desire2Learn. If you must be absent for approved functions, it is YOUR responsibility to let me know in advance so we can make other arrangements. Unapproved absences will result in zero points for missed assignments, including tests.

**Class preparation:** You should read textbook assignments and all other assigned readings and review your notes from previous classes before coming to class. Daily preparation will aid in retention of material and will ease the task of studying for tests. All of the material in this class builds on the prior material and, therefore, all assignments are cumulative throughout the semester.

### **Classroom conduct:**

1. **Classroom Conduct Policy:** Students have the right to learn in an environment where all individuals are treated equitably and with respect. Behaviors in class that interfere with the learning experience are not permitted. Disruptive or disrespectful behaviors may result in dismissal from the class for that day by me.
2. **Guests and Children in the Classroom:** Please ask my permission before bringing any guests or children to class with you. We must be considerate of other students who are paying tuition and have a right to an appropriate learning atmosphere.
3. **Talking and Disturbances in Class:** I expect you to comply with the following classroom rules any time class is in session: 1) Always respect the rights of others, 2) Come to class on time and refrain from visiting during the class time, 3) Cell phones will be placed on SILENT MODE during class. You will not send or receive text messages during class. If you must use a cell phone, please leave the classroom.
4. **University Expectations:** In accordance with the University's Classroom Disruption Policy, students disrupting class will be issued a verbal warning. Students who continue to disrupt the class will be required to leave the classroom. Any further disruption can result in the involvement of Public Safety and/or the expulsion from the class. The University's Classroom Disruption Policy can be found in the Student Handbook:  
<http://www.neiu.edu/university-life/sites/neiu.edu.university-life/files/documents/tfneumei/2014-2015%20Student%20Handbook.pdf>.

### **Reading and writing:**

1. **Required Reading:** You have an excellent textbook that explains concepts clearly. You will do much better in this class if you regularly complete the required reading assignments *before lecture*.
2. **Scientific Writing:** Excellent writing skills are crucial to success in science and in almost any career. Writing is being emphasized more and more at NEIU. You will write in a variety of discipline specific formats, including: 1) field/lab notebook, 2) primary research paper with abstract, introduction, methods, results, discussion, acknowledgements, and literature cited sections, 3) graphs of data, 4) mathematical formulas used to model ecological processes, 5) visual aids to support an oral presentation, and 6) persuasive letter. The purpose is to gain experience with scientific writing, as well as improve general writing skills.

3. **Writing practice:** Writing is a skill like any other, it improves with practice. There will be some opportunities to practice writing *without* having to worry about a grade. Although these practice assignments won't be graded, you will obtain credit for completing many of them. Many writing practice activities will take place during class and you must be present to obtain those points.
4. **Finding, Reading, and Understanding Scientific Research Papers:** The ability to find, read and interpret scientific research papers will help you in any scientific career. You will expand upon your literature searching skills and compare data obtained during lab and field exercises to data published in the scientific literature. The purpose is to become comfortable and confident when searching and evaluating the scientific literature.
5. **Comments received on writing assignments:** You have a wonderful opportunity in this course to receive feedback about your writing assignments before you turn in the assignment for a final grade! Please keep in mind that feedback will *not* highlight every single error. This is done purposefully. If you learn to find and identify your own weaknesses, you will improve your writing much more successfully. A typical error may be pointed out only once, either through feedback given to you or to the entire class as a group, and you will be responsible for working on or fixing that issue in different parts of the same paper *and* in subsequent assignments. Also, remember that the writing tutors and I will only be able to give thorough feedback if you have applied diligent effort. *More often than not, feedback quality reflects the quality of the assignment submitted by the student.*

## Assignments:

1. **Exams:** There will be three exams and a final in this class that will consist of ESSAY QUESTIONS ONLY. Educational research shows that there is a substantial difference between the actual recall (essay and short answer questions) of information and just recognition (multiple choice and true/false). They will not only test whether you know the material, but your ability to use what you know to solve problems. You must understand how different topics relate to one another, and you will be required to interpret data presented in graphs and tables.
    - **IMPORTANT:** There will be NO study guides provided for the exams. If I present it to you in lecture, then it is important for you to learn. Therefore, it will not be beneficial for you to ask me what will be on the exam.
    - **Note taking:** There are tools that you can use to help prioritize the material that you study, and the notes that you take in class. You should focus your efforts on information that I stress via:
      - A. Repetition
      - B. Emphasis
        1. Emphasis can be judged by tone of voice and gesture.
        2. Emphasis can be judged by the amount of time the instructor spends on points and the number of examples.
      - C. Word signals (*e.g.*, "There are **two points of view** on . . . " "The **third** reason is . . . " " **In conclusion** . . . ")
      - D. Summaries given at the end of class.
      - E. Reviews given at the beginning of class.
    - There are additional resources that you can use to improve your note taking skills posted on D2L under note taking, please refer to them. We will refer to one of the resources on the Cornell note taking system in class.
- \*\*In addition, to help you succeed on your first exam I will let you re-write one answer

