BIOLOGY 212
Environmental Biology

Professor Karl Kleiner        Fall 2014

Contacting me: office – 103 Ecological Sciences Center, tel. 1754- email - kkleiner@ycp.edu

Class hours: Lecture – Tuesday & Thursday 2:00 – 2:50, Room – Wolf 314
Lab - Wed. 11:00 AM – 1:45 PM; Room – ESC 108
First lab meets in ESC 108 on, September 3rd.

Office hours: Mon. & Wed. 9:00 – 10:00 AM, Tues. 11:00 AM - 1:00 PM, Thurs. 12:00 – 1:00 PM
or Friday by appoint.

Reading: Lecture notes, assigned readings. There is no textbook, so come to class, pay attention and take notes!

Web-site address for this course: http://faculty.ycp.edu/~kkleiner/envbio/envirnbio.htm

Objectives of the Course – Although our increased use of technology would suggest a decreasing dependency upon the environment, we are in fact, becoming more dependent upon it for material resources and energy. It’s just that we are becoming physically and intellectually removed from it. Yet a basic understanding of biological principles and science in general is indispensable in a society that is increasingly shaped by discoveries and applications from this discipline. Many of our present and future problems will be resolved by you, but not necessarily in the role of scientist, but as political leaders, lawyers, engineers, businesswomen, human resource workers, teachers and of course, as voting individuals. The intent of this course is 1) provide some background on the functioning of individuals, populations, communities, ecosystems and 2) to help you develop the intellectual skills necessary to understand current and future environmental issues.

“What has always made the state a hell on earth has been precisely that man has tried to make it his heaven.”- Friedrich Hoëlderlin

This course will not be a survey of environmental problems. Many individual environmental problems are contemporary issues created by a failure to understand and follow basic ecological principles. Therefore, this class will cover basic biological and ecological principles as they relate to some of the past and present environmental issues. At the end of the semester you should:

1. Understand the scientific process and the creation of knowledge and know why there are limits to scientific inquiry. Plus you should learn how scientists think.
2. Know basic scientific and ecological principles that will permit you to…
3. Recognize and understand how the human activities affect the environment.

This includes:
   a) Understanding basic biological processes.
   b) Understand the organization of communities.
   c) Understand the flow of energy through ecosystems.
   d) Understand and appreciate that there is change in systems of all size.
Most importantly, I hope that you will develop a greater awareness and appreciation of your natural environment.

Skill Outcomes:
1) You will develop the ability to locate and evaluate environmental information from scientifically valid resources.
2) You will develop the ability to write an effective letter of persuasion on an environmental topic supported by valid scientific information.
3) You will learn to conduct experiments in the field and in the greenhouse.
4) You will develop the ability to manipulate raw field data into meaningful scientific metrics.
5) You will be able to present scientific data in an organized manner (e.g. graphs & table).
6) You will write clear, accurate and effective reports using data that you have collected.

Exams & Quizzes: There will be 4 in class quizzes plus the scheduled final exam. Make-up exams and quizzes will only be administered in the event of dire circumstances (personal or family emergencies). Documentation of such events is highly suggested. If you should miss a quiz/exam, it is your responsibility to promptly notify me immediately in person, or by phone or email.

Labs: Three lab reports will be required.

Written Assignments: There will be two written assignments. The first assignment you will work on mostly in class (except for the writing). The second assignment you will work mostly independently.

Due Dates: No assignments will be accepted after the due date unless you have discussed it with me first. No assignments will be accepted after the last day of classes unless scheduled by me. Don’t even think about submitting anything after the end of classes.

Grading:

<table>
<thead>
<tr>
<th></th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quizzes (25 points each)</td>
<td>100</td>
</tr>
<tr>
<td>First written assignment</td>
<td>100</td>
</tr>
<tr>
<td>Second written assignment</td>
<td>100</td>
</tr>
<tr>
<td>Lab reports</td>
<td></td>
</tr>
<tr>
<td>Lawns</td>
<td>100</td>
</tr>
<tr>
<td>Streams</td>
<td>100</td>
</tr>
<tr>
<td>Biodiversity</td>
<td>100</td>
</tr>
<tr>
<td>Final Exam</td>
<td>150</td>
</tr>
<tr>
<td>Lab Attendance</td>
<td>65</td>
</tr>
<tr>
<td>Class Attendance &amp; Participation</td>
<td>25</td>
</tr>
<tr>
<td>Total</td>
<td>840</td>
</tr>
</tbody>
</table>

The grading rubric is subject to change at the instructor’s discretion.

