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| **SUGGESTED PACING** | | | | | | | |
| **STRAND: LIFE SCIENCE (LS)**  **Topic:** **Cycles of Matter and Flow of Energy**  This topic focuses on the impact of matter and energy transfer within the biotic component of ecosystems.  **Content Statements:**   * Matter is transferred continuously between one organism to another and between organisms and their physical environments. * Plants use the energy in light to make sugars out of carbon dioxide and water (photosynthesis). These materials can be used and immediately stored for later use. Organisms that eat plants break down plant structures to produce the materials and energy they need to survive. Then they are consumed by other organisms. * Energy can transform from one form to another in living things. Animals get energy from oxidizing food, releasing some of its energy as heat. * The total amount of matter and energy remains constant, even though its form and location change.   **Content Statements:**   * In any particular biome, the number, growth and survival of organisms and populations depend on biotic and abiotic factors. * Biomes are regional ecosystems characterized by distinct types of organisms that have developed under specific soil and climatic conditions. * The variety of physical (abiotic) conditions that exists on Earth gives rise to diverse environments (biomes) and allows for the existence of a wide variety of organisms (biodiversity). * Ecosystems are dynamic in nature; the number and types of species fluctuate over time. Disruptions, deliberate or inadvertent, to the physical (abiotic) or biological (biotic) components of an ecosystem impact the composition of an ecosystem. | | | | | | | |
| **PRINT RESOURCES** | | | **DIGITAL RESOURCES** | | | | |
| *ScienceFusion*   * Unit 6, TE pages 405-534 * Unit 6, Lab Manual pages 358-479 * Unit 6, Assessment Guide pages 158-196 | | | *ScienceFusion*   * Unit 6, Lesson 1 Digital Lesson * Unit 6, Lesson 1 Virtual Lab * Unit 6, Lesson 2 Digital Lesson * Unit 6, Lesson 3 Digital Lesson * Unit 6, Lesson 3 Virtual Lab | | | * Unit 6, Lesson 4 Digital Lesson * Unit 6, Lesson 5 Digital Lesson * Unit 6, Lesson 6 Digital Lesson * Unit 6, Lesson 7 Digital Lesson * Unit 6, Lesson 7 Virtual Lab | |
| **SCIENCE AND ACADEMIC VOCABULARY** | | | | | | | |
| Biodiversity, Biome, Carbon Cycle, Carnivore, Carrying Capacity, Cellular Respiration, Chlorophyll, Competition, Coniferous Tree, Consumer, Cooperation, Deciduous Tree, Decomposer, Desert, Ecosystem, Emigration, Energy, Energy Pyramid, Estuary, Eutrophication, Food Chain, Food Web, Grassland, Habitat, Herbivore, Immigration, Law Of Conservation Of Energy, Law Of Conservation Of Mass, Limiting Factor, Matter, Nitrogen Cycle, Omnivore, Photosynthesis, Pioneer Species, Producer, Succession, Taiga, Tundra, Water Cycle, Wetland | | | | | | | |
| **DIFFERENTIATION** | | | | | **FIELD EXPERIENCE CONNECTIONS** | | |
| Leveled Inquiry   * Unit 6 TE pages 410, 424, 438, 456, 474, 488, 504, 518   Response to Intervention   * Unit 6 TE page 411   Differentiated Instruction (Basic, ELL, and Advanced)   * Unit 6 TE pages 427, 441, 452, 459, 471, 477, 491, 500, 507, 521 | | | | | Great Lakes Science Center’s Cleveland Creates! Program.  ***Program Details:*** A standards-based program that uses the Engineering and Design Process. Students learn about energy transformation and electricity through an electrifying demonstration and a hands-on workshop. To prepare in advance, plan to attend the professional development session.  For more information contact: Karyn Saunders  216-696-2760 or email [saundersk@glsc.org](mailto:saundersk@glsc.org) | | |
| **INQUIRY SKILLS** | | | | | | | |
| * Analyzing Results/Data * Applying Concepts * Classifying Organisms * Classifying Samples * Comparing Events | * Comparing Results * Creating Models * Describing Relationships * Designing Experiments * Developing Procedures | | | * Drawing Conclusions * Evaluating Models * Explaining Results * Graphing Data * Making Diagrams | | | * Making Inferences * Making Observations * Making Predictions * Organizing Results/Data * Practicing Lab Techniques |
| **HANDS-ON INQUIRY AND APPLICATION** | | | | | | | |