from your exam and receive the AVERAGE from your graded re-write and your original answer. You must turn-in the re-write ONE WEEK after I return the exam to you.

- In general, I do not provide comments on final drafts, this includes exams. Either you determine the errors you made on your own or come talk to me one-on-one during office hours.
2. **Peer-reviewed discussion questions:** As stated above, two large goals of this class are to improve your writing skills and problem solving/synthesis skills. To facilitate the improvement of both of these skills, you will be given writing assignments and essay exams. To help you practice these skills in class, and improve your grades in the writing assignments and exams, you will periodically do in class peer-review discussion questions. The questions will ask you to solve a problem or synthesize information, from the material covered in class, in paragraph form. Then using a rubric, peers will edit your paragraph for writing and content errors. Finally, the peer reviewers will return the edited paragraphs to you, and you will re-write the paragraph and hand it in before the end of class. You will be graded on content, writing, and the quality of the edits made to their peer's paragraph.
  3. **Persuasive letter and the writing tutor:** You will have to write a persuasive letter. Since this course is a WIP class with a writing tutor, we want to facilitate the relationship between you the student and the tutor by requiring that you meet with the tutor at least once in the semester. Therefore, after I have made comments on the first draft of the persuasive letter and returned it to you, you will meet with the writing tutor and receive feedback from the tutor as well.
  4. **Student research project:** In groups of 3-5, you will design and conduct your own research project. You will develop a research question, design an appropriate sampling protocol, collect samples, analyze the data, and compare your data to the scientific literature.
  5. **Field/lab notebook:** You must use your lab notebook for many labs in this class. I will specify when they need to be used and when they do not need to be used.
  6. **Oral presentation with visual aids:** Each group will give presentation on their group research project. You will be graded on the structure of the presentation, participation, presentation of results (graphs and tables), and the written text of your portion of the presentation.

**Field trips:** You will be outdoors for several hours during field exercises. Wear clothes that can get dirty. Dress in layers to ensure that you are warm and bring an umbrella! Field trips will not be canceled due to cold weather, light rain, or snow. They will be canceled only if there are dangerous conditions. Check Desire2Learn (D2L) and your NEIU e-mail address on the morning of a field trip if you suspect that it may be canceled.

**Use of computers:** Knowledge of computer programs such as Word and Excel will help you complete assignments for this course. The Student Client Support Office has online tutorials at <http://www.neiu.edu/university-life/technology-services/student-computing-services-scs/computer-labs> (click on the "Tutorials" menu). We will also be performing statistical analyses using the R statistical program. We will discuss more about R in class.

**Desire2Learn (D2L) and NEIU e-mail address:** I will frequently post handouts, changes to the course schedule, your grades, etc. on D2L and may require that you turn in assignments through D2L. *It is your responsibility to regularly check Desire2Learn as well as your NEIU e-mail address.* According to NEIU policy, e-mail correspondence related to university business should be conducted through NEIU e-mail addresses. Access D2L at <https://neiu.desire2learn.com/>.

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**A note on original work:** You are expected to adhere to the University Student Code of Conduct

(<http://www.neiu.edu/university-life/sites/neiu.edu.university-life/files/documents/tfneumei/conductCode.pdf>) Cheating and plagiarism can result in getting zero for the assignment /exam, failing the entire course or being referred to the Chair of the Department of Biology and/or the Office of the Student Rights & Responsibilities depending upon the individual case. We will all be working very closely together in class discussions and in lab and field exercises, where group efforts are a must, however, when individual efforts are called for (e.g., exams and assignments) – they must be accomplished alone. Keep in mind that plagiarism is a serious offense. Even copying a phrase or sentence, without quote marks and a source reference, whether that phrase or sentence is from a classmate, book, article, or the internet, is plagiarism. Computer software will be used to check for plagiarism from other students, the Internet, textbooks, etc. Please understand that it is never worthwhile to conduct an honor violation. Infractions are sad, because they show that a student doesn't believe in his or her ability to perform well. Dishonesty can ruin a career; it is crucial to be in the habit of always conducting honest work.

