Hamilton Heights School Corporation
Science 6 Curriculum Map

Course Title: Science 6	Quarter 1:	Academic Year: 2024-2025

Essential Questions

1. How will we learn and what are student expectations within our science classroom this year?
2. What skills and thinking practices do scientists use?
3. How do scientists answer scientific questions and solve problems?
4. How do engineers answer questions and solve problems?

Unit Name	Total Days	Standards Number	Knowledge Objectives	Skills Objectives	Specific Assessments	Specific Resources
Introduction to Science	5		Students will spend the first 3 weeks learning the following: ● classroom/school procedures and expectations ● introductory lessons on websites/apps used throughout the year ● assessing understanding of 5th grade standards	1. Students should understand classroom and school expectations. 2. Students should be able to use Canvas, Notability, Gizmos,Generation Genius, and other websites and apps that are used on a regular basis.	AOWs Canvas Quizzes/Tests	● Canvas Textbook ● Unit Objectives ● Interactive Notebooks ● iPad Apps
Scientific Process	20		● Science skills: observing, inferring, predicting, evaluating, classifying, investigations ● Qualitative vs. Quantitative observations	1. Students should be able to Identify, explain, and perform steps of the scientific method. 2. Students should understand and identify variables in an investigation; and how they connect to a hypothesis.	AOWs Canvas Quizzes/Tests End of Unit Test <u>Labs</u> ● Observations Lab	● Canvas Textbook ● Unit Objectives ● Interactive Notebooks (ISN) ● *Science World* Magazine ● Websites: Gizmos, EdPuzzle, Quizizz, Quizlet,, Generation Genius, IXL, Writable, Gimkit

			• Science Thinking: biases (opinion vs. fact) • Scientific Method: the steps, how to perform, independent vs dependent variable **Vocabulary:** observing, inferring, predicting, classifying, evaluating, quantitative observation, qualitative observations, skepticism, bias, ethics, evidence, hypothesis, variable, independent variable, dependent variable, control variable	3. Students should be able to independently write a hypothesis and conclusion during an investigation, while referencing evidence 4. Students should be able to create and label data tables during an investigation	• Penny Lab	
Engineering	3	MS-ETS1-1 MS-ETS1-2 MS-ETS1-3 MS-ETS1-4	• Engineering Process: the steps, how to perform, evaluate solutions • Creating prototypes **Vocabulary:**brainstorm, design/prototype, build, redesign, test/evaluate, solution, constraint, probable/plausible, risk	1. Students should be able to Identify, explain, and perform steps of the Engineering & Design process. 2. Students should be able to define and identify different constraints while forming a solution to an engineering problem. 3. Students should be able to draw a detailed model (prototype) which includes labels and measurements. 4. Students should be able to compare/contrast different prototypes and evaluate how to make improvements.	STEM Challenge: Project Hurricane Defender	• Canvas Textbook • Unit Objectives • Interactive Notebooks (ISN) • *Science World* Magazine • Websites: Gizmos, EdPuzzle, Quizizz, Quizlet, Generation Genius, IXL, Writable

Course Title: Science 6	Quarter 2:	Academic Year: 2022-2023

Essential Questions

1. Why do scientists use the S.I. System of Measurement (metric system)?
2. How to successfully choose and use the correct science tool and measurement unit for specific jobs?
3. How do you record data and create graphs?
4. How do invasive species affect their ecosystems?
5. How do engineers answer questions and solve problems?

Unit Name	Total Days	Standards Number	Knowledge Objectives	Skills Objectives	Specific Assessments	Specific Resources
Measurement & Tools	10		• Scientific Models: data collection, data tables, and graphs • SI System of Measurement: mass, volume, length, density introduction, use of scientific tools, metric conversion introduction *(meters, centi-, mili-)* • Tools used: rulers, meter sticks, graduated cylinders, triple-beam balance, digital scale, spring scales **Vocabulary:** accuracy, mass, weight, volume, density, data table, graph, S.I. System, triple-beam balance, graduated cylinder, digital scale,	1. Students should be able to read all types of graphs: (bar, circle, line) and create bar and line graphs of their own from data collected. 2. Students should be able to measure the mass, volume (regular and irregular shaped objects), and length of any object independently with provided tools and directions. 3. Students should be able to successfully explain the difference between mass and weight.	AOWs Canvas Quizzes/Tests Labs • Gummy Bear Lab • Measurement Labs: Length, mass, volume	• Canvas Textbook • Unit Objectives • Interactive Notebooks (ISN) • *Science World* Magazine • Websites: Gizmos, EdPuzzle, Quizizz, Quizlet, Generation Genius, IXL, Writable

