Summer Assignment
AP Biology
2013-2014

AP Biology is designed to be the equivalent of a college course in biology. This class will be conducted in similar fashion to what you could expect to see in college. The goal of AP Biology is to provide students with the scientific principles and focus on the four big ideas of biology.

Big idea #1: The process of evolution drives the diversity and unity of life.
Big idea #2: Biological systems utilize free energy and molecular building blocks to grow, to reproduce, and to maintain dynamic homeostasis.
Big idea #3: Living systems store, retrieve, transmit, and respond to information essential to life possess.
Big idea #4: Biological systems interact, and these systems and their interactions possess complex properties.

In order to cover the material necessary for the AP Biology Exam in May, we need to move at a rapid pace. To cover everything required, there is a summer assignment.

Part I: Ecology (Chapters 52-56)
We will begin the 2014-2015 school year with Ecology, so you need to come prepared for the first day by having read the Ecology chapters. In addition to reading the text, you will also define the list of "Key Terms" and complete "Focus Questions" for Ecology. There will be an assessment on the first day of school on which you can use your vocabulary and focus questions. **You will need to check out a copy of the AP Biology book from the AC before you leave this year.**

Part II: Natural History Collection
This assignment will send you out of doors to do field work, "old-fashioned" Biology. You are to find an example of each organism listed in the following pages and photograph it in its natural habitat. You will then present those photographs through the use of Instagram. If you choose to use Instagram, you must create a unique account that only contains images for this project. If you do not have access to Instagram, you may use presentation software (ex. PowerPoint, Keynote, Prezi) to assemble a natural history collection of the specimens you collect. The collection will include photographs of the organism, its common and scientific names, its classification, and information that describes where an when it was collected. This part of the assignment will not be due until one week prior to the end of the first quarter (probably late October).

Part III: Summer Field Trips
Approximately six times throughout the summer and first quarter of the school year, I will announce filed trips. You will be invited to join me at locations (all locations will be in Waterford or very close) where we will spend an hour or two doing field work. These will be early mornings or late evenings, as that is the best time to view wildlife. You should bring a field notebook and a camera. The main purpose of these field trips is to heighten your appreciation for the outdoors and allow you time to work on your Natural History Collection. You are required to attend at least three, but you are invited and encouraged to attend all.

Helpful Resources

Website - www.mottbiology.weebly.com - This site contains all the information you need about this course including vocabulary and focus questions for the entire school year.

Twitter and Instagram - @mdlindemulder

Email - lindem01@wsdmi.org

The Natural History Collection

Part I: The first part of the collection is general in nature and includes:

- Four insects (two can be arachnids instead)
- Three wildflowers (avoid the very common ones like dandelions/daisy)
- Two non-flowering plants
- Two fungi
- Five animal artifacts (Be creative! Capture a spider web; find a track; find an egg casting, shell, or nest...etc. Be sure to ID the specimen from the artifact.)
- Three songbirds
- Three birds of prey or waterfowl
- Three herpetiles - sometimes spelled herpitiles (amphibians and reptiles)

Part II: The second part of the collection is specific in nature and centers on some of the common trees of Michigan and five invasive or toxic plants. Trees must have at least three photos per organism: entire tree, top and bottom of leaf, bark/trunk.

- You must identify five trees native to Michigan
- You must identify at least one invasive or toxic plant (ex. poison ivy, purple loosestrife, russian olive, stinging nettle, tree of heaven)
- You must also find an example of phragmities and typha and provide a slide explaining the relationship of these two organisms

Part III: Extra Credit: You may earn extra credit for each additional organism you identify up to 10 additional organisms.

Do's and Don'ts

- Do take a camera and small notebook with you as you collect. Remember to record the original colors and markings immediately as they may not photograph as well as you had hoped. When photographing trees, take one shot of the entire tree, one of its bark, and another of the leaves.
- Do avoid plain brown moths (very hard to identify with our resources) and caterpillars.
- Do be sure to have organisms that are different in type in the general collection - ex. Only one kind of grasshopper, one shelf-fungus. Each artifact type should be different in nature (only one footprint and one shell)
- Do observe rules of the State Parks and private property. There is no need to do any damage or harm to anything in this assignment. Take nothing but a picture; leave nothing but your footprint.
- Don't wait too long - things begin to die in the fall! You can still do your collecting in the first couple of weeks in September, but you will be doing it *in addition to your regular class work*.
- Do collect more than you need - sometimes you have something that is really difficult to identify; backup samples are good.
- Do remember to record the sort of habitat (side of the road, in a marsh, a shaded woods, GPS location, etc.) where your samples were found - this is part of your information to include in the field-book and will help you in using the classification guides.
- Don't handle bird nests; they can be full of parasites and many birds return to their nest each year.
- Do have pictures clear enough so that identification is easily made.
- Do take your own pictures. No swapping of shots or taking them from a book or the Internet; include a time and date stamp if possible.

I am looking forward to our time together in AP Biology, as I am sure many of you are. If you have any questions over the course of the summer, feel free to email me at lindem01@wsdmi.org .

Enjoy the summer!

Mr. Lindemulder