### Grading:

#### Points breakdown:

250 pts. from exams and activities:		250 pts. from writing assignments (schedule on next page has due dates):	
3 Exams	50 pts. each X 3 = 150 pts.	Procedural writing assignments: 1. grammar diagnostic (5 pts.) 2. self-evaluation of writing (10 pts.)	15 pts.
Final Exam	100 pts.	Write-ups of various lab activities written in the style of a section from a scientific paper (abstract, introduction, methods, results, discussion)	95 pts.
		Primary research paper based on group project: 1. observational lab (10 pts.) 2. two rough drafts (5 pts. each) 3. peer-review (5 pts.) 4. oral presentation (20 pts.) 5. final draft (50 pts.)	95 pts.
		Persuasive letter	20 pts.
		Environmental ethics activity	10 pts.
		Peer-reviewed discussion questions	5 pts. each X 3 = 15 pts.

**Final grades:** Final grades are based on the following percentage ranges:

Percentage	Points Needed	Final Grade
90-100%	450-500	A
80-89%	400-449	B
70-79%	350-399	C
60-69%	300-349	D
<60%	≤ 299	F

Often, there is confusion voiced, or misconceptions held by students regarding what grades mean (e.g., that “B” is the default grade, or that simply fulfilling the minimum performance requirements will earn a “C”). Below are the actual operational definitions of grades from the *NEIU Academic Catalog*. Analogous definitions will be used in grading for this course:

**A** = Completion of course requirements in an **outstanding** manner, reflecting a degree of **accomplishment that is exceptional**.

**B** = Completion of course requirements in an entirely acceptable manner, demonstrating **an excellent grasp of the subject matter**, and the likelihood of successful completion of further courses in the same area.

**C** = Completion of the course requirements in an **acceptable manner**, reflecting a **basic understanding** of the subject matter of the course and the possibility of successful completion of further courses in the same subject area.

**D** = Fulfillment of the **minimum performance requirements** prescribed by the instructor, but not in such a manner that higher level courses in the same area can be recommended

**F** = Failure to demonstrate acceptable competence in the subject matter of the course, and/or **failure to fulfill the requirements of the course**.

**Grading Policy:** The total number of points and distribution of points is subject to change. Assignments must be turned in at the START OF CLASS on the day that they are due, and late assignments WILL NOT BE ACCEPTED without my prior approval. **I DO NOT ACCEPT ASSIGNMENTS VIA E-MAIL.** There will be no make-ups for exams. Special accommodations will NOT be given to accommodate travel or vacation plans. In very rare circumstances, I may grant an extension on an assignment, but you must speak with me *before* the day that the assignment is due (late points may be deducted) and documentation (such as a doctors note) for the reason that an assignment was missed must be provided. No work will be accepted after the final exam. Please do not ask for extra credit or for your final grade to be “bumped up”, the answer will be no. There are ample opportunities to earn points in this class, with smaller writing assignments in addition to larger exams. The easiest way to gain points is to carefully complete and submit all assignments. On the other hand, the easiest way to lose points is to not turn in assignments.

**Emergency Information:** It is recognized that a safe university environment is a shared responsibility of faculty, staff, and students, all of whom are expected to familiarize themselves with and cooperate with emergency procedures. Web links to Campus Safety: Emergency Procedures and Safety Information can be found on NEIUport on the MyNEIU tab or at:  
[http://homepages.neiu.edu/~neutemp/Emergency\\_Procedures/MainCampus/](http://homepages.neiu.edu/~neutemp/Emergency_Procedures/MainCampus/).

**Help with Disabilities:** Students are invited to meet with the instructor to discuss problems, concerns, personal needs or accommodations for those with disabilities in connection with this course. Discussions early in the term are encouraged. All discussions are conducted on a confidential basis. Students are also encouraged to contact the Accessibility Center at [773-442-4595](tel:773-442-4595) or visit them in building D, rm. 104

**Student Rights & Responsibilities web page:**

<http://neiu.edu/university-life/student-rights-and-responsibilities> has links to “Student Code of Conduct” and “Student Handbook” (among other things).

**Schedule:** The schedule is tentative and subject to change. You are responsible for changes that are announced during class, on D2L, and via your NEIU email. We will be taking a field trip for several labs, details of these trips will be given in advance.

