**Covington High School Curriculum Map**

**Class: Biology I**

| **August-** Unit 1: Nature of Life (chp1-2) | **Standards:** procedures/logins/rules/safetyBiology Words (Prefix/Suffix)SEPS 1-8Chp1 (HS-LS1-3 1.3)(HS-LS1-2 1.3) | **Teaching Methods:**ActivityPPT & flash cardsChp. 1- (scientific method, metric system, experimental design)book notes, define vocab.Subtopics focus in taught by PPT lecture, activities, labs, worksheets, video, games, webquests | **Assessments:**  QuizzesTests- pre/postWorksheetsLabs |
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| **September-**Unit 1: Nature of Life(chp 1-2) | **Standards:** SEPS 1-8Chp 2 (HS-LS1-6)(HS-LS1-1 2.3) (HS-LS1-7 | **Teaching Methods:** Chp. 2- Chemistry(Atoms, Chemical/Physical changes, Acids/Bases/pH, Macromolecules)book notes, define vocab.Subtopics focus in taught by PPT lecture, activities, labs, worksheets, video, games, webquests | **Assessments:** QuizzesTests-pre/postWorksheetsLabs |
| **October**Unit2: Ecology (chp3-6) | **Standards:** SEPS 1-8Chp 3(HS-LS2-3)(HS-LS1-5)(HS-LS2-4)(HS-LS2-5)(HS-LS2-6) | **Teaching Methods:**Chp. 3 BiosphereChp. 4 EcosystemsChp 5 Populationsbook notes, define vocab.Subtopics focus in taught by PPT lecture, activities, labs, worksheets, video, games, webquests | **Assessments:**QuizzesTests-pre/postWorksheetsLabs |
| **November**Unit2: Ecology (chp3-6) | **Standards:** Chp4, Chp5(HS-LS2-1)(HS-LS2-2) (HS-LS2-6)(HS-LS2-8) | **Teaching Methods:**Chp. 6 Humans Impactbook notes, define vocab.Subtopics focus in taught by PPT lecture, activities, labs, worksheets, video, game | **Assessments:**QuizzesTests-pre/postWorksheetsLabs- dissect frog? |
| **December**Unit2: Ecology (chp3-6) | **Standards:** Chp 6 (HS-LS2-7)(HS-LS4-6) | **Teaching Methods:**Chp. 6 Humans Impactbook notes, define vocab.Subtopics focus in taught by PPT lecture, activities, labs, worksheets, video, games, webquests | **Assessments:**QuizTests-pre/postWorksheetsLabs |
| **January**Unit3: Cells (chp7-10) | **Standards:** Chp7 (HS-LS1-1)(HS-LS1-2)Chp8 (HS-LS1-5)Chp9 (HS-LS1-7)Chp10 (HS-LS1-4) | **Teaching Methods:**Chp 7 Cell StructureChp 8 PhotosynthesisChp 9 RespirationChp10 Cell Growthtbook notes, define vocab.Subtopics focus in taught by PPT lecture, activities, labs, worksheets, video, games, webquests | **Assessments:** QuizzesTests-pre/postWorksheetsLabs |
| **February**Unit3: Cells (Chp7-10) | **Standards:** Chp7 (HS-LS1-1)(HS-LS1-2 7.4 dissection)(HS-LS1-3 7.4)Chp8 (HS-LS1-5)Chp9 (HS-LS1-7)Chp10 (HS-LS1-4) | **Teaching Methods:**Chp 7 Cell StructureChp 8 PhotosynthesisChp 9 RespirationChp10 Cell Growthbook notes, define vocab.Subtopics focus in taught by PPT lecture, activities, labs, worksheets, video, games, webquests | **Assessments:** QuizzesTests-pre/postWorksheetsLabs |
| **March**Unit4: Genetics(chp.11-15) | **Standards:** Chp11 - Chp15HS-LS3-1 to HS-LS3-3HS-LS4-1 to HS-LS4-5HS-LS2-8 | **Teaching Methods:**Chp 11 GeneticsChp 12 DNAChp13 RNAChp14 Human HeredityChp15 Genetic Engineeringbook notes, define vocab.Subtopics focus in taught by PPT lecture, activities, labs, worksheets, video, games, webquests | **Assessments:** QuizzesTests-pre/postWorksheetsLabs |
| **April**Unit4: Genetics(chp.11-15) | **Standards:** Chp11 - Chp15HS-LS1-4 11.4HS-LS3-1 to HS-LS3-3HS-LS4-1 to HS-LS4-5HS-LS2-8 | **Teaching Methods:**Chp 11 GeneticsChp 12 DNA (HS-LS1-1)Chp13 RNAChp14 Human HeredityChp15 Genetic Engineeringbook notes, define vocab.Subtopics focus in taught by PPT lecture, activities, labs, worksheets, video, games, webquests | **Assessments:** QuizzesTests-pre/postWorksheetsLabs |
| **May- 3 weeks**Unit5: Evolution (chp.16-19)Time will shift downOR Unit8: Human Bodychp30-35 | **Standards:**HS-LS4-1 to HS-LS4-6 | **Teaching Methods**Chp16 DarwinChp17 EvolutionChp 18 ClassificationChp 19 History of Life evolutionbook notes, define vocab.Subtopics focus in taught by PPT lecture, activities, labs, worksheets, video, games, webquests | **Assessments:** Human Body Projects/IntroductionsSystem functions/organsDissect Frog? |

