PACING GUIDE SCIENCE
Grade 5

Topic	Unit	Marking Period	Number of Days
Matter and its Interaction	Physical Science	MP 1	15 days
Motion and Stability: Forces and Interaction	Earth Science	MP 1	5 days
Energy	Life Science	MP 1	7 days
From Molecules to Organisms: Structures and Processes	Life Science	MP 2	10 days
Ecosystems: Interactions, Energy and Dynamics	Life Science	MP 2	13 days
Earth's Place in the Universe	Earth Science	MP 3	14 days
Earth's Systems	Earth Science	MP 3	22 days
Earth and Human Activity	Earth Science	MP 4	20 days
Engineering Design	Physical Science	MP 4	2 days

Alpha Public School
Science Curriculum Map

Grade: 5th

Standard: 5-PS1	**Content Topic:** Matter and its Interactions

Strand	Disciplinary Core Ideas / Essential Statement	Objective/ Essential Question	Science & Engineering Practices / Skills & Lesson
5-PS1-1	---matter of any type can be subdivided into particles that are too small to see, but even then the matter still exists and can be detected by other means. A model showing that gases are made from matter particles that are too small to see and are moving freely around in space can explain many observations, including the inflation and shape of a balloon and the effects of air on larger particles or objects (PS1.A)	Develop a model to describe that matter is made of particles too small to be seen. How can I develop a model to describe that matter is made of particles too small to be seen?	---develop a model to describe phenomena
5-PS1-2	---The amount (weight) of matter is conserved when it changes form, even in transitions in which it seems to vanish (PS1.A) ---No matter what reaction or change in properties occurs, the total weight of the substances does not change (Boundary: Mass and weight are not distinguished at this grade level) (PS1.B)	Measure and graph quantities to provide evidence that regardless of the type of change that occurs when heating, cooling, or mixing substances, the total weight of matter is conserved. How can I measure and graph quantities to provide evidence that regardless of the type of change that occurs when heating, cooling, or mixing substances, the total weight of matter is conserved?	---Measure and graph quantities such as weight to address scientific and engineering questions and problems.
5-PS1-3	---Measurements of a variety of properties can be used to identify materials (Boundary: At this grade level, mass and weight are not distinguished, and no attempt is made to define the unseen particles or explain the atomic-scale mechanism of evaporation and condensation (PS1.A)	Make observations and measurements to identify materials based on their properties How can I make observations and measurements to identify materials based on their properties?	---Make observations and measurements to produce data to serve as the basis for evidence for an explanation of a phenomenon
5-PS1-4	---When two or more different substances are mixed, a new substance with different properties may be formed (PS1.B)	Conduct and investigation to determine whether the mixing of two or more substances results in new substances.	---conduct an investigation collaboratively to produce data to serve as the basis for evidence, using fair tests in which variables

		How can I conduct an investigation to determine whether the mixing of two or more substances results in new substances?	are controlled and the number of trials considered

Formative, Summative and Alternative Assessments	Benchmark Assessments	Core Instructional and Supplemental Materials (including various texts at each grade level)
Science journal Lab- Atoms are Made up of Small Particles Lab- Nothing Gets Lost- Does Matter Change? Lab- Properties of Matter Lab- What's What? Lab- A Mixture Lab-Matter Changes Teacher created; guideline 15-25 questions Alternative Assessment: Performance task / picture	Assessment Rubric (pg 26) Assessment Rubric (pg 33) Assessment Rubric (pg 44) Assessment Rubric (pg 65)	Knowing Science- Physical Science Unit 1.2 Knowing Science- Physical Science Unit 1.3 Knowing Science- Physical Science Unit 1.4 Knowing Science- Physical Science Unit 1.5 Knowing Science Literature Knowing Science Vocabulary Flashcards Mystery Science Science Fusion Holt: Science

Technology	Crosscutting Concepts / Interdisciplinary Connections across grade levels and content areas (at least 1)
Mystery Science Chemical Magic mysteries 1,2,5 Mystery Science Chemical Magic mystery 3 Mystery Science Chemical Magic mystery 4 Google Classroom- Internet Research	**ELA/Literacy – RI.5.7** Draw on information from multiple print or digital sources, demonstrating the ability to locate an answer to a question quickly or to solve a problem efficiently. (5-PS1- 1) W.5.7 Conduct short research projects that use several sources to build knowledge through investigation of different aspects of a topic. (5-PS1-2),(5-PS1-3),(5-PS1-4) W.5.8 Recall relevant information from experiences or gather relevant information from print and digital sources; summarize or paraphrase information in notes and finished work, and provide a list of sources. (5-PS1-2),(5-PS1-3),(5-PS1-4) W.5.9 Draw evidence from literary or informational texts to support analysis, reflection, and research. (5-PS1-2),(5-PS1-3),(5-PS1-4)