Final grades will be based on the following point system:

4.0 = EXCELLENT (90-100) … “accomplishment that is truly distinctive and decidedly outstanding”
3.5 = VERY GOOD (85-89.99) … “denotes mastery of the subject matter”
3.0 = GOOD (80-84.99) … “considerable understanding of the subject matter”
2.5 = ABOVE AVERAGE (75-79.99) … “above average understanding of the subject matter”
2.0 = AVERAGE (70-74.99) … “average understanding of the subject matter”
1.0 = BELOW AVERAGE (60-69.99)
0.0 = FAILURE (below 60)
OTHER STUFF
(The fine print)

Classroom:
Technology Policy: While York College recognizes students’ need for educational and emergency-related technological devices such as laptops, cell phones, smart phones, etc., using them unethically or recreationally during class time is never appropriate. The college recognizes and supports faculty members’ authority to regulate in their classrooms student use of all electronic devices. Laptops and cell phones are not allowed in class unless permission is given by the professor.

Disability Support: If you had an IEP or 504 plan in high school or if you have a disability or health condition that impacts you in the classroom, please contact Linda Miller, Director of Disability Support Services, at 815-1785 or lmille18@ycp.edu to discuss obtaining the accommodations for which you may be eligible. If you already have an accommodation memo and wish to access your accommodations in this class, please see me confidentially to discuss.

Writing Standards: Students enrolled in this course are expected to write using literate and effective English in their speech and in their writing. All written material submitted to me must be clear and concise and well written; grades on written work (including examinations) will be based on expression as well as on content. Students may be required to rewrite papers which are marred by errors in grammar, punctuation, spelling, or organization. The Center for Teaching and Learning has writing tutors that can assist with the basics of grammar and structure.

Communication: York College recognizes the importance of effective communication in all disciplines and careers. Therefore students are expected to competently analyze, synthesize, organize, and articulate course materials in papers, examinations, and presentations. In addition, students should know and use communication skills current in their field of study, recognize the need for revision as part of their writing process, and employ standard conventions of English usage in both writing and speaking. Students may be asked to further revise assignments that do not demonstrate effective use of these communication skills.

Laboratories: You are required to attend each and every lab!

- All labs will meet in ESC 108. We will promptly leave from there for our scheduled destination. Obtain and read the lab instructions before each lab period.

- The only reason for canceling a field trip will be driving conditions. Therefore, dress for the conditions and for comfort. Wear long pants and closed-toed shoes. Do not wear sandals! Bring ample warm clothing, a raincoat if necessary, and sturdy shoes or boots that can get wet.

- **Mosquitoes may carry West Nile virus. Deer ticks may carry Lyme disease as well as other diseases.** I will provide insect repellant before we go out in the field. Be sure to check yourself for ticks before the end of the day.

- If you have any allergies, please notify me at the first lab meeting. If you have medication for allergies that may arise in the field, be sure to carry them and use them.

Email: On occasion, I will email the class, as a whole, to provide general announcements, update you on changes in exam dates, or the lab schedule. Every matriculated student has a YCP email account. It is your responsibility to make sure that you receive email that is sent to this account.
### Lecture Schedule

**Course Introduction – a warm-up to the semester.**
- **8/26** 1 – Course Introduction
- **8/28** 1 – Welcome to the Anthropocene
- **9/2** 2 – Environmental Ethics
- **9/4** 3 – The nature of scientific inquiry
  - S. Begley (E-Reserve)

**Soils – the foundation of life**
- **9/9** 4 – Soils
- **9/11** 4 – Soils

**Biodiversity – what good are mosquitoes anyway?**
- **9/16** *Q* 5 – What is biodiversity?
- **9/18** 6 – Tropical diversity

**How to save a species – by writing**
- **9/23** Request for public comment
- **9/25** The American lawn – preparation for lab
- **9/30** Crafting a letter of persuasion
- **10/2** Looking for data – Meet in ESC 108

**Plant Communities are always changing, even if they are standing still**
- **10/7** 7 – Succession
- **10/9** 7 – Succession
- **10/14** *Q* 8 – Life History Traits
- **10/16** FALL BREAK – No Class

**Nutrient cycles and the flow of energy – what comes around, goes around (mostly).**
- **10/21** 9 – The balance of CO\textsubscript{2} and O\textsubscript{2}, Trophic Levels
  - P. Colinvaux (E-Reserve)
- **10/23** 9 – The flow of energy and being efficient
- **10/28** No Class
- **10/30** 10 – Terrestrial ecosystems – Flow of energy
- **11/4** 10 – Nutrient cycling
- **11/6** *Q* Aquatic Bioassessment Calculations
- **11/11** A free gift, or is it? Second writing assignment