WEEK	DATE	TOPIC (lecture or lab)	READ	ASSIGNMENTS DUE
1	8/26/14	Lecture: Syllabus and introduction to	Ricklefs ch. 1	

		ecology		
	8/28/14	Lab: Analyze parts of a scientific paper and lab and field safety	Hofmann chs. 2, 5, and 6	
2	9/2/14	Class canceled for prairie field trip.		
	9/4/14	Lecture: Climate and biomes	Ricklefs chs. 5 and 6	Grammar diagnostic and peer-reviewed discussion question (PRDQ) #1
3	9/9/14	Lab: Hypothesis testing, statistical analysis, and the R statistical program.		Please bring your computer to lab.
	9/11/14	Lecture: Life Histories and discuss persuasive letter assignment	Ricklefs ch. 8	PRDQ #2
4	9/16/14	Lecture: Population growth and Lab: Natural history	Ricklefs ch. 12	Statistical analysis write-up
	9/18/14	Lab: Population dynamics (Cemetery lab)		
	<b>9/19/14</b>	<b>Field trip: Glenview Air Station Prairie (9:30 A.M. – 12:00 P.M.)</b>	<b>Panzer paper (posted on D2L)</b>	
	<b>9/20/14</b>	<b>Field trip: Gensburg-Markham Prairie (9:30 A.M. – 12:00 P.M.)</b>	<b>Panzer paper (posted on D2L)</b>	
5	9/23/14	<b>EXAM 1</b>		
	9/25/14	Lecture: Species interactions	Ricklefs chs. 14, 15, 16, and 17	Persuasive letter – draft
6	9/30/14	Lab: Primary research paper – observational lab		Natural history check-in
	10/2/14	Lecture: Species interactions	Ricklefs chs. 14, 15, 16, and 17	PRDQ #3
	<b>10/4/14</b>	<b>Field trip: Illinois Beach State Park (11:30 A.M. – 2:00 P.M.)</b>	<b>Cowles paper (posted on D2L)</b>	
7	10/7/14	Lab: Population growth equations		Cemetery lab – draft and bring your computer to lab
	10/9/14	Lecture: Community structure and succession	Ricklefs chs. 18 and 19	Population growth equations write-up
8	10/14/14	Lab: Primary research paper – develop group research hypothesis and experiment	Hofmann ch. 2	Primary research paper – observational lab write-up
	10/16/14	<b>EXAM 2</b>		
9	10/21/14	Lab: Primary research paper – field and lab work for group project		Bring your computer to lab
	10/23/14	Lecture: Biodiversity	Ricklefs ch. 22	Persuasive letter – FINAL
10	10/28/14	Lab: Biodiversity		
	10/30/14	Lab: Primary research paper – statistical analysis and group presentation preparation	Hofmann chs. 5 and 12	Cemetery lab – FINAL and bring your computer to lab
11	11/4/14	Lab: Primary research paper – group presentations	Hofmann ch. 12	
	11/6/14	Lecture: Ecosystems	Ricklefs chs. 20 and 21	Natural history check-in and Biodiversity write-up

<b>11/7/14 – LAST DAY TO DROP CLASS</b>				
12	11/11/14	Lab: Primary research paper – peer-review of paper and self-evaluation of writing	Hofmann ch. 7	Primary research paper – draft #1 and self-evaluation of writing
	11/13/14	Lecture: Landscape ecology and Lab: Landscape ecology	Ricklefs chs. 11 and 22	
13	11/18/14	Lab: Landscape ecology (cont.)		Primary research paper – draft #2 and Landscape ecology write-up
	11/20/14	<b>EXAM 3</b>		
14	11/25/14	Class canceled for Illinois Beach State Park field trip.		
	11/27/14	<b>NO CLASS – Thanksgiving holiday</b>		
15	12/2/14	Lecture: Global ecology and Lab: CO <sub>2</sub> sequestration	Ricklefs ch. 23	Natural history write-up
	12/4/14	Lab: CO <sub>2</sub> sequestration (cont.)		Primary research paper – FINAL and CO <sub>2</sub> sequestration write-up
16	12/9/14	NO CLASS	Environmental ethics reading (posted on D2L)	Environmental ethics worksheet, at end of office hours (3:45 P.M.)
	<b>Final Exam: Tuesday, 12/9/14 from 10:00 A.M. – 11:50 A.M. in BBH 354.</b>			