Studying Sustainable Life

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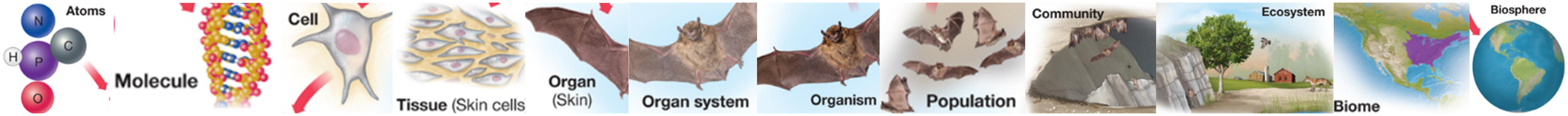

Course: *Biol 1010: Biology and the Citizen*

Biology and the Citizen (BIOL 1010) is a general education course that broadly introduces many concepts to students. As a general education course, a broad range of students enroll in it each semester making it an ideal class to introduce sustainability concepts to a large number of students.

The plan for this class is to incorporate a discussion on sustainability each week as it applies to the planned course topic for that week and for students to participate in or develop a plan for a sustainability project.

Discussions:

During one class period each week, time will be dedicated to introducing a topic in sustainability to students (Tab. 1). This will include discussing current research, including Ted talks, and for a couple weeks exploring the history of life on earth to see what can be learned to make our life today sustainable. Outside of class, students will then submit their thoughts about the topic to a discussion board on Canvas.

Sustainability Project

Students will propose how they will participate in a sustainability project. Their proposals will be due by September 16 and will consist of their plan to participate in a sustainability project throughout the semester. Class time will be reserved to discuss these with peers and the instructor.

The proposal may consist of one of the following:

-Participate extensively in an existing sustainability project
-Prepare an extensive proposal for a new project
-Design and carry out a new project

Upon instructor approval, students will carry out their project throughout the semester, and submit a report of their work at the end of the semester. Time will also be given at the end of the semester to share the results of their work.

Table 1. Weekly biology topic with associated sustainability topic and discussion prompt. Time will be scheduled one class each week to introduce the respective sustainability topic. Students will respond on Canvas to each respective discussion prompt. Students will present the results of their work on their sustainability project during the final week of class.

Week	Topic	Sustainability Topic/Activity	Discussion Prompt
1: Aug 29 – Sep 2	Nature of Science	Introduction to sustainability	What does sustainability mean to you? What sustainable activities do you currently participate in?
2: Sep 5-9	Chemistry of Life	Green Chemistry	Read and report about a Green Chemistry project.
3: Sep 12-16	The Cell	Synthetic Cell Uses Lab grown hamburger (TED talk)	Can synthetic cells help us be sustainable? How is a cell's life sustainable?
4: Sep 19-23	How Cells Work	Algae fuel – renewable fuels	Can algae really be a sustainable source of energy?
5: Sep 26-30	Cell Division	Cell division errors	How has cell division been sustainable when so many things can go wrong?
6: Oct 3-7	Patterns of Inheritance Chromosomes and Human Genetics	Genetic diseases and gene therapy	Why is genetics important in sustainable thinking?
7: Oct 10-14	What Genes Are	Disease, medicine, and sustainability	What role do diseases and medicine play in sustainability?
8: Oct 17-21	How Genes Work	Vaccine production using tobacco plants Engineering our food (TED talk)	Can genetic recombination play a role in sustainable living?
9: Oct 24-28	Evidence and Mechanisms of Evolution	Exploring the Fossil record	What can we learn from the fossil record about sustainable life?
10: Oct 31-Nov 4	Adaptation and Species	Current evolutionary changes in species	Does evolution play a role in sustainability?
11: Nov 7-11	History of Life	Exploring environmental changes during the history of life on earth.	What historical events teach us about sustainability?
12: Nov 14-18	General Principles of Ecology	The top concerns for sustainability.	Share with your peers how your project is going.
13: Nov 21-Nov 25	Population Ecology	Endangered and thriving populations	How is one population affected by your sustainability project?
14: Nov 28-Dec 2	Community Ecology and Ecosystems	Backyard forest (TED talk) Covered in germs (TED talk)	How are communities affected by your sustainability project? How is the ecosystem affected by your project?
15: Dec 5-9	Scientific literacy	Presentations of projects to peers.	