

# Wallenpaupack Area School District Planned Course Curriculum Guide

## Department

## 7<sup>th</sup> Grade Science

### Course Description:

The seventh grade curriculum deals specifically with life science. The major goal of the seventh grade life science curriculum is to see the similarities and differences between living things. The course includes units on the characteristics of living things, cell structures and processes, genetics, and ecology as well as classification and a survey of the six major kingdoms of organisms. Students will actively be involved with projects, reports and lab activities that deal with the concept of life science.

**Revision Date:**  
**September 2015**

**This PCCG is designed as an ACTIVE document capable of technological modification as required.**

Wallenpaupack Area School District Curriculum	
<b>COURSE: 7<sup>th</sup> Grade Science</b>	<b>GRADE/S: 7<sup>th</sup> Grade</b>
<b>UNIT 1: Characteristics of Living Things</b>	<b>TIMEFRAME: 5 weeks</b>

<p><b>PA COMMON CORE/NATIONAL STANDARDS:</b></p> <p>3.1.7.A1 Describe the similarities and differences of physical characteristics in diverse organisms.</p> <p>3.1.7.A2 Describes how organisms obtain and use energy throughout their lives.</p> <p>3.1.7.B2 Compare sexual reproduction with asexual reproduction.</p> <p>3.1.7.A3 Explain why the life cycles of different organisms have varied lengths.</p>
<p><b>UNIT OBJECTIVES (SWBATS):</b></p> <ul style="list-style-type: none"> <li>• Describe the characteristics that all organisms share.</li> <li>• Explain the 4 bare necessities of life.</li> <li>• Explain the building block compounds of cells.</li> <li>• Differentiate between unicellular and multicellular.</li> </ul>
<p><b>INSTRUCTIONAL STRATEGIES/ACTIVITIES:</b></p> <ul style="list-style-type: none"> <li>• Oral Questioning      Short Answers      Class Discussions</li> <li>• Homework              Worksheets      Projects</li> <li>• Internet Resources      Visual Presentations      Study Guides</li> </ul>
<p><b>ANCHOR VOCABULARY:</b> Unicellular, Sexual Reproduction, Photosynthesis, Organisms, Nucleic Acids, Multicellular, Enzymes, DNA, Biomacromolecules, System, Asexual Reproduction</p>
<p><b>ASSESSMENTS (Diagnostic/Benchmark/Formative/Summative):</b></p> <ul style="list-style-type: none"> <li>• <b>CDTS (Diagnostic)</b></li> <li>• <b>Keystones (Summative)</b></li> <li>• <b>Projects</b></li> <li>• <b>Tests</b></li> <li>• <b>Quizzes</b></li> </ul>
<p><b>EVIDENCE OF MASTERY/Cut Score (Keystone Exam):</b></p> <ul style="list-style-type: none"> <li>• Formative Assessments</li> <li>• Teacher/Department generated tests/quizzes</li> <li>• Mastery is demonstrated by passing of the course</li> </ul>
<p><b>DIFFERENTIATED INSTRUCTION (Remediation/Extension) (Process, Product or Content)</b></p> <p><b>Remediation:</b></p> <ul style="list-style-type: none"> <li>• <b>Appropriate accommodations based on the student’s IEP/504 Plan</b></li> <li>• <b>Colored highlighter for focus</b></li> <li>• <b>Explicit modeling followed by systemic guided practice</b></li> <li>• <b>Assign narrative sections that are appropriate level of student comprehension</b></li> </ul> <p><b>Extension:</b></p> <ul style="list-style-type: none"> <li>• <b>Assign narrative sections that are appropriate level of student comprehension</b></li> <li>• <b>Extend skills to the next level of complexity</b></li> <li>• <b>Individualize enriched assignments and activities</b></li> </ul>

<p><b>RESOURCES (Websites, Blogs, Videos, Whiteboard Resources, etc.):</b></p> <ul style="list-style-type: none"> <li>• Discovery Education Tech Book</li> <li>• Holt Science and Technology: Life Science Copyright 2001</li> <li>• Internet resources</li> <li>• Teacher Created resources</li> </ul>
<p><b>RESOURCE SPECIFIC VOCABULARY: Carbohydrates, Lipids, Proteins, Adenosine Triphosphate, Stimuli, Homeostasis, Metabolism, producers, Consumers, Decomposers, Sugar, Starch, Phospholipids, Amino Acids, Nucleotides, Chlorophyll</b></p>

