Incorporating sustainability to BSCI 124 and BSCI 125
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I plan to incorporate several topics discussed in our Sustainability Workshop into the two courses that I teach every semester: BSCI 124 (Plant Biology for Non-Science Majors) and BSCI 125 (Plant Biology Lab). More than 400 students take these courses every school year, including the Summer session I.

Most of the changes will be in the BSCI 124 lectures, which will include deeper coverage of the following topics related to sustainability, and the importance of plants in this issue:

1. **Food and nutrition**. We will explore the importance of a healthy diet, and its ecological implications: how eating lower in the food chain is good for the environment too.
2. **Agriculture.** Will look at the environmental impact of industrial agriculture (erosion, salinization, excessive use of pesticides, fertilizers, etc.), as well as some of the possible solutions of these problems. Sustainable methods of agriculture (such as organic farming) will be introduced.
3. **Human uses of plants**. Sustainable and alternative choices will be incorporated in the discussion of different human uses of plants, like fibers, paper, stimulating beverages, etc.
4. **Plants and the environment**. The role of plants in the different terrestrial biomes of the world, their delicate balance and how sustainable practices can help improve these ecosystems. We will also focus on the Chesapeake Bay aquatic biome, and explore what students can do to help improve the condition of the bay.
5. **Biodiversity and Extinction**. We will cover what humans activities have led to mass extinctions today, and the importance of conservation and sustainable practices. We will discuss the wide array of ecosystem services provided by plants and other organisms (water filtration, oxygen, Carbon uptake, pollination, etc).
6. **The Atmosphere.** Will focus on the atmosphere, the different biogeochemical cycles, and how human activities have created environmental problems like climate change, acid rain and the thinning of the ozone layer. A big component of this section is making students aware of the importance of plants in the Carbon, Water, and Nitrogen Cycles, and how human activities

(deforestation, burning of fossil fuels, industrial agriculture, etc.) disrupt these cycles.

One activity that students will do is to use an online "Carbon Footprint Calculator" in which they will determine their carbon footprint and find at least three ways to reduce it. I already tested this activity as an extra credit assignment this summer and the results were excellent. Most students found out their carbon footprint was lower than the U.S. average person, but considerably higher than the rest of the world. This exercise lead to interesting in-class discussion on the subject and made students aware of their consumption habits – but it also made them think of more sustainable ways of living. So, I plan to continue using this exercise along with a similar "Nitrogen Footprint" assignment.

In addition to improved lectures, assignments and exercises, I would also teach sustainable practices with my own example: using paper-less quizzes, encouraging paperless notes on PowerPoint presentations, having students bring their own cups when I bring coffee, tea and other beverages for one of the classes, etc.

As for the **BSCI 125 Lab**, I plan to incorporate a case study titled: "The Ecological Footprint Dilemma," from the National Center for Case Study Teaching in Science (http://sciencecases.lib.buffalo.edu). The case deals with the question of constructing a parking lot vs. developing a community garden at a fictitious university. Students learn to calculate their ecological footprint, and discuss different issues about the case in a variety of angles.

A case study already in place is one about the compound taxol, which is obtained from the bark of the Pacific yew tree. In this case, students look at conservation of the old growth forest trees vs. exploiting the trees to extract the anti-cancer compound taxol.