

	Essential Questions	Content/ Materials	Skills	Assessments
Hex 1	- How do we illustrate the relationships between components of living and nonliving systems? - Or explain how systems within an organism interact at different levels to carry out functions necessary for life? - How do positive and negative feedback loops help an organism to maintain homeostasis. How do bioengineers design and evaluate solutions to human health problems	Nowicki, Stephen, HMH Science Dimensions Biology	- LS1.A - ETS1.B - ETS1.C - SEP: Developing and Using models, Constructing Explanations and Designing Solutions, Planning and Carrying Out Investigations, Scientific Investigations Use a Variety of Methods - CCC: Systems and Models, Stability and Change, Influence of Science, Engineering, and Technology on Society and the Natural World	- Lesson Self-Check at Lesson end; - Formative Assessments throughout lectures, - Summative Assessment at Lesson end and Unit end.
Hex 2	- How can we draw conclusions about properties of atoms, ions and molecules and the making and breaking of bonds? - How do we use evidence from models to construct an explanation about how carbon can form chains and ring structures in biomolecules and how the biomolecules are used in cell processes	See Above	- LS1.C - SEP: Constructing Explanations and Designing Solutions; Obtaining, Evaluating and communicating Information; Developing and Using Models; Planning and Carrying Out Investigations; Analyzing and Interpreting Data - CCC: Energy and Matter; Cause and Effect	- Lesson Self-Check at Lesson end; - Formative Assessments throughout lectures, - Summative Assessment at Lesson end and Unit end.
Hex 3	- How is energy transferred in the process of photosynthesis - What are the transformations in matter and energy during	See Above	- LS1.C - LS2B - PS3D - SEP: Constructing Explanations and Designing Solutions; Developing and Using	- Lesson Self-Check at Lesson end; - Formative Assessments throughout lectures, - Summative Assessment at

	cellular respiration • How does matter and energy flow through trophic levels using food chains, food webs and pyramid models? • How does matter and energy flow through biogeochemical cycles • What are the impacts of human activities on these cycles		Models; Using Mathematics and Computational thinking. • CCC: Systems and System Models; Energy and Matter	Lesson end and Unit end.
Hex 4	• How can you use mathematical and computational representations to explain how factors affect population density, distribution and growth patterns? • How do limiting factors affect an ecosystem's carrying capacity? • Which mathematical representations would analyze and explain how changes in ecosystems affect ecosystem stability? • How could a model illustrate the role of the cell cycle in producing and maintaining complex organisms?	See Above	• LS2.A • LS2.C • SEP: Using Mathematics and Computational thinking; Scientific Knowledge is Open to Revision in Light of New Evidence • CCC: Stability and Change; Proportion and Quantity	• Lesson Self-Check at Lesson end; • Formative Assessments throughout lectures, • Summative Assessment at Lesson end and Unit end.
Hex 5		See Above		• Lesson Self-Check at Lesson end; • Formative Assessments throughout lectures, • Summative Assessment at Lesson end and Unit end.

Hex 6		See Above		• Lesson Self-Check at Lesson end; • Formative Assessments throughout lectures, • Summative Assessment at Lesson end and Unit end.
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