**Covington High School Curriculum Map**

**Class: Biology I**

| **August-**  Unit 1: Nature of Life (chp1-2) | **Standards:**  procedures/logins/rules/safety  Biology Words (Prefix/Suffix)  SEPS 1-8  Chp1 (HS-LS1-3 1.3)  (HS-LS1-2 1.3) | **Teaching Methods:**  Activity  PPT & flash cards  Chp. 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:**  Quizzes  Tests- pre/post  Worksheets  Labs |
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| **September-**  Unit 1: Nature of Life(chp 1-2) | **Standards:**  SEPS 1-8  Chp 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:**  Quizzes  Tests-pre/post  Worksheets  Labs |
| **October**  Unit2: Ecology (chp3-6) | **Standards:**  SEPS 1-8  Chp 3  (HS-LS2-3)  (HS-LS1-5)  (HS-LS2-4)  (HS-LS2-5)  (HS-LS2-6) | **Teaching Methods:**  Chp. 3 Biosphere  Chp. 4 Ecosystems  Chp 5 Populations  book notes, define vocab.  Subtopics focus in taught by PPT lecture, activities, labs, worksheets, video, games, webquests | **Assessments:**  Quizzes  Tests-pre/post  Worksheets  Labs |
| **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 Impact  book notes, define vocab.  Subtopics focus in taught by PPT lecture, activities, labs, worksheets, video, game | **Assessments:**  Quizzes  Tests-pre/post  Worksheets  Labs- dissect frog? |
| **December**  Unit2: Ecology (chp3-6) | **Standards:**  Chp 6 (HS-LS2-7)(HS-LS4-6) | **Teaching Methods:**  Chp. 6 Humans Impact  book notes, define vocab.  Subtopics focus in taught by PPT lecture, activities, labs, worksheets, video, games, webquests | **Assessments:**  Quiz  Tests-pre/post  Worksheets  Labs |
| **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 Structure  Chp 8 Photosynthesis  Chp 9 Respiration  Chp10 Cell Growth  tbook notes, define vocab.  Subtopics focus in taught by PPT lecture, activities, labs, worksheets, video, games, webquests | **Assessments:**  Quizzes  Tests-pre/post  Worksheets  Labs |
| **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 Structure  Chp 8 Photosynthesis  Chp 9 Respiration  Chp10 Cell Growth  book notes, define vocab.  Subtopics focus in taught by PPT lecture, activities, labs, worksheets, video, games, webquests | **Assessments:**  Quizzes  Tests-pre/post  Worksheets  Labs |
| **March**  Unit4: Genetics(chp.11-15) | **Standards:**  Chp11 - Chp15  HS-LS3-1 to HS-LS3-3  HS-LS4-1 to HS-LS4-5  HS-LS2-8 | **Teaching Methods:**  Chp 11 Genetics  Chp 12 DNA  Chp13 RNA  Chp14 Human Heredity  Chp15 Genetic Engineering  book notes, define vocab.  Subtopics focus in taught by PPT lecture, activities, labs, worksheets, video, games, webquests | **Assessments:**  Quizzes  Tests-pre/post  Worksheets  Labs |
| **April**  Unit4: Genetics(chp.11-15) | **Standards:**  Chp11 - Chp15  HS-LS1-4 11.4  HS-LS3-1 to HS-LS3-3  HS-LS4-1 to HS-LS4-5  HS-LS2-8 | **Teaching Methods:**  Chp 11 Genetics  Chp 12 DNA (HS-LS1-1)  Chp13 RNA  Chp14 Human Heredity  Chp15 Genetic Engineering  book notes, define vocab.  Subtopics focus in taught by PPT lecture, activities, labs, worksheets, video, games, webquests | **Assessments:**  Quizzes  Tests-pre/post  Worksheets  Labs |
| **May- 3 weeks**  Unit5: Evolution (chp.16-19)  Time will shift down  OR Unit8: Human Body  chp30-35 | **Standards:**  HS-LS4-1 to HS-LS4-6 | **Teaching Methods**  Chp16 Darwin  Chp17 Evolution  Chp 18 Classification  Chp 19 History of Life evolution  book notes, define vocab.  Subtopics focus in taught by PPT lecture, activities, labs, worksheets, video, games, webquests | **Assessments:**  Human Body Projects/Introductions  System functions/organs  Dissect 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***