Kenilworth Public Schools

Curriculum Guide

Content Area: Science
Grade: 7
BOE Approved: 7/11/2016

Revision Date: March 2022
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BOE Revision Approved: 4/11/22

Science- 7th Grade Scope and Sequence

Unit 1- Scientific Inquiry	Unit 2- Structure and Function	Unit 3- Forces and Motion	Unit 4- Atmosphere
Weeks 1-7	Weeks 8-20	Weeks 21-31	Weeks 31-38
Unit Description: Students will begin to investigate core concepts such as introducing the basic tools, instrumentation, laboratory safety, metric measurement, and scientific methods necessary to categorize, represent and interpret the natural and physical world. Application of the scientific method is used to interpret experimental results in evaluating conclusions.	*Unit Description:* In this unit, students will demonstrate abilities to plan and carry out investigations to develop evidence that living things are made of cells. Students will gather information to support explanations of the relationship between structure and function in cells. They are able to communicate an understanding of cell theory and understand that all organisms are made of cells. Students will understand that special structures are responsible for particular functions in organisms.	*Unit Description:* Students use systems, system models, stability and change to understand ideas related to why some objects will keep moving and why objects fall to the ground. Students also apply an engineering practice to solve problems caused when objects collide. The crosscutting concepts of system and system models and stability/change provide a framework for understanding the core ideas.	*Unit Description:* Students make sense of how Earth's geosystems operate by modeling the flow of energy and cycling of matter within different systems. A systems approach is important in examining the feedback between systems as energy from the Sun is transferred between systems and circulates through the ocean and atmosphere. In this unit, students are expected to demonstrate proficiency in developing and using models, and planning and carrying out investigations as they make sense of disciplinary core ideas.
Define the criteria and constraints of a design problem with sufficient precision to	Conduct an investigation to provide evidence that living things are made of cells; either one cell or many	Apply Newton’s Third Law to design a solution to a problem involving the motion of two	Collect data to provide evidence for how the motions and complex

ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions	different numbers and types of cells.	colliding objects.	interactions of air masses results in changes in weather conditions.
Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.	Organisms may consist of many different numbers and types of cells (multicellular).	Emphasis is on balanced and unbalanced forces in a system, qualitative comparisons of forces, mass and changes in motion, frame of reference, and specification of units.	The complex patterns of the changes in and movement of water in the atmosphere, determined by winds, landforms, and ocean temperatures and currents, are major determinants of local weather patterns.
Analyze data from tests to determine similarities and differences among several design solutions to identify the best characteristics of each that can be combined into a new solution to better meet the criteria for success	Within cells, special structures are responsible for particular functions.	Examples of practical problems could include the impact of collisions between two cars, between a car and stationary objects, and between a meteor and a space vehicle.	The complex patterns of the changes in and movement of water in the atmosphere, determined by winds, landforms, and ocean temperatures and currents, are major determinants of local weather patterns.
Develop a model to generate data for iterative testing and modification of a proposed object, tool, or process such that an optimal design can be achieved.	Students will have a basic understa nding of the compound microscope and the ability to observe, measure and estimate the size of objects.	The motion of an object is determined by the sum of the forces acting on it; if the total force on the object is not zero, its motion will change.	Patterns of the changes and the movement of water in the atmosphere are so complex, weather can only be predicted probabilistically.

Science-Grade 7 Forces and Motion

Unit Title: Forces and Motion

Unit Summary: Students use systems, system models, stability and change to understand ideas related to why some objects will keep moving and why objects fall to the ground. Students also apply an engineering practice to solve problems caused when objects collide. The crosscutting concepts of system and system models and stability/change provide a framework for understanding the core ideas.

