

Piedmont Project Statement

Chad Brommer

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I am part of the instructional faculty of the Biology department in Emory College.

Throughout the 9 months prior to participating in the Piedmont Project, I have had the great experience of working with the Emory University Office of Sustainability.

Through these interactions, my approach to sustainability has been closely tied to how the University and local community approach sustainable issues. The Piedmont Project was a wonderful way for me to refocus and reassess the different issues of sustainability in greater Atlanta, Georgia, and even the world. Piedmont has a unique way of coaxing out the tidbits of insight, experience, and knowledge of its participants.

This is, perhaps, the goal of most workshops or in-service training events. The difference is rooted in the way that Piedmont coaxes these outcomes; by actions and not just by proximity. This is to say that walking in the woods, talking with your fellow participants about specific topics related to your life, and spending the whole day eating, listening, and getting to know everyone forms a wonderful bond. The bond lets us speak without thinking and experience without hesitation. Ideas and motivation develop from this free environment. This is a goal and direct outcome of the Piedmont Project. We, as members of the academic community gather to learn, share, develop, challenge, and ultimately create something new for our students, perhaps for the entire Emory University Community through our new courses and educational modules.

My course is unique to most other courses present at the Piedmont Project; it is entitled "The Biology of Sustainability". A direct application of the principles and practices of sustainable development using science and biology as a way to explain and describe what is and is not taking place in our local ecosystem.

This course contains a lecture and a laboratory portion. Classroom exercises will focus on the background science needed to function in the laboratory section. The lecture portion seeks to reinforce the topics of: Basic ecology, population biology, chemistry, toxicology, meteorology, atmospheric science, water-soil science, plants, insects, animals, microbes, and communication of these diverse ideas to fellow scientists and the lay-population. The laboratory section will focus on sustainable situations around DeKalb County, GA with the students working in the "field" to assess the level of sustainable or non-sustainable practices.

Biology 470: The Biology and Basic Science of Sustainability
Spring Semester, 2008
MWF, 1462CR (Dental Building) Room 101

Meeting from: 11:45-12:35pm. Group meeting times will need to be scheduled throughout the semester.

Chad L. Brommer, 2101 Rollins Research Center

Office Hours: Available any time by appointment, LL, BB, or email.

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NOTE: this is an evolving, flexible syllabus and is therefore subject to change.

Blackboard

We will touch on many diverse and intriguing topics in this course. Please refer to the BB site to facilitate class discussion, allow pre-class postings of questions, and for handing out assignments. Please check it daily, add interesting relevant readings you find in other walks of life, and join the discussion. This is part of your participation grade.

This course does not have a textbook nor does it have a large list of pre-determined readings. The entire class will be adding, debating, and subtracting different primary, secondary, and popular science articles. This process will be based on the veracity of each individual paper, book, article, or other source of information. Many links, pdfs, and other formats for reading papers will be provided to you during the semester.

Library

In this course you will be scouring the internet and the library for information and insights. The library is not a separate entity for which an assignment or paper must be turned in. It is THE source for information and guidance for which information is credible and which is not. Students are expected to be adept at using all the resources available at the libraries on campus. Students may lose points if they do not utilize ALL resources available from the campus libraries. If you are not familiar with the library and its resources, you should contact Rachel Borchardt for a demonstration or consultation. DO NOT wait until the last minute to do this.

Rachel Borchardt, Biology and NBB Librarian, Woodruff Library

Phone: (404) 727-0858 E-mail: rborcha@emory.edu

Assignments

• Participation (100 pts) is the key to making this course work. In addition to informed participation in class discussions, students will be expected to present to the class an original example of the biochemical arms race. This section will be graded totally based on the instructor's impression of the student's participation.

• Short 'Position/Foundation Paper' (100 pts)

After the first three weeks of intensive lecture, discussion, and readings; each student will submit a paper detailing an example of a biological, experimental foundation for a sustainable practice found in the American southeast (DeKalb county is a good place to start). You will be, in effect, justifying that there is a biological imperative associated with sustainable practices or a need for a more sustainable practice. Details will follow on paper length, format, grading policies, and my general expectations.

• Research/Outreach Case Study Building (300 pts)

Your research project evaluation will come from these components:

- 1) A **1-2 page initial proposal** written by your project team (3 students) (50 pts)
- 2) A **progress report** on your project given by your group to the class (50 pts)
- 3) A **classroom presentation (case study) will be given by each group**, (75 pts)
- 4) Finally, **each person** will write their own **proposal for submission to a curricular/scientific review body** growing from your group's project (125pts, due last day of class).

•Leading Class in Case Studies (200 pts)

At least twice during the semester, a group will lead the class in a case study or discussion. We will talk more about this and model it for you, but it is important for these class sessions that you *lead a discussion*, **not** give a presentation of sustainability. A rubric will be provided to help explain the grading process. You may be asked to lead a discussion one class period before the actual discussion date.

Lab projects will tie in directly with the above research project and with your foundation or position paper. Activities in lab as well as quizzes will also be tied into this portion of your overall grade.

•Leading Class Discussions (200 pts)

During lecture and lab will have quizzes which will assess your knowledge of the cores material in the course. This portion of your grade also involves documenting the experiments and outcomes of the analytical labs you will design and perform. Quizzes and lab outcomes will be given to you after class starts and usually announced before the course begins.

Week 1 Thursday January 16

Course Introduction and student development of a definition of Sustainability/Biology.

Week 2 January 22-25

Biology Basics: Population Ecology, Ecosystems.
Global Information Systems (GIS) training for lab. Quiz

Week 3 January 28-February 1

Biodiversity and food chains.
GIS training in advanced applications to ecosystems. Lab quiz

Week 4 February 4 - 8

Models and Cycles: Nitrogen, carbon, water, and others affecting biology.
Lab in bioaccumulation and bioassays. Position paper due. Quiz

Week 5 February 11 – 16

Models and Cycle: The chemistry and biology of air and meteorology.
Modeling climate in lab. Climatologists and NOAA scientists helping us.

Week 6 February 18 - 22

Energy, consumption, and waste. Some environmental toxicology with SPH.
Guest lab and lecture speakers on solid waste impacts to Atlanta. Quiz

Week 7 February 25 – 29

Food, fiber, water and the resources we use from the environment.
Chemistry department helping us in lab analysis collected local samples. Quiz and lab reporting.

Week 8 March 3 - 7

Student presentations and progress reports on your sustainability projects.
More chemistry department instruction in lab, catch up, and reporting.

Week 9 March 10 and 14 Spring Break

Week 10 March 17 – 21

Student presentation week. Your cases and topics.
Lab analysis of samples, modeling impacts to local fauna and flora.

Week 11 March 24 - 28

Restatement of the basics of biology and sustainability.
Your lab projects and troubleshooting. Trips to local sites of sustainability.

Week 12 March 31- April 4

Modeling and prediction of human impacts to the biology of ecosystems. SPH faculty leading students in analysis, modeling, and impacts to human health.
Lab analysis of air samples, radioactivity, and toxicology.

Week 13 April 7 - 11

Water Quality in Metropolitan Atlanta, how is it impacting human and non-human biology?

Week 14 April 14 - 18 Regional Water Topics

Student presentations and cases in lecture and lab

Week 15 April 21 - 25

Student presentation and cases in lecture and lab. Presenting of cases to local school children and teachers.

April 28 Last Day of Classes

Final exam dates from May 1st- 7th. Final Exam TBD.