<b>Wallenpaupack Area School District Curriculum</b>	
<b>COURSE: 7<sup>th</sup> Grade Science</b>	<b>GRADE/S: 7<sup>th</sup> Grade</b>
<b>UNIT 2: Cell structures and processes</b>	<b>TIMEFRAME: 7 weeks</b>

<p><b>PA COMMON CORE/NATIONAL STANDARDS:</b></p> <p>3.1.6.A8.1 - Explain why the details of most cells are visible only through a microscope.</p> <p>3.1.6.A4.1 - Recognize that all organisms are composed of cells and that many organisms are unicellular and must carry out all life functions in one cell.</p> <p>3.1.6.A5.1 - Describe basic structures that plants and animals have that contribute to their ability to make or find food and reproduce.</p> <p>3.1.6.A6.1 - Identify examples of unicellular and multicellular organisms.</p> <p>3.1.6.A2.1 - Describe how energy derived from the sun is used by plants to produce sugars (photosynthesis) and is transferred within a food chain from producers (plants) to consumers to decomposers.</p> <p><b>3.1.7.A4</b> Explain how cells arise from pre-existing cells.</p> <p><b>3..1.7.A5</b> Explain how the cell is the basic structural and functional unit of living things.</p> <p><b>3.1.7.A6</b> Identify the levels of organization from cell to organism.</p> <p><b>3.1.7.A7</b> Compare life processes (e.g. growth, digestion) at the organism level with life processes at the cellular level.</p> <p>3.1.7.B2 Compare sexual reproduction with asexual reproduction</p> <p>.</p>
<p><b>UNIT OBJECTIVES (SWBATS):</b></p>

- Arrange the levels of organization from cell to organism.
- Explain the structures of cells.
- Differentiate between prokaryotic and eukaryotic cells.
- Explain how small, medium and large particles enter and exit cells.
- Explain how light energy is converted into food.
- Explain how food energy is released and used in cells.
- Identify types of cellular reproduction.

**INSTRUCTIONAL STRATEGIES/ACTIVITIES:**

- Oral Questioning      Short Answers      Class Discussions
- Homework              Worksheets      Projects
- Internet Resources      Visual Presentations      Study Guides

**ANCHOR VOCABULARY:** Gamete, Cell Cycle, Meiosis, Mitosis, Photosynthesis

**ASSESSMENTS (Diagnostic/Benchmark/Formative/Summative):**

- **CDTS (Diagnostic)**
- **Keystones (Summative)**
- **Projects**
- **Tests**
- **Quizzes**

**EVIDENCE OF MASTERY/Cut Score (Keystone Exam):**

- Formative Assessments
- Teacher/Department generated tests/quizzes
- Mastery is demonstrated by passing of the course

**DIFFERENTIATED INSTRUCTION (Remediation/Extension) (Process, Product or Content)**

**Remediation:**

- **Appropriate accommodations based on the student's IEP/504 Plan**
- **Colored highlighter for focus**
- **Explicit modeling followed by systemic guided practice**
- **Assign narrative sections that are appropriate level of student comprehension**

**Extension:**

- **Assign narrative sections that are appropriate level of student comprehension**
- **Extend skills to the next level of complexity**
- **Individualize enriched assignments and activities**

**RESOURCES (Websites, Blogs, Videos, Whiteboard Resources, etc.):**

- Discovery Education Tech Book
- Holt Science and Technology: Life Science Copyright 2001
- Internet resources
- Teacher Created resources

**RESOURCE SPECIFIC VOCABULARY:** Cellular respiration, Fermentation, Interphase, Prophase, Metaphase, Anaphase, Telophase, Glucose, Cells, Tissues, Organs, Organ systems, Prokaryotic, Eukaryotic, Organelles, Cytoplasm, Cell Membrane, Nucleus, Nucleolus, Cell Wall, Ribosome,

**Endoplasmic Reticulum, Mitochondria, Chloroplast, Golgi Complex, Vesicle, Vacuole, Lysosome, Diffusion, Osmosis, Active Transport, Passive Transport, Exocytosis, Endocytosis, Binary Fission, Chromatids, Centromere, Cytokinesis**