			meter, liter, gram, bar graph, circle graph, line graph			
Life Science	10	MS-LS2-2 MS-LS2-4	**Invasive Species Project**: Students will research invasive species and their impact on ecosystems. **Vocabulary:** ecology, organism, ecosystem, population, invasive species, native species	1. Students should be able to identify and explain what an invasive species is. 2. Students should be able to list specific ways invasive species impact their ecosystem.	AOWs Research & Essay	• Writable • Interactive Notebooks (ISN) • *Science World* Magazine • Websites: Gizmos, EdPuzzle, Quizizz
Engineering	5	MS-ETS1-1 MS-ETS1-2 MS-ETS1-3 MS-ETS1-4	• Engineering Process: the steps, how to perform, evaluate solutions • Creating prototypes **Vocabulary:**brainstorm, design/prototype, build, redesign, test/evaluate, solution, constraint, probable/plausible, risk	5. Students should be able to Identify, explain, and perform steps of the Engineering & Design process. 6. Students should be able to define and identify different constraints while forming a solution to an engineering problem. 7. Students should be able to draw a detailed model *(prototype)* which includes labels and measurements. 8. Students should be able to compare/contrast different prototypes and evaluate how to make improvements.	STEM Challenge: Camouflage Critters	• Canvas Textbook • Unit Objectives • Interactive Notebooks (ISN) • *Science World* Magazine • Websites: Gizmos, EdPuzzle, Quizizz, Quizlet, Generation Genius, IXL, Writable

Course Title: Science 6	Quarter 3:	Academic Year: 2024-2025

Essential Questions

1. How do biotic and abiotic factorial changes affect an ecosystem?
2. What is an organism's role in an ecosystem and how does it form relationships?
3. How does energy flow within an ecosystem between organisms?
4. What are the different ways the Earth, sun, and the moon interact?
5. How are objects in the solar system different from each other?
6. How do engineers answer questions and solve problems?

Unit Name	Total Days	Standards Number	Knowledge Objectives	Skills Objectives	Specific Assessments	Specific Resources
Life Science	10	MS-LS1-6 MS-LS2-1 MS-LS2-2 MS-LS2-3 MS-LS2-4 MS-LS2-5	• Biotic/Abiotic factors and their effect on homeostasis *(food, water, shelter, etc)* • Relationships in ecology through symbiosis: predation, parasitism, mutualism, commensalism • Ecological roles: producer, consumer, decomposer • Energy Flow in ecosystems: food chains, food webs, photosynthesis **Vocabulary:** ecology, organism, species, population, community, ecosystem, habitat, biotic, abiotic, homeostasis, biome, predation, parasitism, symbiosis,	1. Students should be able to identify biotic/abiotic factors within ecosystems and how changes in them affect the entire ecosystem. 2. Students should be able to explain what an organism needs to survive. 3. Students should be able to define homeostasis and give examples. 4. Students should be able to identify and explain different relationships between organisms in an ecosystem. 5. Students should be able to classify organisms into ecological roles and predict how changes in	AOWs Canvas Quizzes/Tests End of Unit Test STEM Case: Ecosystems (Gizmo) <u>Labs</u> • Food Webs Lab • Forest Ecosystem Lab (Gizmo) • Prairie Ecosystem Lab (Gizmo) • Homeostasis Lab (Gizmo)	• Canvas Textbook • Unit Objectives • Interactive Notebooks (ISN) • *Science World* Magazine • Websites: Gizmos, EdPuzzle, Quizizz, Quizlet, Boom Cards, Generation Genius, IXL, Writable

			photosynthesis, chlorophyll, producer, consumer, decomposer, food chain, food web, invasive species	these roles can affect an ecosystem. 6. Students should be able to compare and contrast different models of energy flow in ecosystems; and create their own.		
Earth & Space Science	35	MS-ESS1-1 MS-ESS1-2 MS-ESS1-3	• Gravity *(mass and distance of objects)* & inertia in space • Relationships of Sun, Moon, & Earth: tides, eclipses, day/night *(rotation)*, year *(revolution)*, seasons, moon phases • Solar System Composition: sun, moons, planets, dwarf planets, asteroids, comets, meteors • Students will research the planets and compare their characteristics. **Planets Project**: Students will research the planets in our solar system and gravity's role in their formation. **Vocabulary:** planet, satellite *(moon)*, star, dwarf planet, axis, rotation, revolution, orbit, gravity, Law of Universal Gravitation, moon phase, eclipse, tide, astronomical unit *(AU)*, terrestrial, gas	1. Students should be able to describe the role of gravity and inertia in maintaining the regular and predictable motion of celestial bodies. 2. Students should be able to explain the factors that contribute to gravitational strength. 3. Students should be able to explain and create diagrams how Earth's rotation and revolution affect time, seasons, moon phases, tides, and eclipses. 1. Students should be able to list components of the solar system. 2. Students will research inner and outer planets and compare/contrast the main differences within the planet groups and explain gravity's role in how the planet groups were formed. 3. Students should be able to demonstrate their knowledge of the planets' characteristics and effectively communicate	AOWs Canvas Quizzes/Tests End of Unit Test Labs • Phases of the Moon Lab (Gizmo) • Ocean Tides Lab (Gizmo) • Eclipse Lab (Gizmo) • Why Do We Have Seasons? (Gizmo) • Research & Essay	• Canvas Textbook • Unit Objectives • Interactive Notebooks (ISN) • *Science World* Magazine • Websites: Gizmos, EdPuzzle, Quizizz, Quizlet, Boom Cards, Generation Genius, IXL, Writable

