**Oxford Virtual Academy Syllabus – Dinosaur Hill**

For Fall 2023 Semester we’ll be comparing and contrasting the physical descriptions and functions of the parts of living things. Working our way up from the ground up, from roots & toes to hair & feathers and many parts in between. Over the course of the semester, we’ll engineer the systems in our own imaginary animals.

1. **Plants vs. Animals** What things do all living things need? What parts do animals and plants use to get those needs met? We’ll discuss how they are similar and different. Take a hike to record which plants and animals are having their needs met in different areas of Dinosaur Hill Nature Preserve. We’ll then design a habitat for our Engineer an Animal.
2. **Skeletal Systems** Which bones go where- & why? We’ll examine bones from different types of animals (some extinct!) and make a bone puzzle before designing the skeleton of our Engineer an Animal project.
3. **Skulls** What can you learn about an animal based on its skull? Usually when an animal has a large body part, that means it is good at using that part. Big brains might mean big thinkers, big ears means good hearing, etc. The skull is where many important parts are located. Examine skulls and teeth from different types of animals. Design the skull of your Engineer an Animal.
4. **Smell & Taste** How do animals use smell and taste? Why would it be beneficial to have a bad sense of taste? Today will be about how taste and smell are used in the animal kingdom. Smell is often used for communication. We’ll play a game using scent to communicate with one another. Try a “plug your nose” taste test at home to see how scent and taste are related.
5. **Sight & Hearing** Ears & Eyes are the other sense organs we have. We’ll try on different lenses to see how they affect our sight. Learn about how eyes and ears work, using sound to navigate, and animals that see & hear things that humans cannot. Play a game using sound to avoid obstacles.
6. **Muscles & Movement** How do animals move? Watch animals ambulate and see if you can mimic the way they move. Build a model hand with string tendons to show how they work together. Design the muscles layer of your Engineer an Animal.
7. **Feet & Toes** What kinds of animals have which kind of feet? We’ll be comparing feet and toes of some animal mounts before looking for animal tracks and signs. Then head back inside to make some track casts of your own. Design the feet of your Engineer an Animal.
8. **Reproductive Systems** Which types of animals lay eggs or give live birth? Are those the only options? We’ll discuss a few examples of each and compare animal babies to adults in a matching game. Create a lifecycle bookmark. Decide how your Engineer an Animal reproduces.
9. **Digestive & Excretory Systems** Conduct a digestion experiment using vinegar as substitute stomach acid. Dissect a model or virtual animal to see which parts are in a digestive system. Take a look at different scat models to figure out what animals eat. Design a digestive system for your Engineer an Animal.
10. **Respiratory Systems** Build a respiratory system in a bottle. Learn about who has how many lungs. Design a respiratory system for your Engineer an Animal.
11. **Circulatory Systems** Build a heart model to pump “blood” through our creature. We’ll discuss how hearts are different across animal classes. Design a system of veins & arteries for your Engineer an Animal.
12. **Nervous Systems/ Touch** Learn about the parts of the brain and the pathways to get there. Experiment with your sense of touch- how light can you touch a feather and still feel it? Design the nervous system of your Engineer an Animal.
13. **Endocrine & Exocrine Systems**- Different types of body coverings, and the glands that maintain them. We’ll observe and discuss the types of body coverings different types of animals have, how those body coverings grow with the animal, and how different body coverings are maintained, depending on where the animal lives. Decide on a body covering for your Engineer an Animal.
14. **Tails**- Examine the tails of our animal mount collection and learn about the different ways that tails are used before deciding on a use and designing the tail for your Engineer an Animal to function that way.