Primary Interdisciplinary Connections: Math, Language Arts and Literacy

Career Readiness, Life Literacies, and Key Skills:

- Creativity and Innovation
- Information Literacy
- Critical Thinking and Problem Solving
- Communication and Collaboration
- Media Literacy
- Information, Communication, and Technology
- Life and Career Skills

Learning Targets

NJSLS Standards:

MS-PS3-1. Construct and interpret graphical displays of data to describe the relationships of kinetic energy to the mass of an object and to the speed of an object.
1.MS-4.8.1.CC-1- Proportional relationships (e.g. speed as the ratio of distance traveled to time taken) among different types of quantities provide information about the magnitude of properties and processes.
1.MS-4.8.1.DCI-1- Motion energy is properly called kinetic energy; it is proportional to the mass of the moving object and grows with the square of its speed.
1.MS-4.8.1.SEP-1- Construct and interpret graphical displays of data to identify linear and nonlinear relationships.
MS-PS3-2. Develop a model to describe that when the arrangement of objects interacting at a distance changes, different amounts of potential energy are stored in the system.
1.MS-4.8.2.DCI-1- A system of objects may also contain stored (potential) energy, depending on their relative positions.
1.MS-4.8.2.DCI-2- When two objects interact, each one exerts a force on the other that can cause energy to be transferred to or from the object.
1.MS-4.8.2.SEP-1- Develop a model to describe unobservable mechanisms.
MS-PS3-3. Apply scientific principles to design, construct, and test a device that either minimizes or maximizes thermal energy transfer.
1.MS-4.8.3.CC-1- The transfer of energy can be tracked as energy flows through a designed or natural system.
1.MS-4.8.3.DCI-1- Temperature is a measure of the average kinetic energy of particles of matter.

The relationship between the temperature and the total energy of a system depends on the types, states, and amounts of matter present.
1.MS-4.8.3.DCI-2- Energy is spontaneously transferred out of hotter regions or objects and into colder ones.
1.MS-4.8.3.DCI-3- The more precisely a design task's criteria and constraints can be defined, the more likely it is that the designed solution will be successful. Specification of constraints includes consideration of scientific principles and other relevant knowledge that is likely to limit possible solutions.
1.MS-4.8.3.DCI-4- A solution needs to be tested, and then modified on the basis of the test results in order to improve it. There are systematic processes for evaluating solutions with respect to how well they meet criteria and constraints of a problem.
1.MS-4.8.3.SEP-1- Plan an investigation individually and collaboratively, and in the design: identify independent and dependent variables and controls, what tools are needed to do the gathering, how measurements will be recorded, and how many data are needed to support a claim.
1.MS-4.8.4.SEP-2- Science knowledge is based upon logical and conceptual connections between evidence and explanations.
MS-PS3-5. Construct, use, and present arguments to support the claim that when the kinetic energy of an object changes, energy is transferred to or from the object.
1.MS-4.8.5.CC-1- Energy may take different forms (e.g. energy in fields, thermal energy, energy of motion).
1.MS-4.8.5.DCI-1- When the motion energy of an object changes, there is inevitably some other change in energy at the same time.
1.MS-4.8.5.SEP-2- Science knowledge is based upon logical and conceptual connections between evidence and explanations.

Computer Science and Design Thinking Standards:

• 8.1.2.DA.3: Identify and describe patterns in data visualizations.

• 8.1.2.DA.4: Make predictions based on data using charts or graphs.

Climate Change Standards:

•MS-LS2-3: Develop a model to describe the cycling of matter and flow of energy among living and nonliving parts of an ecosystem.

ELA Companion Standards:

• RST.6-8.1 Cite specific textual evidence to support analysis of science and technical texts, attending to the precise details of explanations or descriptions (MS-PS1-2), (MS-PS1-3)

• RST.6-8.3 Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks. (MS-PS1-6)

• RST.6-8.7 Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table). (MS-PS1-1), (MS-PS1-2), (MS-PS1-4), (MS-PS1-5)

• WHST.6-8.7 Conduct short research projects to answer a question (including a self-generated question), drawing on several sources and generating additional related, focused questions that allow for multiple avenues of exploration. (MS-PS1-6)

• WHST.6-8.8 Gather relevant information from multiple print and digital sources, using search terms effectively; assess the credibility and accuracy of each source; and quote or paraphrase the data and conclusions of others while avoiding plagiarism and following a standard format for

citation. (MS-PS1-3)

Big Idea: In this unit, students will investigate how different types of forces applied to an object can cause predictable patterns of motion.