**Biology Standards (24 total standards)**

**HS-LS1 From Molecules to Organism: Structures & Processes (HS-LS1-1 to HS-LS1-7)**

 **-1 construct an explanation based on evidence for how the structure of DNA determines the structure of proteins which carry out the essential functions of life through systems of specialized cells.**

 **-2 develop and use a model to illustrate the hierarchical organization of interacting systems that provide specific functions within multicellular organisms.**

 **-3plan and construct an investigation to provide evidence that feedback mechanisms maintain homeostasis.**

 **-4Use a model to illustrate the role of cellular division (mitosis) and differentiation in producing and maintaining complex organisms**

 **-5 use a model to illustrate how photosynthesis transforms light energy into stored chemical energy**

 **-6 construct and revise an explanation based on evidence for how carbon, hydrogen, and oxygen from sugar molecules may combine with other elements to form amino acids and/or other large carbon-based molecules**

 **-7use a model to illustrate that cellular respiration is a chemical process whereby the bonds of food molecules and oxygen molecules are broken and the bonds in new compounds are formed resulting in a net transfer of energy**

**HS-LS2 Ecosystems: Interactions, Energy and Dynamics (HS-LS2-1 to HS-LS2-8)**

 **-1use a mathematical and/or computational representations to support explanations of factors that affect carrying capacity of ecosystems on different scales carrying capacity chapter / limiting factor**

 **-2use a mathematical representations to support and revise explanations based on evidence about factors affecting biodiversity and populations in ecosystems of different scales. Biodiversity/ carrying capacity**

 **-3construct and revise an explanation based on evidence for the cycling of matter and flow of energy in aerobic and anaerobic conditions autotroph/heterotroph/foodchain/food web)**

 **-4use mathematical representations to support claims for the cycling of matter and flow of energy among organisms in an ecosystem food chain/energy pyramid, cycles**

 **-5develop a model to illustrate the role of photosynthesis and cellular respiration in the cycling of carbon among the biosphere, atmosphere, hydrosphere and geosphere carbon cycle**

 **-6evaluate the claims, evidence, and reasoning that the complex interactions in ecosystem maintain relatively consistent numbers and types of organisms in stable conditions, but changing conditions may result in a new ecosystem climax community / secondary succession**

 **-7design, evaluate, and refine a solution for reducing the impacts of human activities on the environment and biodiversity. Human impact section/chapter**

 **-8evaluate the evidence for the role of group behavior on individual and species chances to survive and reproduce**

**Groups behavior???**

**HS-LS3 Heredity: Inheritance and Variation of Traits (HS-LS3-1 to HS-LS3-3)**

 **-1Ask questions to clarify relationships about the role of DNA and chromosomes in coding the instructions for characteristics traits passed from parents to offspring (DNA chapter Genetics Chapter Meiosis Chapter)**

 **-2make and defned a claim based on evidence that inheritable genetic variations may result from: 1 new genetic combinations through meiosis, 2 viable eros occurring during replication, and/or 3 mutations caused by environmental factors. genetics and meiosis chapter mutations sections**

 **-3apply concepts of statistics and probability to explain the variation and distribution of expressed traits in a population genetics chapter**

**HS-LS4 Biological Evolution: Unity and Diversity (HS-LS4-1 to HS-LS4-6)**

 **-1communicate scientific information that common ancestry and biological evolution are supported by multiple lines of empirical evidence**

 **-2construct an explanation based on evidence that the process of evolution primarily results from four factors 1 the potential for a species to increase in number 2 the heritable genetic variation of individuals in a species due to mutation and sexual reproduction 3 competition for limited resources 4 the proliferation of those organisms that are better able to survive and reproduce in the environment**

 **-3apply concepts of statistics and probability to support explanations that organisms with an advantageous heritable trait tend to increase in proportion to organisms lacking this trait**

 **-4construct an explanation based on evidence for how natural selection leads to adaptation of populations**

 **-5evaluate the evidence supporting claims that changes in environmental conditions may result in 1 increase in the number of individuals of some species 2 the emergence of new species over time and 3 the extinction of other species**

 **-6 create or revise a simulation to test a solution to mitigate adverse impacts of human activity on biodiversity.**

**Science & Engineering Process Standards (SEPS)**

 ***SEPS.1 Asking questions (for science) and defining problems (for engineering)***

 ***SEPS.2 Developing and using models***

 ***SEPS.3 Planning and carrying out investigations***

 ***SEPS.4 Analyzing and interpreting data***

 ***SEPS.5 Using mathematics and computational thinking***

 ***SEPS.6 Constructing explanations for science & designing solutions for engineering***

 ***SEPS.7 Engaging in argument from evidence***

***SEPS.8 Obtaining, evaluating and communicating information***