<b>Wallenpaupack Area School District Curriculum</b>	
<b>COURSE: 7<sup>th</sup> Grade Science</b>	<b>GRADE/S: 7<sup>th</sup> Grade</b>
<b>UNIT 3: Genetics</b>	<b>TIMEFRAME: 7 weeks</b>

**PA COMMON CORE/NATIONAL STANDARDS:**

- 3.1.7.B1 Explain how genetic instructions influence inherited traits. Identify Mendelian patterns of inheritance.
- 3.1.7.B4 Describe how selective breeding and biotechnology can alter the genetic composition of organisms.
- 3.1.7.B5.1 – Compare and contrast observable patterns in the physical characteristics across families, strains and species.
- 3.1.7.C2.2 – Explain that mutations can alter a gene and are the original source of new variations in a population.
- 3.1.7.C2.1 – Explain why the extinction of a species may occur when the environment changes.

**UNIT OBJECTIVES (SWBATS):**

- Identify inheritable characteristics.
- Differentiate between dominant and recessive traits.
- Use Punnett squares to determine probability of inherited traits.
- Interpret a pedigree.

**INSTRUCTIONAL STRATEGIES/ACTIVITIES:**

- Oral Questioning      Short Answers      Class Discussions
- Homework              Worksheets      Projects
- Internet Resources      Visual Presentations      Study Guides

**ANCHOR VOCABULARY:** Adaptation, DNA, Gene Expression, Gene Recombination, Genetic Engineering, Genetic(s), Genotypic, Mendelian Patterns of Inheritance, Mutations, Phenotypic

**ASSESSMENTS (Diagnostic/Benchmark/Formative/Summative):**

- **CDTS (Diagnostic)**
- **Keystones (Summative)**

<ul style="list-style-type: none"> <li>• <b>Projects</b></li> <li>• <b>Tests</b></li> <li>• <b>Quizzes</b></li> </ul>
<b>EVIDENCE OF MASTERY/Cut Score (Keystone Exam):</b> <ul style="list-style-type: none"> <li>• Formative Assessments</li> <li>• Teacher/Department generated tests/quizzes</li> <li>• Mastery is demonstrated by passing of the course</li> </ul>
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<b>RESOURCES (Websites, Blogs, Videos, Whiteboard Resources, etc.):</b> <ul style="list-style-type: none"> <li>• Discovery Education Tech Book</li> <li>• Holt Science and Technology: Life Science Copyright 2001</li> <li>• Internet resources</li> <li>• Teacher Created resources</li> </ul>
<b>RESOURCE SPECIFIC VOCABULARY: Homologous Chromosomes, Heterozygous, Homozygous, genes, genotype, Allele, Heredity, Dominant trait, Recessive trait, Probability, Punnett Square, Sex Cells, Sex Chromosomes, Adenine, Guanine, Cytosine, Thymine, Mutagen, Pedigree, Incomplete Dominance</b>

<b>Wallenpaupack Area School District Curriculum</b>	
<b>COURSE: 7<sup>th</sup> Grade Science</b>	<b>GRADE/S: 7<sup>th</sup> Grade</b>
<b>UNIT 4: Classification</b>	<b>TIMEFRAME: 10 weeks</b>

<b>PA COMMON CORE/NATIONAL STANDARDS:</b> <b>3.1.7.B PATTERNS Compare and contrast observable patterns in the physical</b>
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characteristics across families, strains and species.

3.1.6.A1.1 - Describe the similarities and differences of major physical characteristics in plants, animals, fungi, protists, and bacteria.

3.1.6.A5.1 - Describe basic structures that plants and animals have that contribute to their ability to make or find food and reproduce.

3.1.7.B5.1 - Compare and contrast observable patterns in the physical characteristics across families, strains and species.

**UNIT OBJECTIVES (SWBATS):**

- Classify living things.
- Use a dichotomous key to identify unknown organisms.
- Explain how bacteria can be beneficial and harmful to humans.
- Explain why viruses are not considered living things.
- Identify characteristics of the three protist groups.
- Identify four groups of fungi and examples of each.
- Describe the characteristics of a lichen.
- Compare vascular and nonvascular plants.
- Explain the structure and function of roots, stems, leaves and flowers.
- Contrast endoskeletons and exoskeletons.
- Identify the three possible body plans of animals.
- Compare vertebrate and invertebrate animals.