Unit Essential Questions:	**Unit Enduring Understandings:**
• How can you explain/predict interactions between objects and within systems of objects?	For any pair of interacting objects, force exerted by the first object on the second object is equal in strength to the force that the second object exerts on the first, but in the opposite direction. - Models can be used to represent motion of objects in colliding systems and their interactions, such as inputs, processes, and outputs, as well as energy and matter flows within systems.

Unit Learning Targets

Students will…

- Students will investigate Newton's first and second laws of motion through hands-on activities in which they observe the result of balanced and unbalanced forces on an object's motion.
- Students will observe how an object's motion will change depending upon the mass of the object and the amount of force.
- Activities could include pushing objects of different masses and comparing forces needed to accelerate the objects.
- Apply Newton's Third Law to design a solution to a problem involving the motion of two colliding objects.
- Emphasis is on balanced and unbalanced forces in a system, qualitative comparisons of forces, mass and changes in motion, frame of reference, and specification of units.
- Examples of practical problems could include the impact of collisions between two cars, between a car and stationary objects, and between a meteor and a space vehicle.
- The motion of an object is determined by the sum of the forces acting on it; if the total force on the object is not zero, its motion will change.

Evidence of Learning

Summative Assessment:

- Unit tests
- Portfolio Assignments
- Interactive Science Notebook

Formative Assessments:

- Quizzes
- Homework
- Posters
- Laboratory Reports
- Projects/ Individual Presentations.
- CER Investigations

Lesson Plans

Activities/Interdisciplinary Connections	*Timeframe*
Laboratory-Spring Scale Comparative, How Does Friction Change an Objects Motion? Design your own Newton's Law Class Demo. • Projects-Marble Run Competition • Lab Activities • Informational texts • Video demonstrations • Academy presentations • Assessments for SE, ESL, BSI, GT	5 weeks
Teacher Resources	*Teacher Note*
• Technology Tools -Google Classroom -Seesaw -Pear Deck -BrainPOP -PHet -Book Creator -FlipGrid -EdPuzzle -Kahoot -Kami -Quizizz	Add new resources to this unit when appropriate.

Differentiating Instruction: Students with Disabilities, English Language Learners, and Gifted & Talented Students

Examples of Strategies and Practices that Support Students with Disabilities:
• Use of visual and multisensory formats
• Use of assisted technology
• Use of prompts

• Modification of content and student products
• Testing accommodations
• Authentic assessments

Examples of Strategies and Practices that Support Gifted & Talented Students:
• Adjusting the pace of lessons
• Curriculum compacting
• Inquiry-based instruction
• Independent study
• Higher-order thinking skills
• Interest-based content
• Student-driven instruction
• Real-world problems and scenarios

Examples of Strategies and Practices that Support English Language Learners:
• Pre-teaching of vocabulary and concepts
• Visual learning, including graphic organizers
• Use of cognates to increase comprehension
• Teacher modeling
• Pairing students with beginning English language skills with students who have more advanced English language skills
• Scaffolding
•Word walls
•Sentence frames
•Think-pair-share
•Cooperative learning groups

7th Grade Science- Scientific Inquiry

Unit Title: Scientific Inquiry

Unit Summary: Students will begin to investigate core concepts such as introducing the basic tools, instrumentation, laboratory safety, metric measurement, and scientific methods necessary to categorize, represent and interpret the natural and physical world. Application of the scientific method is used to interpret experimental results in evaluating conclusions.

Primary Interdisciplinary Connections: Math, ELA, Social Studies

Career Readiness, Life Literacies, and Key Skills:

• 9.1.8.PB.5: Identify factors that affect one's goals, including peers, culture, location, and past experiences.

