| Standard | Lesson 1 Case study through critical reading | Lesson 2 Exploration of sources and detection of CO2, carbon cycle | Lesson 3 Consider stakeholders and possible investigation | **Lesson 4** Plan a cohesive set of experiments | Lesson 5AExperiments and analysis  | Lesson 5BAnalyze online data, simulations or other evidence | Lesson 6Mock summit, presentation of findings, development of network, possible solutions  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **HS-PS1-6**Refine the design of a chemical system by specifying a change in conditions that would produce increased amounts of products at equilibrium. |  |  X |   |  |   |  |  |
| **HS-LS1-2**Develop and use a model to illustrate the hierarchical organization of interacting systems that provide specific functions within multicellular organisms. |  |  X |  |  |   X  |  X |  |
| **HS-LS1-3**Plan and conduct an investigation to provide evidence that feedback mechanisms maintain homeostasis. |   |  |    |  X |  X  |  |   |
| **HS-LS2-1**Use mathematical and/or computational representations to support explanations of factors that affect carrying capacity of ecosystems at different scales. |  |   X |   |  |   X |  X |  X |
| **HS-LS2-2**Use mathematical representations to support and revise explanations based on evidence about factors affecting biodiversity and populations in ecosystems of different scales |  |  |  |  |  X |  X |  X |
| **HS-LS2-4**Use mathematical representations to support claims for the cycling of matter and flow of energy among organisms in an ecosystem. |   |  X |  |  |  |  X |  X |
| **HS-LS2-5**Develop a model to illustrate the role of photosynthesis and cellular respiration in the cycling of carbon among the biosphere, atmosphere, hydrosphere, and geosphere. |  |   X |  |  |  |  |  |
| **HS-LS2-6**Evaluate the claims, evidence, and reasoning that the complex interactions in ecosystems maintain relatively consistent numbers and types of organisms in stable conditions, but changing conditions may result in a new ecosystem. |  X |  |   X |  |  X |  X |  X |
| **HS-LS2-7**Design, evaluate, and refine a solution for reducing the impacts of human activities on the environment and biodiversity. |  |  |  |  |   |  |  X |
| **HS-LS4-4**Construct an explanation based on evidence for how natural selection leads to adaptation of populations. |   |  |   |  |   |    |  X |
| **HS-LS4-5**Evaluate the evidence supporting claims that changes in environmental conditions may result in: (1) increases in the number of individuals of some species, (2) the emergence of new species over time, and (3) the extinction of other species. |  X |  |   |  |  |  |  X |
| **HS-ETS1-1**Analyze a major global challenge to specify qualitative and quantitative criteria and constraints for solutions that account for societal needs and wants. |  X |  X  |  X |  X |  X |  X |  X |
| **HS-ETS1-3**Evaluate a solution to a complex real-world problem based on prioritized criteria and trade-offs that account for a range of constraints, including cost, safety, reliability, and aesthetics as well as possible social, cultural, and environmental impacts. |  X |  |   X  |  X |   |   X  |  X |
| **HS-ETS1-4**Use a computer simulation to model the impact of proposed solutions to a complex real-world problem with numerous criteria and constraints on interactions within and between systems relevant to the problem. |  |   |   |  |   |  X |  X |
| **HS-ESS2-2**Analyze geoscience data to make the claim that one change to Earth's surface can create feedbacks that cause changes to other Earth systems. |   |  X |  |   |  |  X |   |
| **HS-ESS2-6**Develop a quantitative model to describe the cycling of carbon among the hydrosphere, atmosphere, geosphere, and biosphere. |  |  X |   |  |   |  |  X  |
| **HS-ESS3-1**Construct an explanation based on evidence for how the availability of natural resources, occurrence of natural hazards, and changes in climate have influenced human activity. |  X |  X |  X |  X |    X  |   X |  X |
| **HS-ESS3-4**Evaluate or refine a technological solution that reduces impacts of human activities on natural systems. |   |  |   |  |    |  |  X |
| **HS-ESS3-6**Use a computational representation to illustrate the relationships among Earth systems and how those relationships are being modified due to human activity |    X |   X |   |  |   |   X |   X |