

### **Apogee Program** **Course Title: Zoology**

#### **Course Description:**

Lions and tigers and bears, oh my! The animal kingdom is vast and often mysterious. Participants learn the basics of animal biology relate to structure and physiology. Students investigate the evolutionary mechanisms that lead to the diversity of vertebrate and invertebrate animals. While conducting hands –on and virtual dissection, students identify, compare, and contrast the critical features used to classify animal into major groups. Field trips and hands-on activities are planned.

#### **Essential Questions**

- How are the implications of evolution and the development of diversity in the animal kingdom important to human responsibility, interaction and participation as part of this system?
- How did scientific observation and thinking “out of the box”, in this branch of science, promote continued scientific inquiry and the search for more knowledge?
- What is the difference between scientific “fact” and science fiction? Does fiction precede fact?

**Outcomes:** Upon successful completion of this course, students will have the opportunity to explore:

- a. the vast diversity and importance of animal life on earth.
- b. the history and background of the science of Zoology
- c. the important scientist and their contributions to the understanding of the animal kingdom.
- d. animal classifications
- e. anatomical structures of vertebrates and invertebrates
- f. habitats and food chains
- g. strange, true and mythical creatures.

Students will understand:

- a. the concept and role of evolution as it applies to the development of the animal kingdom.
- b. the way in which the animal world is dependent, interdependent, and/or co-dependent
- c. the specialized vocabulary that helps defines this area of study.
- d. representative habitats and structures of vertebrates and invertebrates.

Students will be able to:

- a. make observations
- b. follow and conduct simple lab activities and experiments
- c. draw conclusions based upon these observations.
- d. design and share an independent project in a meaningful way
- e. share their knowledge, ideas, generalizations, and/or speculations

### Resources and Materials:

- a. Various websites and articles, teacher made course packet and materials
- b. Websites, articles, course packs, etc.
- c. Field trips

### Student Assessment:

- Pre Assessment: Discussion, question and answer group and individual activities to assess prior knowledge, and individual goal setting,
- Documentation of Learning
  - Students will have three trials to demonstrate 90% mastery (or better) on each of 3 assessments given once per week.
  - Class notes, drawings and journals responses to readings
  - Participation in dissections
  - Participation in class discussions and activities
  - Daily “exit questions” on a new experience, new “fact”, idea, or concept, reflection on the day’s activities.
- Post Assessment •Students will be responsible  
for an interest based independent study project/science experiment that demonstrates application, analysis, synthesis, and generalization of concepts studies during the class

### Student Evaluation:

As this is an enrichment course, each student will receive a narrative evaluation. This evaluation will be based on participation in the activities, discussion during class, and the student’s application of learned concepts to the final presentation. Please feel free to contact me at any time should you have questions or concerns regarding your child’s progress.

### Schedule:

Date(s)	Topic(s)	In-Class Activities	Assignments and/or Assessment
Monday, June 27th	•Introductions to each other and the course •Overview •Projects	•Pre-Assessment activities and goal setting •Nature Walk	•Collect and Categorize specimens gathered
Tuesday June 28th	•History of Zoology •Charles Darwin and the Origin of Species	•Categorize gathered specimens •Animal Classifications •Research	•Mounting specimens and research •Application of Darwin’s concepts.
Wednesday June 29th		Field Trip to Lincoln Park Zoological Society	

Thursday June 30th	<ul style="list-style-type: none"> <li>•Discussion of Field Trip</li> <li>•Animal Classification Vertebrate and Invertebrate photos/pictures.</li> <li>•Habitats and food chain</li> </ul>	<ul style="list-style-type: none"> <li>•Dissection of Owl Pellets</li> </ul>	<ul style="list-style-type: none"> <li>•Mount specimens retrieved to recreate and identify bones.</li> <li>•Speculate on the owl's habits and habitats.</li> </ul>
Friday July 1st	<ul style="list-style-type: none"> <li>•Week in review</li> </ul>	<ul style="list-style-type: none"> <li>•What have you learned?</li> </ul>	<ul style="list-style-type: none"> <li>•Mounted specimens and research from nature walk complete.</li> <li>•Owl Pellet dissection, mounting and write up complete.</li> </ul>
Monday July 4nd	Structures and habitats: Vertebrates Invertebrates	<ul style="list-style-type: none"> <li>•Physical examination of vertebrate specimens</li> <li>•Virtual Dissection</li> <li>•Compare/Contrast the structures of vertebrates and invertebrates on and in land/sea/air in computer lab.</li> <li>•Research</li> </ul>	<ul style="list-style-type: none"> <li>•Draw the general points of commonality and uniqueness.</li> <li>•Draw conclusions on the similarities and differences of species.</li> </ul>
Tuesday July 5th	Similarities in structures	<ul style="list-style-type: none"> <li>•frog dissection (real or virtual)</li> </ul>	Draw the internal structures of frogs as it relates to other species.
Wednesday July 6 <sup>th</sup>		Field trip Lincoln Park Zoological Society	
Thursday July 7th	<ul style="list-style-type: none"> <li>•Discussion of field trip.</li> <li>•Sharing the facts</li> </ul>	<ul style="list-style-type: none"> <li>•Final day for virtual and real dissections</li> <li>•Project research</li> </ul>	*2 <sup>nd</sup> week of mural
Friday July 8 <sup>th</sup>	<ul style="list-style-type: none"> <li>•Week in Review</li> </ul>	<ul style="list-style-type: none"> <li>•What have you learned</li> </ul>	This week's work is added.
Monday July 11	<ul style="list-style-type: none"> <li>*Review of the facts for vertebrates and invertebrates</li> <li>•Projects</li> </ul>	<ul style="list-style-type: none"> <li>•Independent work</li> </ul>	<ul style="list-style-type: none"> <li>•Project and class group work completed by Thursday.</li> </ul>
Tuesday July 12 <sup>th</sup>	<ul style="list-style-type: none"> <li>•Strange but true</li> </ul>	<ul style="list-style-type: none"> <li>•Computer lab last research</li> </ul>	
Wednesday July 13th	<ul style="list-style-type: none"> <li>•Real or legendary creatures</li> </ul>	<ul style="list-style-type: none"> <li>•Class group projects completed</li> </ul>	

		•Special visitors	
Thursday July 14th	<ul style="list-style-type: none"> <li>• already extinct</li> <li>• newly discovered</li> </ul>	•Individual Project completion and practice presentation	
Friday July 15		Expo celebration	

\*Please note: We will begin this study as a whole class activity with a variety of hands on activities and delivery styles and techniques offered. Directed by student need, differentiation strategies will include but will not be limited to tiered assignments, flexible grouping, individualized instruction, and open-ended alternative options to achieve higher order thinking and sharing.

SAMPLE