Learning Targets

NJSLS Standards:

• MS-ETS1-1 Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions.

• MS-ETS1-2 Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.

• MS-ETS1-3 Analyze data from tests to determine similarities and differences among several design solutions to identify the best characteristics of each that can be combined into a new solution to better meet the criteria for success.

MS-ETS1-4 Develop a model to generate data for iterative testing and modification of a proposed object, tool, or process such that an optimal design can be achieved.

Computer Science and Design Thinking Standards:

• 8.1.8.DA.1: Organize and transform data collected using computational tools to make it usable for a specific purpose.

• 8.1.8.DA.5: Test, analyze, and refine computational models.

Climate Change Standards:

• MS-ESS3-3: Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.

ELA Companion Standards:

• RST.6-8.1 Cite specific textual evidence to support analysis of science and technical texts.

• WHST.6-8.8 Gather relevant information from multiple print and digital sources, using search terms effectively; assess the credibility and accuracy of each source; and quote or paraphrase the data and conclusions of others while avoiding plagiarism and following a standard format for citation.

• WHST.6-8.9 Draw evidence from informational texts to support analysis, reflection, and research.

Big Idea: Students understand core concepts and principles of science and use measurement and observation tools to assist in categorizing, representing, and interpreting the natural and designed world. Students master conceptual, mathematical, physical, and computational tools that need to be applied when constructing and evaluating claims.

Unit Essential Questions:	**Unit Enduring Understandings:**
• How do you use the scientific inquiry to better understand the world around us? • How do scientists analyze and interpret data to determine similarities and differences in findings?	Scientific Knowledge is acquired and continually revised based on data from specific observations and experiments.

Unit Learning Targets
Students will…

- Demonstrate understanding and use interrelationships among central scientific concepts to revise explanations and to consider alternative explanations.
- Use mathematical, physical, and computational tools to build conceptual-based models and to pose theories.
- Use scientific principles and models to frame and synthesize scientific argument and pose theories.
- Engage in productive scientific discussion practices with peer conversations in the context of scientific investigations and model-building.
- Demonstrate how to safely use tools, instruments, and supplies.

Evidence of Learning

Summative Assessments: Tests, quizzes, authentic assessments, projects, reports, presentations laboratory investigations, data analysis

Formative Assessments:

- Do Now
- Exit Slips
- Google forms for mini assessments
- Google Slides, Nearpod, & Pear Deck presentations
- Design Challenges
- Lab Investigations

Lesson Plans

Activities/Interdisciplinary Connections	*Timeframe*
• Laboratory Activities- Scientific Method, Lab Tools Use and Care Of, Science Safety, Engineering Design Process • Projects-Career Brochures, Comparative Posters,	6 weeks

Classification Booklet • Class discussions • Individual explorations • Academy projects	
Teacher Resources	*Teacher Note*
• Technology Tools -Google Classroom -Seesaw -Pear Deck -BrainPOP -PHet -Gizmos -GimKit -Book Creator -FlipGrid -Kahoot -Kami -Quizizz	Add additional resources as needed.

Differentiating Instruction: Students with Disabilities, English Language Learners, and Gifted & Talented Students

Strategies and Practices that Support Students with Disabilities:
• Use of visual and multisensory formats
• Tiered Instruction
• Use of assisted technology
• Use of prompts
• Modification of content and student products
• Testing accommodations
• Authentic assessments

Strategies and Practices that Support Gifted & Talented Students:
• Adjusting the pace of lessons
• Curriculum compacting
• Inquiry-based instruction
• Independent study
• Higher-order thinking skills
• Interest-based content
• Student-driven instruction
• Real-world problems and scenarios

Strategies and Practices that Support English Language Learners:
• Pre-teaching of vocabulary and concepts

