Biology 315 : Syllabus and Introduction

Ecology, Biology 315 Honors  Spring 2017

Instructor: Dr. Albert Meier.  Office Hours: By appointment (email first)
Email: albert.meier@wku.edu  Office: EBS 3120 Cell Phone: 270-791-9442

Meeting Location  TCCW 308
Meeting Time  Tu Th 11:10-12:30pm
Prerequisites  BIOL 120 AND BIOL 121 AND BIOL 122 AND BIOL 123
Honors Eligibility or 3.2 overall university GPA required

Course Description  A study of the fundamental principles of ecology. Three credit hours.
Required Material  http://www.nature.com/scitable/knowledge/ecology-102

Other readings as assigned

Optional Reference Text  Any ecology text published recently could serve as a good reference.

Other  Readings and exercises as assigned
Course Description

Ecology is an integrative and holistic science that embraces aspects of the biological and physical sciences; some branches also involve mathematics, philosophy, engineering, or economics. In this course we will focus on the physical and biological aspects of ecology. We will attempt to place this within a historical context because it is a philosophical assumption of this course that history matters. This course also assumes that context matters and causation exists.

We will begin with a review of logic then discuss the modern philosophy of science. When we have placed ecology within the context of science, we will discuss ecology as a science of connectivity, and various analytical methods including statistics. Upon completing this preparatory material we will study Global Ecology, Ecosystems, Community Ecology, Evolutionary Ecology, Population Ecology, Physiological Ecology Behavioral Ecology, Life History, Applications: Conservation, Human Condition, and Management.

Upon completing this preparatory material we will study global physical factors and flows of material and energy in ecosystems.

I will attempt to highlight important principles through lecture and study questions. You are, however, responsible for all materials covered in the assigned readings.

Learning Outcomes

Students who successfully complete this course will be able to

1. Assess the degree to which statements and scientific literature adhere to principles of logic.
2. Assess works within the context of a modern philosophy of science.
3. Be able to understand rudiments of connectivity and complexity.
4. Choose appropriate statistical analyses given goals and data types.
5. Learn about the role of scale in systems.
6. Understand rudiments of earth history, geology, climatology, and oceanography that structure global environments.
7. Apply the principles of systems ecology to a given situation.
8. Demonstrate an understanding of the basics of community ecology.
9. Use simple methods for estimating populations and their densities and distributions.
10. Knowledgeably discuss population ecology, use and understand population growth models, the Leslie matrix, Lotka-Volterra, predation, and competition models.
11. Understand how complex landscapes influence populations.
12. Understand elements of behavior, life history strategies and evolution that relate to ecology, and be familiar with some of the models including game theoretic that have applications to these studies.
13. Apply simple models of population genetics.
15. Write a short review paper on an ecological topic.
16. Write a short paper based on ecological data that they gather, or write a longer group paper. The paper will assess ecological hypotheses, analyze results, and relate the results to the hypotheses and appropriate ecological literature.
17. Recognize communities and understand key environmental factors shaping one of two ecoregions- either the Gulf Coast (Southern Coastal Plain), or the Interior Plateaus.

Some test material will come from http://www.gingerbooth.com/

Field Experience:

Weekend field trips will be scheduled during the semester. You will have to pay some of your costs. Each student will be expected to attend a minimum of one major field trip or perform an alternative project. The alternative project will in no way substitute for other assignments made during the semester. Field trip performance will be evaluated on the basis of promptness, preparedness, participation, and a quiz or assignment. Trips are subject to change in the case of severe weather. If you cannot attend a trip, see me and I will assign your alternative project.

This semester one field trip will go to the Gulf Coast, one field trip will go to the and one will go to the Green River. Additional field trip opportunities may arise.

Office Hours:
by appointment. If there are any questions regarding this course please see me. I will be happy to help you understand.
Room 3120 EBS, Phone: 270-791-9442. Email: Albert.Meier@wku.edu. Place the word student at the start of the subject line. The phone call will tend to give you the quickest response.
Warning: There is a potential time delay in this system. I do not necessarily check my e-mail daily.

I will remind you that because history matters and causation exists, behaviors have consequences.

**Grading Policy:**

A: 91-100 Represents excellent and creative work

B: 81-90 Represents good disciplined work

C: 71-80 Represents competent and acceptable work

D: 65-70 Represents passable work

F: 0-64 Represents failing work
**Course Grade:** Honors

<table>
<thead>
<tr>
<th>Performance Measures</th>
<th>% Grade</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test 1</td>
<td>= 20%</td>
<td></td>
</tr>
<tr>
<td>Test 2</td>
<td>= 25%</td>
<td></td>
</tr>
<tr>
<td>Notebook</td>
<td>= 2%</td>
<td></td>
</tr>
<tr>
<td>Review Paper</td>
<td>= 10%</td>
<td></td>
</tr>
<tr>
<td>Research Paper</td>
<td>= 25%</td>
<td></td>
</tr>
<tr>
<td>Ignite</td>
<td>= 8%</td>
<td></td>
</tr>
<tr>
<td>Extra Ecological Experience</td>
<td>= 10%</td>
<td></td>
</tr>
</tbody>
</table>

**Ecology, Biology 315 Honors   Fall 2015**

**Readings beyond** [http://www.nature.com/scitable/knowledge/ecology-102](http://www.nature.com/scitable/knowledge/ecology-102) will be posted on the class Blackboard site.