**INSTRUCTIONAL STRATEGIES/ACTIVITIES:**

- |                      |                      |                   |
|----------------------|----------------------|-------------------|
| • Oral Questioning   | Short Answers        | Class Discussions |
| • Homework           | Worksheets           | Projects          |
| • Internet Resources | Visual Presentations | Study Guides      |

**ANCHOR VOCABULARY:** Families, Species

**ASSESSMENTS (Diagnostic/Benchmark/Formative/Summative):**

- **CDTS (Diagnostic)**
- **Keystones (Summative)**
- **Projects**
- **Tests**
- **Quizzes**

**EVIDENCE OF MASTERY/Cut Score (Keystone Exam):**

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**DIFFERENTIATED INSTRUCTION (Remediation/Extension) (Process, Product or Content)**

**Remediation:**

- Appropriate accommodations based on the student's IEP/504 Plan
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- Explicit modeling followed by systemic guided practice
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**Extension:**

- Assign narrative sections that are appropriate level of student comprehension
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- Individualize enriched assignments and activities

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**RESOURCE SPECIFIC VOCABULARY:** Domain, Kingdom, Phylum, Class, Order, Family, Genus, Species, Vertebrates, Invertebrates, Vascular, Nonvascular, Gymnosperms, Angiosperms, Club Fungi, Sac Fungi, Threadlike Fungi, Imperfect Fungi, Ascus, Basidia, Sporangia, Flagella, Cilia, Pseudopodia, Algae, Phytoplankton, Amoeba, Paramecium, Euglena, Slime Mold, Archaeobacteria, Eubacteria, Taxonomy, Dichotomous Key, Bacilli, Cocci, Spirilla, Cyanobacteria, Nitrogen-fixing Bacteria, Bioremediation, Antibiotics, Pathogenic bacteria, Protozoa, Fission, Conjugation, Lichen, Mold, Spore, Mycelium, Hyphae, Xylem, Phloem, Cotyledon, Cuticle, Stamen, Pistil, Epidermis, Stomata, Guard Cells, Bilateral Symmetry, radial Symmetry, Asymmetrical, Exoskeleton, Endoskeleton, Metamorphosis

<b>Wallenpaupack Area School District Curriculum</b>	
<b>COURSE: 7<sup>th</sup> Grade Science</b>	<b>GRADE/S: 7<sup>th</sup> Grade</b>
<b>UNIT 5: Ecology</b>	<b>TIMEFRAME: 7 weeks</b>

**PA COMMON CORE/NATIONAL STANDARDS:**

- 3.1.6.A2.1 – Describe how energy derived from the sun is used by plants to produce sugars (photosynthesis) and is transferred within a food chain from producers (plants) to consumers to decomposers.
- 3.1.7.A8.1 – Apply the appropriate models to show interactions among organisms in an environment.
- 4.1.7.A Describe the relationships between biotic and abiotic components of an ecosystem.
- Compare and contrast different biomes and their characteristics.
  - Describe symbiotic and predator/ prey relationships.
- 4.1.7.B Explain biogeochemical cycles within an ecosystem.



4.1.7.C Explain the flow of energy within an ecosystem.

- Compare and contrast the flow of energy between organisms in different habitats.
- Explain the concept of trophic levels

**UNIT OBJECTIVES (SWBATS):**

- Identify the biotic and abiotic parts of an ecosystem.
- Construct food chains to build a food web.
- Explain the loss of energy as it flows through an energy pyramid.
- Give examples of symbiotic relationships.

**INSTRUCTIONAL STRATEGIES/ACTIVITIES:**

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**ANCHOR VOCABULARY:** Food Chain, Food Web, Biosphere, Carbon Cycle, Life Cycles, Abiotic, Biological Diversity, Biomes, Biotic, Carrying Capacity, Consumer, Decomposer, Ecosystem, Habitat, Limiting Factors, Niche, Producers, Prey, Predators, Symbiotic, Succession

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**RESOURCE SPECIFIC VOCABULARY: Populations, Communities, Herbivores, Carnivores, Omnivores, Scavengers, Energy Pyramid, Aquatic, Terrestrial, Marine, Estuary, Carrying Capacity, Symbiosis, Mutualism, Commensalism, Parasitism, parasite, Host, Pioneer Species**