• Visual learning, including graphic organizers
• Use of cognates to increase comprehension
• Choice activities
• Modified time requirements
• Teacher modeling
• Pairing students with beginning English language skills with students who have more advanced English language skills
• Scaffolding
•Word walls
•Sentence frames
•Think-pair-share
•Cooperative learning groups

7th Grade Science- Atmosphere

Unit Title: Atmosphere

Unit Summary: Students make sense of how Earth's geosystems operate by modeling the flow of energy and cycling of matter within different systems. A systems approach is important in examining the feedback between systems as energy from the Sun is transferred between systems and circulates through the ocean and atmosphere. In this unit, students are expected to demonstrate proficiency in developing and using models, and planning and carrying out investigations as they make sense of disciplinary core ideas.

Primary Interdisciplinary Connections: Math, Language Arts and Literacy

Career Readiness, Life Literacies, and Key Skills:

9.1.8.CR.2: Compare various ways to give back through strengths, passions, goals, and other personal factors.

9.1.8.EG.7: Explain the effect of the economy (e.g., inflation, unemployment) on personal income, individual and family security, and consumer decisions.

Learning Targets

NJSLS Standards:

MS-ESS1-1 Develop and use a model of the Earth-sun-moon system to describe the cyclic patterns of lunar phases, eclipses of the sun and moon, and seasons.

MS-ESS1-2 Develop and use a model to describe the role of gravity in the motions within galaxies and the solar system.

Computer Science and Design Thinking Standards:

8.1.8.NI.3: Explain how network security depends on a combination of hardware, software, and practices that control access to data and systems.

8.1.8.IC.1: Compare the trade-offs associated with computing technologies that affect individual's everyday activities and career options.

Climate Change Standards:

1.2.8.Re7b: Compare, contrast and analyze how various forms, methods and styles in media artworks affect and manage audience experience and create intention when addressing global issues including climate change.

2.1.8.CHSS.7: Collaborate with other students to develop a strategy to address health issues related to climate change.

ELA Companion Standards:

RST.6-8.1 Cite specific textual evidence to support analysis of science and technical texts, attending to the precise details of explanations or descriptions (MS-LS4-1), (MS-LS4-2), (MS-LS4-3), (MS-LS4-4), (MS-LS4-5)

RST.6-8.7 Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table). (MS-LS4-1), (MS-LS4-3)

RST.6-8.9 Compare and contrast the information gained from experiments, simulations, video, or multimedia sources with that gained from reading a text on the same topic. (MS-LS4-3), (MS-LS4-4)

Big Idea: In this unit students will analyze phenomena that occur as a result of the interaction of the sun, earth, and moon.

Unit Essential Questions:

1. How does the Earth, Sun, and Moon relationship impact humans?
2. How does the tilt of the Earth cause seasonal changes?
3. How does the tilt of the Earth cause changes in the hours of light and darkness throughout the Earth?
4. What is the role of the sun in energy transfer in the atmosphere and in the oceans?
5. How do changes in one part of an Earth system affect other parts of the system?

Unit Enduring Understandings:

- The gravitational pull of the sun and the moon cause tides on Earth's surface.
- The angle of insolation from the sun affects the temperature of the Earth's surface at different locations.
- The tilt of the Earth causes hours of light and darkness to increase and decrease depending on the season and time of year.

Unit Learning Targets

Students will…

- Use data and computational tools to construct explanations for the observation that it always seems hotter in the city than in the suburbs during the summer.
- Explain how energy from the Sun is transformed or transferred in global wind circulation, ocean circulation, and the water cycle.
- Determine the origin of local weather by exploring national and international weather maps.

