**Geology 106 – Study Guide for Exam #4 (Tuesday Dec 6th 9 – 10 am)**

**Know the general characteristics and the key evolutionary novelty of each Suborder of dinosaurs and be able to identify them from the pictures included at the end of this study guide**

**Chapters 1&2: Fossilization & Geologic Time**

Know Suborder of geologic Era’s (Cenozoic, Mesozoic, and Paleozoic) and the time periods Cretaceous, Jurassic &

Triassic

What are the approximate dates when the Mesozoic era began and ended?

What types of fossils did the dinosaurs leave behind?

What are the 3 major groups of rocks and in why type of rocks are dinosaur fossil most commonly found?

**Chapters 14: History of Dinosaur Hunters / Paleontology & Evolution and phylogeny**

What were the first 2 dinosaurs described who described them?

What were the “bone wars” and what did they results in (good & bad)

Other people and/or dinosaurs to know: *Iguanodon,*

What was (and was not) included in Darwin’s theory of evolution? What is the Suborder of taxa from domain to species?

What is the significant of transitional fossils, & how do they support Darwin’s theory of evolution?

**Chapter 4**

When did the first dinosaurs/ mammals / birds evolve and why did the dinosaurs become dominant?

Which groups of vertebrate were dominant in the sea and air during the Mesozoic?

How do Saurichian dinosaurs differ from Ornithischian dinosaurs?

*Terms and names to know:* Permian Extinction, Femur, Humerus, Pubis, Ilium, Ischium, Furcula

**Chapters 9&10: Suborder Theropoda and the Evolution of Birds**

Theropoda Diagnostic Characteristics = Clawed hand, 3 functional toes, curved serrated teeth, Furcula, hollow bones

What type evidence is used to reconstruct the lifestyle of *T. rex, Allosaurus, and Velociraptor* and were each an active

hunter or a scavenger?

How do the families Allosauridae (Ex. Genus *Allosaurus*), Dromaeosauridae (Ex. Genus *Velociraptor*), and

Tyrannosauridae (Ex. Genus *Tyrannosaurus*) differ?

Know that *Archaeopteryx* is the earliest well-accepted bird fossil, what time period it evolved in; and how it is

similar to and different from other small Theropods and modern birds (Ex. Feathers)?

**Chap. 8: Suborder Sauropodomorpha** *Diagnostic Characteristics* = Smallest head/body ratio, Very long necks, Spatulate teeth

How do Prosauropods and the Sauropods differ?

What is the evidence for a terrestrial vs. aquatic habitat for the Sauropods?,

**Chpt 5:= Suborders Stegosauria & Anylosauria** *Diagnostic Characteristics* uniting these two clades = boney armor in skin

What are 3 main purposes scientists suggest for the plates and spikes of the Stegosauria?

Know the evidence that suggests that the Ankylosaurus tail club was used as a battering ram for defense

*Evolutionary Trends:* Ankylosauridae replace Stegosauria in the Cretaceous everywhere except India

**Chapter 9: Suborders Ceratopsia & Pachycephalosauria**

*Know Diagnostic Characteristics s* that unite these two clades (boney rim or frill on back of skull)

What are the main purposes scientists suggest for the horns & frills found on the Ceratopsian dinosaurs?

How do the Suborders Ceratopsia & Pachycephalosauria differ?

**Chapter 7: Suborder Ornithopoda** *Diagnostic Characteristics*  = jaw joint below teeth, hinged skull, elongated snout

What are possible purposes for the large crests found on some Hadrosauridae (“duck – billed” dinosaurs)?

How do the families *Hadrosauridae* and *Iguanodontidae* differ?

**Chapter 15: Dinosaur Extinction** Terms to *Know: Pangaea*

What percentage of all fossil species went extinct at the end of the Cretaceous and how does this compare

with the extinction rate at the end of the Permian?

What evidence supports the theory that a bolide (asteroid or comet) impact caused the dinosaur extinction?

What evidence supports the theory that climate change caused the dinosaur extinction?