			giant, meteor, meteorite, meteoroid, comet, asteroid, composition	their evidence in written and model form.		
Engineering	3	MS-ETS1-1 MS-ETS1-2 MS-ETS1-3 MS-ETS1-4	• Engineering Process: the steps, how to perform, evaluate solutions • Creating prototypes **Vocabulary:**brainstorm, design/prototype, build, redesign, test/evaluate, solution, constraint, probable/plausible, risk	9. Students should be able to Identify, explain, and perform steps of the Engineering & Design process. 10. Students should be able to define and identify different constraints while forming a solution to an engineering problem. 11. Students should be able to draw a detailed model (prototype) which includes labels and measurements. 12. Students should be able to compare/contrast different prototypes and evaluate how to make improvements.	STEM Challenge: Lunar Crater Challenge	• Canvas Textbook • Unit Objectives • Interactive Notebooks (ISN) • *Science World* Magazine • Websites: Gizmos, EdPuzzle, Quizizz, Quizlet, Generation Genius, IXL, Writeable

Course Title: Science 6	Quarter 4:	Academic Year: 2024-2025

Essential Questions

1. What are the two main forms of energy and how is it transformed from one form to another?
2. How can an object's movement be described and predicted over time?
3. How are energy waves transmitted through materials and space?
4. How do engineers answer questions and solve problems?

Unit Name	Total Days	Standards Number	Knowledge Objectives	Skills Objectives	Specific Assessments	Specific Resources
Physical Science	35	MS-PS4-1 MS-PS4-2	• Kinetic vs Potential Energy; classification of the	1. Students should be able to define and explain the difference between	AOWs	• Canvas Textbook • Unit Objectives • Interactive Notebooks (ISN)

		MS-PS4-3	different forms: *(elastic, gravitational, thermal, nuclear, thermal, sound, electrical, light)* • Energy conservation and transfer; both single and multiple transformations • Energy waves *(light & sound)* and their properties • Object movement (distance, position, displacement) • Introduce formulas: speed*(rate)*, velocity *(speed with direction)* **Vocabulary:**kinetic energy, potential energy, thermal energy, gravitational energy, energy transformation, Law of Conservation of Energy, position, distance, displacement, speed, velocity, waves, design process	kinetic and potential energy. 2. Students should be able to classify different forms of energy as kinetic or potential and give examples. 3. Students should be able to demonstrate and model how energy is transformed within a system. 4. Students should be able to define and demonstrate how objects move; this includes using mathematical formulas. 5. Students will investigate energy waves and explain how they move throughout materials and space.	Canvas Quizzes/Tests End of Unit Test <u>Labs</u> • Energy Transformation Lab • Energy Conversions Lab (Gizmo) • Measuring Motion Lab (Gizmo) • Distance-Time Graphs (Gizmo) • Waves Lab (Gizmo) • Sled Wars (Gizmo)	• *<u>Science World</u>* Magazine • Websites: Gizmos, EdPuzzle, Quizizz, Quizlet, Boom Cards, Generation Genius, IXL, Writable, Quizizz
Engineering	10	MS-ETS1-1 MS-ETS1-2 MS-ETS1-3 MS-ETS1-4	• Engineering Process: the steps, how to perform, evaluate solutions • Creating prototypes **Vocabulary:**brainstorm, design/prototype, build, redesign, test/evaluate, solution,	13. Students should be able to Identify, explain, and perform steps of the Engineering & Design process. 14. Students should be able to define and identify different constraints while forming a solution to an engineering problem.	STEM Challenge: Marshmallow Mover	• Canvas Textbook • Unit Objectives • Interactive Notebooks (ISN) • *<u>Science World</u>* Magazine • Websites: Gizmos, EdPuzzle, Quizizz, Quizlet, Boom Cards, Generation Genius, IXL, Writable, Quizizz

			constraint, probable/plausible, risk	15. Students should be able to draw a detailed model (prototype) which includes labels and measurements. 16. Students should be able to compare/contrast different prototypes and evaluate how to make improvements.		