Basic Ecology

Course category: (P) Life Sciences

Instructor: **Jack Bartley**

Ecosystems are extremely complex and dynamic. They respond to perturbations much in the same way an individual organism would. In the Basic Ecology course, we will be taking a look at how this actually happens. Two of the basic functions within an ecosystem are material cycling and energy flow. They are often confused. They are interlocked but they function quite differently. How they function is dependent on how the organisms within the ecosystem interact, and how much energy enters the ecosystem, a factor that is not uniform around the globe.

The amount of energy and the basic physical structure of an ecosystem will determine what kind of biome it is. A biome can be loosely defined by what the dominant vegetation is: deciduous hardwoods, conifers, grasslands, tropical rainforests, and deserts, to name a few. In the class, we will take a look at the major biomes of the world and discuss what factors came into play to create each one.

Energy also determines how species of plants and animals are distributed throughout the world. Why are some species found in one part of the world, and not in others? In evolutionary history, what role did continental drift play in addition to the amount of energy entering a system?

As mentioned previously, it is the interactions of the organisms within the environment that will determine how energy flows through the system and how materials are cycled. We will look at examples of predator/prey, competition, mutualism, and commensalism and how each can structure an ecosystem.

The course will consist of short readings provided by the instructor, discussions of the readings, mini-lectures and power point presentations on specific topics, such as those mentioned above. Student interaction with the instructor and fellow students will be encouraged. The classes will be similar to the ones I used to do for my honors students at the University of Delaware (without all the writing).

Week 1: Global energy and biomes

Week 2: Energy flow and material cycling

Week 3: Food chains or food webs? Ecosystem stability

Week 4: Species interactions

Week 5: The impact of humans

I will share my power point presentations with the class, and the class can be recorded if a student so desires. The syllabus will include my e-mail and phone number. If students have questions between classes, they will be able to reach me at any time via e-mail. As mentioned above, discussions within the class will be encouraged.