**Evolution Unit Plan**

Start Date\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_End Date\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Test Date\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Unit Objectives:**

1.Compare and contrast Lamarck’s explanation of evolution with Darwin’s theory of evolution by natural selection.

2.Recognize that evolution involves a change in allele frequencies in a population across successive generations

3.Identify effects of changes brought about by mutations: beneficial, harmful, neutral

4.Evaluate evolution in terms of evidence found in the following:

Fossil record, DNA analysis, artificial selection, morphology, embryology, viral evolution, geographic distribution of related species, antibiotic and pesticide resistance in various organisms.

5.Analyze the effects of mutations and the resulting variations within a population in terms of natural selection

6.Summarize biological evolution

7.Interpret a cladogram

8.Compare the processes of relative dating and radioactive dating to determine the age of fossils

9.Illustrate mass extinction events using a time line

**Pre-assessments:**

A.Free write about prior knowledge of evolution

B.Circle the number that best shows how well you understand each topic BEFORE starting any new activities. 1=I have a lot of knowledge, could easily explain and demonstrate understanding; 2= I know something about it, but would need to refresh/review before giving a full explanation or demonstrating understanding;

3=I know little or nothing about the topic, need to spend some/a lot of time to learn about the topic to demonstrate understanding.

**Essential Questions:**

1.What is the theory of evolution and who were some scientists who influenced/developed it?

2.What is the evidence used to support the theory of evolution?

3.How do mutations lead to mutations that affect populations?

4.What are some mechanisms seen in the evolution of populations?

**Vocabulary: (40 words)**

Evolution (biological), natural selection, artificial selection, adaptation, speciation, variation, allele frequency, relative frequency, genetic equilibrium, fitness, homologous structure, analogous structure, vestigial structure, gene pool, gene flow, genetic drift, founder effect, reproductive isolation, directional selection, stabilizing selection, disruptive selection, derived traits, cladogram, adaptive radiation, convergent evolution, divergent evolution, coevolution, paleontologist, fossil, index fossil, fossil record, mass extinction, geologic time scale, era, period, gradualism, punctuated equilibrium, relative dating, radioactive dating, half-life

**Topics**: (\*Review topics—you do not need to write a separate SoUL, but MUST include the information in other SoULs)

**\*1.** 1 2 3 **Mutations in DNA**—point mutations (silent, substitution, nonsense, missense); frameshift mutation (deletion, insertion), diseases resulting from mutations

CHOICES: Read text Ch 12-4, Ch 14 pgs 346-47, class notes, Mutation/gene expression color sheet, mutations WS, foldable

**2**. 1 2 3 **Theory of Evolution**—Darwin, Darwin’s travels, Lamarck, acquired traits, Lyell, Hutton, geology, natural selection, artificial selection, fitness, descent with modification, evidence of evolution: fossil record, geographic distribution, homologous structures, analogous structures, vestigial structures, embryology, morphology, phylogeny

CHOICES: Read & outline text Ch 15. Pgs 368-386, Class notes, Lamarck v Darwin Venn diagram, Color pages: Introduction to evolution, Darwin’s finches, Natural selection, An example of evolution, Evidence for Evolution; Natural Selection Sim lab, Natural and Artificial Selection Sim lab

**3**. 1 2 3 **Evolution in Populations**—Evolution, variation, gene pool, gene shuffling, directional selection, stabilizing selection, disruptive selection, genetic drift, gene flow, allele frequency, relative frequency, founder effect, genetic equilibrium, types of mutations: beneficial, harmful, neutral, types of speciation, types of reproductive isolation

CHOICES: Read & outline text Ch 16 pgs.392-410, Class notes, Color pages: The gene pool, Gene flow, Genetic drift, Allopatric speciation, Sympatric speciation, Mutation and natural selection; Rainfall and Bird Beak Sim lab, Mutation and Selection Sim lab

**4**. 1 2 3 **Geology**— paleontologist, fossil, index fossil, fossil record, mass extinction, geologic time scale, era, period, gradualism, punctuated equilibrium, relative dating, radioactive dating, half-life, derived traits, cladogram, patterns of evolution: adaptive radiation, coevolution, parallel evolution, convergent evolution, divergent evolution

CHOICES: Read & outline Ch 17 pgs 416-422,429-440; Class notes, Color pages: History of life on earth, Evolution and shifting earth, Adaptive radiation, Gradualism v. Punctuated equilibrium; Cladogram webquest, Relative age dating WS, Determining the Age of Rocks & Fossils lab, Fossil Mystery lab,Half-life Sim lab, Geology Time Scale Project

**Assessments:** All labs Choices:

Vocab flashcards Natural Selection Sim lab

3 SoULs Artificial and Natural Selection Sim lab

Vocab Quiz Rainfall and Bird Beak Sim lab

Regular Unit Test Determining the Age of Rocks & Fossils lab

Layout lab Fossil Mystery lab

(with questions/answers) Half-life Sim lab

Geology Time Scale Project