	Mathematics – MP.2 Reason abstractly and quantitatively. (5-PS1-1),(5-PS1-2),(5-PS1-3) MP.4 Model with mathematics. (5-PS1-1),(5-PS1-2),(5-PS1-3) MP.5 Use appropriate tools strategically. (5-PS1-2),(5-PS1-3) 5.NBT.A.1 Explain patterns in the number of zeros of the product when multiplying a number by powers of 10, and explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. Use whole-number exponents to denote powers of 10. (5-PS1-1) 5.NF.B.7 Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions. (5-PS1-1) 5.MD.A.1 Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real-world problems. (5-PS1-2) 5.MD.C.3 Recognize volume as an attribute of solid figures and understand concepts of volume measurement. (5-PS1-1) 5.MD.C.4 Measure volumes by counting unit cubes, using cubic cm, cubic in, cubic ft, and improvised units. (5-PS1-1)

Differentiation (IEPs / 504s)	Differentiation (ELL)	Differentiation (G &T)
Visual aids Sentence Frames Modeling Anchor charts Modify rubric Teacher directed grouping Chunk learning at teacher discretion Re-read text at teacher discretion Text in auditory format	Visual aids Sentence Frames Modeling Anchor charts Modify rubric Teacher directed grouping Chunk learning at teacher discretion Re-read text at teacher discretion Text in auditory format Pre-teach vocabulary Non-linguistic cues Manipulatives Graphic organizers Use of educational websites: www.khanacademy.org www.colorincolorado.org/	Independent research projects Advanced texts http://education.jlab.org/vocabhangman/ Science content vocabulary hangman http://kids.nationalgeographic.com/ National Geographic online http://www.bbc.co.uk/schools/scienceclips/ages/10_11/science_10_11.shtml Interactive science activities http://classroom.jc-schools.net/sci-units/plants-animals.htm#Interactive

21st Century Education	Career Education
THEMES: Global Awareness Financial, Economic, Business and Entrepreneurial Literacy Civic Literacy Health Literacy SKILLS: Creativity and Innovation Critical Thinking and Problem Solving Communication and Collaboration Information Literacy Media Literacy ICT Literacy Life and Career Skills	Career Ready Practices describe the career-ready skills that all educators in all content areas should seek to develop in their students. They are practices that have been linked to increase college, career, and life success. Career Ready Practices should be taught and reinforced in all career exploration and preparation programs with increasingly higher levels of complexity and expectation as a student advances through a program of study. CRP1. Act as a responsible and contributing citizen and employee. CRP2. Apply appropriate academic and technical skills. CRP3. Attend to personal health and financial well-being. CRP4. Communicate clearly and effectively and with reason. CRP5. Consider the environmental, social and economic impacts of decisions. CRP6. Demonstrate creativity and innovation. CRP7. Employ valid and reliable research strategies. CRP8. Utilize critical thinking to make sense of problems and persevere in solving them. CRP9. Model integrity, ethical leadership and effective management. CRP10. Plan education and career paths aligned to personal goals. CRP11. Use technology to enhance productivity. CRP12. Work productively in teams while using cultural global competence.

Alpha Public School
Science Curriculum Map

Standard: 5-PS2	**Content Topic:** Motion and Stability: Forces and Interaction

Strand	Disciplinary Core Ideas / Essential Statement	Objective / Essential Question	Science & Engineering Practices / Skills & Lesson
5-PS2-1	---The gravitational force of Earth acting on an object near Earth's surface pulls that object toward the planet's center (PS2.B)	Support an argument that the gravitational force exerted by Earth on objects is directed down How can I support an argument that the gravitational force exerted by Earth on objects is directed down?.	---support an argument with evidence, data, or a model

Formative, Summative and Alternative Assessments	Benchmark Assessments	Core Instructional and Supplemental Materials (including various texts at each grade level)
Science journal Lab- Bungee Jumpers Teacher created; guideline 15-25 questions Alternative Assessment: Performance task / picture	Assessment Rubric (pg 177)	Knowing Science- Earth Science Unit 2.1 Knowing Science Literature Knowing Science Vocabulary Flashcards Mystery Science Science Fusion Holt: Science