**Population and Community Ecology.**
- **11/13** 11 – Population Growth
  - Robert Engelman, Yale 360
- **11/18** 11 – Population Growth
  - Erik Stokstad (2005)
- **11/20** 12 – Competition and niche diversity
- **11/25** 13 – Habitat, Extinction, & Exotic Species
- **11/27** NO CLASS – THANKSGIVING VACATION
- **12/2** *Q* 13 – Extinction & Exotic Species

**Ecology and Society.**
- **12/4** 14 – Ecological Effects of Climate Change
- **12/9** 15 – Tragedy of the Commons
  - G. Hardin (E-Reserve)

* Quizzes will take the first 15 minutes of class

This lecture schedule is subject to revision at the instructor’s discretion.
### Lab Schedule

<table>
<thead>
<tr>
<th>Date</th>
<th>Lab Title</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>9/3</td>
<td>Introduction to patterns in nature and sampling design</td>
<td>ESC 108/ Campus Environs</td>
</tr>
<tr>
<td>☀ ☀</td>
<td><strong>Note: Field labs will meet at the Ecological Sciences Center.</strong></td>
<td>☀ ☀</td>
</tr>
<tr>
<td>9/10</td>
<td>Soils, the foundation of terrestrial systems</td>
<td>William Kain County Park</td>
</tr>
<tr>
<td>9/17</td>
<td>Life Under Your Feet - Soil Invertebrate Diversity</td>
<td>ESC 108</td>
</tr>
<tr>
<td>9/24</td>
<td>Biodiversity and Productivity I</td>
<td>ESC 108 &amp; Greenhouse</td>
</tr>
<tr>
<td>10/1</td>
<td>A managed lawn</td>
<td>Campus Environs</td>
</tr>
<tr>
<td>10/8</td>
<td>An unmanaged lawn</td>
<td>Campus Environs</td>
</tr>
<tr>
<td>10/15</td>
<td>Calculations/How to write a scientific paper</td>
<td>ESC 108</td>
</tr>
<tr>
<td>10/22</td>
<td>An old field</td>
<td>Campus Environs</td>
</tr>
<tr>
<td>10/29</td>
<td>Bioassessment of Aquatic Systems – A clean stream</td>
<td>West Branch Codorus Creek</td>
</tr>
<tr>
<td>11/5</td>
<td>Bioassessment of Aquatic Systems – Industrial impacts</td>
<td>West Branch Codorus Creek</td>
</tr>
<tr>
<td>11/12</td>
<td>Bioassessment of Aquatic Systems – Farming impacts</td>
<td>South Branch Codorus Creek</td>
</tr>
<tr>
<td>11/19</td>
<td>Biodiversity and Productivity II</td>
<td>ESC 108 &amp; Greenhouse</td>
</tr>
<tr>
<td>11/26</td>
<td>NO LAB – THANKSGIVING</td>
<td>☔</td>
</tr>
<tr>
<td>12/3</td>
<td>No lab – reserved for weather related make-up</td>
<td>☔</td>
</tr>
</tbody>
</table>

This lab schedule is subject to revision at the instructor’s discretion and the weather’s indiscretion.
ACADEMIC INTEGRITY IN THE YORK COLLEGE
DEPARTMENT OF BIOLOGICAL SCIENCES

Science and the teaching of science represent a search for truth and they rest on ethical behavior and intellectual honesty. As such, both the Department of Biological Sciences and York College of Pennsylvania unequivocally condemn academic dishonesty. Academic dishonesty is defined in the York College Student Handbook as cheating, plagiarism, fabricating research, falsifying academic documents, etc. and includes all situations where students make use of the work of others and claim such work as their own. Because the Department of Biological Sciences maintains high expectations for all students and is committed to stringent standards of academic integrity, we contend that all published information, in any form, must not be used unless rigorously paraphrased and properly cited. Moreover, all tests, projects, assignments, and lab reports require a solo effort unless specifically noted otherwise by the instructor. This means that the sharing of text, images, tables, figures, or data analyses with classmates is a breach of academic integrity. Furthermore, providing such information to others will be considered as dishonest as accepting or taking the information.

Work done in lab may involve partners, but the formal partnerships end when the laboratory period ends. At the end of a lab, each partner should leave with his or her group’s protocols, hypotheses, data, and any information about procedural problems. Once the in-lab work is completed, the work shifts from a group effort to a solo effort. This does not mean that students shouldn’t discuss lab concepts, problems, and general strategies and broad interpretations. Talking about science is healthy and is encouraged. And, it is understood that lab groups may obtain similar or identical quantitative data for a given project. In the end, however, data analyses and report writing as well as the overall presentation and interpretation of these data are to be done independently by the individual and not by the group.

