Curriculum Unit Title	The Transformation of Energy and Matter in Ecosystems	Author	Elizabeth Nowak

KEY LEARNING, ENDURING UNDERSTANDING, ETC.

Photosynthesis and cellular respiration provide most of the energy for key processes. HS-LS2-3
At each link upward in a food web, only a small fraction of the matter consumed at the lower level is transferred upward, to produce growth and release energy in cellular respiration at the higher level. HS-LS2-4
Energy drives the cycling of matter in ecosystems. HS-LS2-3

ESSENTIAL QUESTION(S) for the UNIT

How does matter cycle and energy flow through ecosystems?
How are photosynthesis and cellular respiration interdependent in terms of matter and energy?
How do factors such as temperature and pH affect the rates of photosynthesis and cellular respiration?

CONCEPT A	CONCEPT B	CONCEPT C
Flow of Energy and Matter in Ecosystems	Photosynthesis and Cellular Respiration	Factors Affecting Photosynthesis and Cellular Respiration
ESSENTIAL QUESTIONS A	**ESSENTIAL QUESTIONS B**	**ESSENTIAL QUESTIONS C**
How does matter cycle and energy flow through ecosystems?	How are photosynthesis and cellular respiration interdependent in terms of matter and energy?	How do factors such as temperature and pH affect the rates of photosynthesis and cellular respiration?
VOCABULARY A	**VOCABULARY A**	**VOCABULARY A**
ecosystem, biotic, abiotic, food web, trophic level, producer, consumer, decomposer, biosphere, reservoir	photosynthesis, cellular respiration, chloroplast, mitochondria, exothermic, endothermic, energy diagram, reactant, product, calorie, bond energy	temperature, pH, biomass, spectrophotometer

ADDITIONAL INFORMATION/MATERIAL/TEXT/FILM/RESOURCES

This unit includes activities from SEPUP's Science and Global Issues: Ecology Activities 7, 8, 9, Cell Biology Activity 12
Worksheet samples as well as models of student work are included in this unit.