**Review Paper:** Students will be asked to write a review paper discussing an aspect of ecology. The topics will be assigned individually.

a. Minimum of 350 words in length.

b. This paper should follow the format of the scientific journal, *Trends in Ecology and Evolution*. Please follow this web address for examples of articles in this format: [http://www.cell.com/trends/ecology-evolution/home](http://www.cell.com/trends/ecology-evolution/home). The following website will give you the author guidelines for submitting a journal article to this paper: [http://www.cell.com/trends/ecology-evolution/authors](http://www.cell.com/trends/ecology-evolution/authors). Use these guidelines in your own paper. The paper must cite a minimum of eight papers from the scientific literature.
**Scientific Paper:** Students will be asked to write a scientific paper to address the results of the lab activity of her/his choosing for the semester.

a. The paper should follow the format of the scientific journal, *Ecology*. Please follow this web address for examples of articles in this format: [http://www.esajournals.org/loi/ecol](http://www.esajournals.org/loi/ecol). The following website will give you the author guidelines for submitting a journal article to this paper: [http://esapubs.org/esapubs/preparation.htm](http://esapubs.org/esapubs/preparation.htm) - Spa. Use these guidelines in your own paper.

b. Paper should include a title, author’s name, academic addresses, abstract, key words, introduction, methods, results, discussion, and literature cited.

c. Literature cited should be included with a minimum of 10 referenced peer-reviewed articles (the list of references is not included in the total page count).

d. The abstract should summarize the main purpose and conclusions of the lab activity and paper. The introduction should include the major questions being addressed in the lab activity, in the form of hypothesis, and logical explanations for these hypotheses (backed up by references). The methods include the procedures used to collect the data during lab and steps taken to analyze the data collected. The results must give the statistical answers to these hypotheses and the conclusion should give possible explanations (also backed up by references) to why these results were found.

**Ignite:** Students will be required to give a presentation about an ecological topic. The topic should last five minutes.

Ecology is an integrative holistic subject. All tests and the final will be comprehensive. Exams are typically open book, open notebook, and open computer. They are designed to test your ability to think critically, use logic, analyze, and synthesize information.

Please note that the grades represent my evaluation of your work and not of you.

**Absences:** If you miss lecture, get the notes from another student. If you are going to miss an exam you should notify me before the exam is given. If you have a documented, acceptable reason for being absent you will be allowed a make-up. If chronic absenteeism develops I will initiate a system of in class quizzes.
POLICIES

General: The general policies are simple and based on respect. You are expected to:

- Attend class on time and remaining in the class the entire period until dismissed. If you have a medical condition that prevents this, provide evidence at the beginning of the semester.
- Pay attention in class
- Turn off cell phones and other sources of electronic distraction
- Avoid excessive talking or inappropriate behavior

Unless explicit permission is given, the use of phones, iPads, laptops, any other electronic devices, or any other informational aids in the classroom during any graded activities is prohibited. Such use will result in a grade of zero on the activity on the first instance. Any further instances will result in a failing grade for the course and immediate expulsion from the class.

Academic Integrity and Misconduct: Please see the Student Code of Conduct: Do not cheat. Cheating is not only disrespectful (violating general policies) but it is also dishonest. Cheating on quizzes, exams or assignments will result in a failing grade for the course and could result in expulsion from the university. It is not worth it. Do your own work.
http://www.wku.edu/judicialaffairs/student-code-of-conduct.php

Attendance: Experience has shown that poor attendance in class results in poor grades. You must come to class to maximize all of the resources available to you to learn course material. If you are not in class, you will not know which information is stressed. Per the Student Conduct Code, attendance in class is expected.

Deadlines: WKU sets deadlines for withdrawal from a class or the university. Please make note of these dates. Dropping the class after the university deadline requires a written explanation by you and signatures from the instructor, department head and the dean of Ogden College. These exceptions are only granted in extreme circumstances. So, ABIDE by the deadlines! See: http://www.wku.edu/registrar/withdrawal.php [Ceasing to attend class does not drop you from the class. If circumstances arise that keep you from attending, then go through the proper channels to withdraw.]
**Audits:** You must arrange with your instructor to audit the class DURING THE FIRST TWO WEEKS OF CLASS! Changes from normal credit to audit will NOT be granted after the first two weeks. If you audit the course, you must attend every class and complete all assignments and evaluations. If you miss more than three class periods, or fail to turn in any assignments or complete any evaluations, your audit will be reverted to a whatever normal grade you earn.

**End of Semester:**

Final grades are posted in TOPNET {the grading scale is posted on this syllabus}. There is no “making up” missed assignments.

**Extra Help:** If you are having difficulty in the course, please speak with the instructor early. Do not wait until late in the semester. Be responsible - it is your responsibility to look up dates and pay attention to announcements discussed in class. Free assistance may be available for Biology 315 through the Learning Center: Call 745-6254 for more information. ([http://www.wku.edu/tlc](http://www.wku.edu/tlc))

**Family Educational Rights and Privacy Act:** Be familiar with your rights according to this Act.

**Plagiarism** is a form of misconduct. The university's definition of plagiarism is: "To represent written work taken from another source as one's own is plagiarism. Plagiarism is a serious offense. The academic work of a student must be his/her own. One must give any author credit for source material borrowed from him/her. To lift content directly from a source without giving credit is a flagrant act. To present a borrowed passage without reference to the source after having changed a few words is also plagiarism."
**Student Disability Services:** In compliance with university policy, students with disabilities who require accommodations (academic adjustments and/or auxiliary aids or services) for this course must contact the Office for Student Disability Services in DUC A-200 of the Student Success Center in Downing University Center. Please DO NOT request accommodations directly from the professor or instructor without a letter of accommodation from the Office for Student Disability Service.

Please read, sign, and date the following statement: “I have a copy of the 315 Lab course syllabus and understand and accept its contents. I also understand that work in this course must be my work, and all required assignments, projects, and tests must be completed to receive a passing grade for this course.”

__________________________
Printed Name

__________________________
Signature