If work submitted by two or more students appears unexplainably and unreasonably similar, or if credit for previously published information or ideas is not given through literature citation, academic dishonesty will be assumed. In this event, the instructor will provide written notification to the student, the Department Chair, and the Dean of Academic Affairs of the charge and the sanction. Documentation related to instances of academic dishonesty will be kept on file in the student’s permanent record. If the academic dishonesty is the student’s first offense, the instructor will have the discretion to decide on a suitable sanction up to a grade of 0 for the course. The faculty member may request that the Student Welfare Committee conduct a hearing and decide on the sanction, which can involve academic suspension or dismissal from the College, if the faculty member believes the offense to be of an extremely egregious nature.

If the Dean of Academic Affairs determines that the breach of academic integrity is the student’s second offense, the Dean will provide written notification to the student, the instructor, and the Department Chair. The Student Welfare Committee will automatically conduct a hearing to review the charge and decide on an appropriate sanction, which will involve academic suspension or dismissal from the College. Students are not permitted to withdraw from a course in which they have been accused of academic dishonesty.

If questions about academic integrity arise, see the course instructor before completing and submitting your work. In addition, specific information about the York College of Pennsylvania Academic Integrity Policy can be found in the most recent edition of the Student Handbook.

I, ____________________________ (print name), have read this statement and the syllabus for this course and I understand and accept departmental and college expectations of academic integrity and ethical conduct.

Signature ____________________________________
ACADEMIC INTEGRITY IN THE YORK COLLEGE
DEPARTMENT OF BIOLOGICAL SCIENCES

Science and the teaching of science represent a search for truth and they rest on ethical behavior and intellectual honesty. As such, both the Department of Biological Sciences and York College of Pennsylvania unequivocally condemn academic dishonesty. Academic dishonesty is defined in the York College Student Handbook as cheating, plagiarism, fabricating research, falsifying academic documents, etc. and includes all situations where students make use of the work of others and claim such work as their own. Because the Department of Biological Sciences maintains high expectations for all students and is committed to stringent standards of academic integrity, we contend that all published information, in any form, must not be used unless rigorously paraphrased and properly cited. Moreover, all tests, projects, assignments, and lab reports require a solo effort unless specifically noted otherwise by the instructor. This means that the sharing of text, images, tables, figures, or data analyses with classmates is a breach of academic integrity. Furthermore, providing such information to others will be considered as dishonest as accepting or taking the information.

Work done in lab may involve partners, but the formal partnerships end when the laboratory period ends. At the end of a lab, each partner should leave with his or her group’s protocols, hypotheses, data, and any information about procedural problems. Once the in-lab work is completed, the work shifts from a group effort to a solo effort. This does not mean that students shouldn’t discuss lab concepts, problems, and general strategies and broad interpretations. Talking about science is healthy and is encouraged. And, it is understood that lab groups may obtain similar or identical quantitative data for a given project. In the end, however, data analyses and report writing as well as the overall presentation and interpretation of these data are to be done independently by the individual and not by the group.

If work submitted by two or more students appears unexplainably and unreasonably similar, or if credit for previously published information or ideas is not given through literature citation, academic dishonesty will be assumed. In this event, the instructor will provide written notification to the student, the Department Chair, and the Dean of Academic Affairs of the charge and the sanction. Documentation related to instances of academic dishonesty will be kept on file in the student’s permanent record. If the academic dishonesty is the student’s first offense, the instructor will have the discretion to decide on a suitable sanction up to a grade of 0 for the course. The faculty member may request that the Student Welfare Committee conduct a hearing and decide on the sanction, which can involve academic suspension or dismissal from the College, if the faculty member believes the offense to be of an extremely egregious nature.

If the Dean of Academic Affairs determines that the breach of academic integrity is the student’s second offense, the Dean will provide written notification to the student, the instructor, and the Department Chair. The Student Welfare Committee will automatically conduct a hearing to review the charge and decide on an appropriate sanction, which will involve academic suspension or dismissal from the College. Students are not permitted to withdraw from a course in which they have been accused of academic dishonesty.

If questions about academic integrity arise, see the course instructor before completing and submitting your work. In addition, specific information about the York College of Pennsylvania Academic Integrity Policy can be found in the most recent edition of the Student Handbook.

I, ____________________________ (print name), have read this statement and the syllabus for this course and I understand and accept departmental and college expectations of academic integrity and ethical conduct.

Signature ____________________________________