Evidence of Learning

Summative Assessment: Chapter Test, Midterm, Benchmark, Final Exam

Formative Assessments:

- Quizzes
- Homework
- Design Challenges
- Posters
- Laboratory Investigations
- Projects
- Presentations

Lesson Plans

Activities/Interdisciplinary Connections	*Timeframe*

Laboratory-How Does Acid Rain Form? How Does Temperature Affect Weathering? • Projects-PowerPoint presentation on weather • Group/Class Discussions • Individual Explorations • Academy Presentations	7 weeks
Teacher Resources	*Teacher Note*
• Technology Tools: -Google Classroom -Seesaw -Pear Deck -EdPuzzle -PHet -GimKit -BrainPOP -Book Creator -FlipGrid -Kahoot -Kami -Quizizz	Use other resources when needed.

Differentiating Instruction: Students with Disabilities, English Language Learners, and Gifted & Talented Students

Strategies and Practices that Support Students with Disabilities:
• Use of visual and multisensory formats
• Use of assisted technology
• Use of prompts
• Modification of content and student products
• Testing accommodations
• Authentic assessments

Strategies and Practices that Support Gifted & Talented Students:
• Adjusting the pace of lessons
• Curriculum compacting
• Inquiry-based instruction
• Independent study
• Higher-order thinking skills
• Interest-based content
• Student-driven instruction
• Real-world problems and scenarios

Strategies and Practices that Support English Language Learners:

- Pre-teaching of vocabulary and concepts
- Visual learning, including graphic organizers
- Use of cognates to increase comprehension
- Teacher modeling
- Pairing students with beginning English language skills with students who have more advanced English language skills
- Scaffolding
- Choice activities
- Modified time requirements
- Word walls
- Sentence frames
- Think-pair-share
- Cooperative learning groups

7th Grade Science- Structure and Function

Unit Title: Life: Structure and Function

Unit Summary: In this unit, students will demonstrate abilities to plan and carry out investigations to develop evidence that living things are made of cells. Students will gather information to support explanations of the relationship between structure and function in cells. They are able to communicate an understanding of cell theory and understand that all organisms are made of cells. Students will understand that special structures are responsible for particular functions in organisms.

Primary Interdisciplinary Connections: Math, Language Arts and Literacy

Career Readiness, Life Literacies, and Key Skills:

9.1.8.CR.2: Compare various ways to give back through strengths, passions, goals, and other personal factors.

9.1.8.CP.1: Compare prices for the same goods or services.

9.1.8.FP.6: Compare and contrast advertising messages to understand what they are trying to accomplish.

Learning Targets

NJSLS Standards:

• MS-LS1-1 Conduct an investigation to provide evidence that living things are made of cells; either one cell or many different numbers and types of cells.

• MS-LS1-2 Develop and use a model to describe the function of a cell as a whole and ways parts of cells contribute to the function.

• MS-LS1-3 Use argument supported by evidence for how the body is a system of interacting subsystems composed of groups of cells.

• MS-LS1-4 Use argument based on empirical evidence and scientific reasoning to support an explanation for how characteristic animal behaviors and specialized plant structures affect the probability of successful reproduction of animals and plants respectively.

• MS-LS1-5 Construct a scientific explanation based on evidence for how environmental and genetic factors influence the growth of organisms.

• MS-LS1-6 Construct a scientific explanation based on evidence for the role of photosynthesis in the cycling of matter and flow of energy into and out of organisms.

• MS-LS1-7 Develop a model to describe how food is rearranged through chemical reactions forming new molecules that support growth and/or release energy as this matter moves through an organism.

• MS-LS1-8 Gather and synthesize information that sensory receptors respond to stimuli by sending messages to the brain for immediate behavior or storage as memories.

Computer Science and Design Thinking Standards:

8.1.8.CS.3: Justify design decisions and explain potential system trade-offs

8.1.8.DA.1: Organize and transform data collected using computational tools to make it usable

for a specific purpose.

8.1.8.DA.5: Test, analyze, and refine computational models.

Climate Change Standards:

• MS-ETS1-1: Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions.

•MS-ETS1-3: Analyze data from tests to determine similarities and differences among several design solutions to identify the best characteristics of each that can be combined into a new solution to better meet the criteria for success.

ELA Companion Standards:

•RST.6-8.1 Cite specific textual evidence to support analysis of science and technical texts.

