

# SUSTAINABILITY

## Principles of Biology II, BSCI106 Fall 2015

These are the changes that I will be introducing to BSCI106 in the Fall

1. The theme of **sustainability will be an overarching theme of BSCI106**. Please read from the lecture policies and goals: *“My hope is that after finishing this course you will be able to learn concepts and skills that will prepare you to take more advance science courses and be a better-informed citizen in this ever-changing world. In order to reach this goal we will work on connecting the major concepts of this course to sustainability issues such a climate change; biodiversity and species conservation; human population growth; evolution of antibiotic resistance among others.”* My plan is to connect in a more explicit form the concepts of the course to sustainability. Many of these themes were in previous versions of the course, e.g. climate change and species conservation but were not necessarily linked to sustainability.
2. I plan to invite a Sustainability Advisor at the beginning of the semester to talk about sustainability and encourage my students from the beginning to get involved on campus. I also plan to have a final lecture on sustainability that I need to create still. My hope is that this lecture will help put together many of the concepts of the class and inspire the students to continue to be informed and take action.
3. Assignments. I will use lecture activities to facilitate learning and explore some topics in more depth.

Three out of these six graded assignments are on sustainability issues (a, b, c):

a.	LA1-Human population growth	September 11	10 points
b.	LA2-Sea otter case study	September 18	10 points
c.	LA3-Climate change impacts	September 30	10 points
d.	LA4-Evolution by natural selection	October 9	10 points
e.	LA5-Hardy Weinberg	October 19	10 points
f.	LA6-Phylogenies	November 13	10 points

I also have two non-graded activities on sustainability issues:

- a. Global Climate change impacts (POGIL activity)
- b. Calculation of carbon footprint
- c. Use of antibiotic and pesticides and the evolution of resistance

4. Learning Outcomes.

Course General Learning outcomes:

Students will be able to link major course concepts to sustainability issues

Specific Learning outcomes :

- Be able to explain how evolution by natural selection could give rise to a new species
  - Be able to apply concept and explain for example how evolution by natural selection can explain antibiotic and pest resistance
  - Be able to predict how species might evolve given a change in the environment
- Be able to apply population growth concepts and models to human population growth
- Become acquainted with the population crisis and its social and ecological impact
- Students will be able to understand how human activity like overfishing can trigger a chain effect on other species (sea otter case study)

- Students should be able to describe how humans affect chemical cycles (Nitrogen and Carbon)
- Students should be able to explain the relationship between the disturbance of the carbon cycle and climate change

5. Assessments.

Sustainability topics are part of the topics covered in BSCI106 and they will be assessed like any other course topic in mid-term exams and final exams. In addition to these summative assessments I plan to use formative assessments during the semester. I will use lecture activities, some graded and some non-graded, to assess understanding and foster learning. I have also participation points and some of these points will be given for class work (e.g carbon footprint).