| * Unit 6, Lesson 1 Quick Lab 1: Plant Cell Structures: LM pages 358-361 * Unit 6, Lesson 1 Quick Lab 2: Investigate Carbon Dioxide: LM pages 362-365 * Unit 6, Lesson 1 S.T.E.M. Lab 1: Investigate Rate of Photosynthesis: LM pages 366-376 * Unit 6, Lesson 2 Quick Lab 1: Making Compost: LM pages 377-380 * Unit 6, Lesson 2 Quick Lab 2: Energy Role Game: LM pages 381-384 * Unit 6, Lesson 2 Quick Lab 3: Where Does All the Energy Flow?: LM pages 385-390 * Unit 6, Lesson 2 Field Lab 1: Food Webs: LM pages 391-400 * Unit 6, Lesson 3 Quick Lab 1: Pyramid of Energy: LM pages 401-404 * Unit 6, Lesson 3 Quick Lab 2: Model the Carbon Cycle: LM pages 405-408 * Unit 6, Lesson 3 Quick Lab 3: Condensation and Evaporation: LM pages 409-412 * Unit 6, Lesson 4 Quick Lab 1: Climate Determines Plant Life: LM pages 413-416 * Unit 6, Lesson 4 Quick Lab 2: Identify Your Land Biome: LM pages 417-420 * Unit 6, Lesson 4 Field Lab 1: Survey of a Biome’s Biotic and Abiotic Factors : LM pages 421-431 * Unit 6, Lesson 5 Quick Lab 1: Life in Moving Water: LM pages 432-435 * Unit 6, Lesson 5 Quick Lab 2: Light Penetration and Water Clarity: LM pages 436-439 * Unit 6, Lesson 6 Quick Lab 1: What Factors Influence a Population Change?: LM pages 440-443 * Unit 6, Lesson 6 Quick Lab 2: Investigate an Abiotic Limiting Factor: LM pages 444-447 * Unit 6, Lesson 6 Exploration Lab 1: How Do Wetland Populations Interact?: LM pages 448-458 * Unit 6, Lesson 7 Quick Lab 1: Measuring Species Diversity: LM pages 459-462 * Unit 6, Lesson 7 Quick Lab 2: Investigate Evidence of Succession: LM pages 463-466 * Unit 6, Lesson 7 Field Lab 1: Predicting How Succession Follows a Human Disturbance: LM pages 467-479 * STEM- TE pages 468-471 | | | | | | | |
| **ASSESSMENTS/PROGRESS MONITORING** | | | | | | | |
| * Formative and Summative Assessment   + Unit 6, Lesson 1 - TE page 429   + Unit 6, Lesson 2 - TE page 443   + Unit 6, Lesson 3 - TE page 461   + Unit 6, Lesson 4 - TE page 479   + Unit 6, Lesson 5 - TE page 493   + Unit 6, Lesson 6 - TE page 509   + Unit 6, Lesson 7 - TE page 523 | | * Visual Summary and Lesson Review   + Unit 6, Lesson 1 - TE page 435   + Unit 6, Lesson 2 - TE page 450   + Unit 6, Lesson 3 - TE page 467   + Unit 6, Lesson 4 - TE page 485   + Unit 6, Lesson 5 - TE page 499   + Unit 6, Lesson 6 - TE page 515   + Unit 6, Lesson 7 - TE page 528 | | | | * Unit 6 Review - TE page 530-533 | |
| **ASSESSMENT GUIDE** | | | | | | | |
| Unit 6   * Unit 6 Pretest: AG pages 158 * Lesson 1 Quiz: Photosynthesis and Cellular Respiration: AG page 160 * Lesson 1 Alternative Assessment: Photosynthesis and Cellular Respiration: AG page 161 * Lesson 2 Quiz: Ecology and Energy Transfer: AG page 162 * Lesson 2 Alternative Assessment: Ecology and Energy Transfer: AG page 163 * Lesson 3 Quiz: Energy and Matter in Ecosystems: AG page 164 * Lesson 3 Alternative Assessment: Energy and Matter in Ecosystems: AG page 165 * Lesson 4 Quiz: Land Biomes: AG page 166 * Lesson 4 Alternative Assessment: Land Biomes: AG page 167 * Lesson 5 Quiz: Aquatic Ecosystems: AG page 168 * Lesson 5 Alternative Assessment: Aquatic Ecosystems: AG page 169 * Lesson 6 Quiz: Population Dynamics: AG page 170 * Lesson 6 Alternative Assessment: Population Dynamics: AG page 171 * Lesson 7 Quiz: Changes in Ecosystems: AG page 172 * Lesson 7 Alternative Assessment: Changes in Ecosystems: AG page 173 * Performance-Based Assessment: Teacher Edition: AG page 174 * Performance-Based Assessment: Student Edition: AG pages 175-176 * Unit 6 Unit Review: AG pages 177-182 * Unit 6 Unit Test A: AG pages 183-189 * Unit 6 Unit Test B: AG pages 190-196 | | | | | | | |
| **ACADEMIC CONNECTIONS TO OTHER DISCIPLINES:** | | | | | | | |
| * Real World Connection: TE page 428 * Marine biology Connection: TE page 428 * Earth Science Connection: TE page 442 * Math Connection: TE page 442 * Environmental Science Connection: TE page 460 * Engineering Connection: TE page 460 * Life Science Connection: TE page 478 * Social Studies Connection: TE page 478 | | | | * Chemistry Connection: TE page 492 * Social Studies Connection: TE page 492 * Do the Math: TE pages 500-501 * Real World Connection: TE page 508 * Fine Arts Connection: TE page 508 * Health Connection: TE page 522 * Language Arts Connection: TE page 522 | | | |