• RST.6-8.2 Determine the central ideas or conclusions of a text; provide an accurate summary of the text distinct from prior knowledge or opinions.

• RI.6.8 Trace and evaluate the argument and specific claims in a text, distinguishing claims that are supported by reasons and evidence from claims that are not.

• WHST.6-8.1 Write arguments focused on discipline content.

Content Statements:

1	Conduct an investigation to provide evidence that living things are made of cells; either one cell or many different numbers and types of cells.
2	Organisms may consist of many different numbers and types of cells (multicellular).
3	Within cells, special structures are responsible for particular functions.
4	Students will have a basic understanding of the compound microscope and the ability to observe, measure and estimate the size of objects.

Big Idea: In this unit, students will develop microscopy skills to investigate the structure and function of cells and their organelles. Students will then model how the organelles work together in unicellular living things and how cells work together in multicellular living things.

Unit Essential Questions:	**Unit Enduring Understandings:**
• How do scientists classify our world into living and nonliving categories? • How are the needs and characteristics of unicellular organisms similar to multicellular organisms? • How are animal cells/plant cells similar and different?	● Living organisms have specific characteristics. ● Unicellular organisms share the same needs and characteristics as multicellular organisms. ● Living organisms have structures with specific functions to help that organism meet all of its needs to survive. ● The cell has many structures to serve different needs within the cell as a whole. ● Animal and plant cells share similarities and differences in their structures and functions. ● Microscopes are used to study organisms too small for the naked eye.

Unit Learning Targets
Students will…

- Compare the benefits and limitations of existing as a single or multi-cellular organism.
- Relate the energy and nutritional needs of organisms in a variety of life stages and situations, including stages of development and periods of maintenance.
- Model the effect of positive and negative changes in population size on a symbiotic pairing.
- Conduct an investigation to provide evidence that living things are made of cells; either one cell or many different numbers and types of cells.
- Learn organisms may consist of many different numbers and types of cells (multicellular). Within cells, special structures are responsible for particular functions.
- Students will have a basic understanding of the compound microscope and the ability to observe, measure and estimate the size of objects.

Evidence of Learning

Summative Assessment: Chapter Tests, Midterm, Benchmark

Formative Assessments:

- Quizzes
- Homework
- Posters
- Design Investigations
- Laboratory Investigations
- Projects
- Presentations

Lesson Plans

Activities/Interdisciplinary Connections	*Timeframe*
• Google Slide Notes • Microscope Lab • Cell Theory Brochure/book • Cell Analogy Project • Cell Social Media Project • Cell Organelle Design Challenge	12 weeks
Teacher Resources	*Teacher Note*
• Technology Tools: -Google Classroom -Seesaw	Add resources that fit curriculum as needed.

-Pear Deck -BrainPOP -EdPuzzle -PHet -Book Creator -FlipGrid -Kahoot -Kami -Quizizz	

Differentiating Instruction: Students with Disabilities, English Language Learners, and Gifted & Talented Students

Strategies and Practices that Support Students with Disabilities:
• Use of visual and multisensory formats
• Use of assisted technology
• Use of prompts
• Graphic Organizer
• Modification of content and student products
• Testing accommodations
• Authentic assessments

Strategies and Practices that Support Gifted & Talented Students:
• Adjusting the pace of lessons
• Curriculum compacting
• Inquiry-based instruction
• Independent study
• Higher-order thinking skills
• Interest-based content
• Student-driven instruction
• Real-world problems and scenarios

Strategies and Practices that Support English Language Learners:
• Pre-teaching of vocabulary and concepts
• Visual learning, including graphic organizers
• Use of cognates to increase comprehension
• Teacher modeling
• Choice activities
• Modified time requirements
• Pairing students with beginning English language skills with students who have more advanced English language skills
• Scaffolding
•Word walls

- Sentence frames
- Think-pair-share
- Cooperative learning groups