Technology	Crosscutting Concepts / Interdisciplinary Connections across grade levels and content areas (at least 1)
Mystery Science Spaceship Earth mystery 7 Google Classroom- Internet Research	---cause and effect relationships are routinely identified and used to explain change **ELA/Literacy – RI.5.1** Quote accurately from a text when explaining what the text says explicitly and when drawing inferences from the text. (5-PS2-1) RI.5.9 Integrate information from several texts on the same topic in order to write or speak about the subject knowledgeably. (5-PS2-1) W.5.1 Write opinion pieces on topics or texts, supporting a point of view with reasons and information. (5-PS2-1)

Alpha Public School
Science Curriculum Map

Differentiation (IEPs / 504s)	Differentiation (ELL)	Differentiation (G &T)
Visual aids Sentence Frames Modeling Anchor charts Modify rubric Teacher directed grouping Chunk learning at teacher discretion Re-read text at teacher discretion Text in auditory format	Visual aids Sentence Frames Modeling Anchor charts Modify rubric Teacher directed grouping Chunk learning at teacher discretion Re-read text at teacher discretion Text in auditory format Pre-teach vocabulary Non-linguistic cues Manipulatives Graphic organizers Use of educational websites: www.khanacademy.org www.colorincolorado.org/	Independent research projects Advanced texts http://education.jlab.org/vocabhangman/ Science content vocabulary hangman http://kids.nationalgeographic.com/ National Geographic online http://www.bbc.co.uk/schools/scienceclips/ages/10_11/science_10_11.shtml Interactive science activities http://classroom.jc-schools.net/sci-units/plants-animals.htm#Interactive

21st Century Education	Career Education
THEMES: Global Awareness Financial, Economic, Business and Entrepreneurial Literacy Civic Literacy Health Literacy SKILLS: Creativity and Innovation Critical Thinking and Problem Solving Communication and Collaboration Information Literacy Media Literacy ICT Literacy Life and Career Skills	Career Ready Practices describe the career-ready skills that all educators in all content areas should seek to develop in their students. They are practices that have been linked to increase college, career, and life success. Career Ready Practices should be taught and reinforced in all career exploration and preparation programs with increasingly higher levels of complexity and expectation as a student advances through a program of study. CRP1. Act as a responsible and contributing citizen and employee. CRP2. Apply appropriate academic and technical skills. CRP3. Attend to personal health and financial well-being. CRP4. Communicate clearly and effectively and with reason. CRP5. Consider the environmental, social and economic impacts of decisions. CRP6. Demonstrate creativity and innovation. CRP7. Employ valid and reliable research strategies. CRP8. Utilize critical thinking to make sense of problems and persevere in solving them. CRP9. Model integrity, ethical leadership and effective management. CRP10. Plan education and career paths aligned to personal goals. CRP11. Use technology to enhance productivity. CRP12. Work productively in teams while using cultural global competence.

Alpha Public School
Science Curriculum Map

Standard: 5-PS3	**Content Topic:** Energy

Strand	Disciplinary Core Ideas / Essential Statement	Objective / Essential Question	Science & Engineering Practices / Skills & Lesson
5-PS3-1	---The energy released from food was once energy from the sun that was captured by plants in the chemical process that forms plant matter (from air and water) (PS3.D) ---Food provides animals with the materials they need for body repair and growth and the energy they need to maintain body warmth and for motion (LS1.C)	Use models to describe that energy in animals' food (used for body repair, growth, motion, and to maintain body warmth) was once energy from the sun. How can I use models to describe that energy in animals' food (used for body repair, growth, motion, and to maintain body warmth) was once energy from the sun?	- construct and interpret graphical displays of data to identify linear and nonlinear relationships

Formative, Summative and Alternative Assessments	Benchmark Assessments	Core Instructional and Supplemental Materials (including various texts at each grade level)
Science journal Lab- Sorting Cards Lab- Interdependency Lab- The Photosynthesis Equation Lab- Seeing Green Teacher created; guideline 15-25 questions Alternative Assessment: Performance Task- make a model	Assessment Rubric (pg 19)	Knowing Science- Life Science Unit 1.1- activities 1-4 Knowing Science Literature Knowing Science Vocabulary Flashcards Mystery Science Holt: Science Science Fusion

Technology	Crosscutting Concepts / Interdisciplinary Connections across grade levels and content areas (at least 1)
Mystery Science Web of Life mystery 6 Google Classroom- Internet Research	---energy can be transferred in various ways and between objects **ELA/Literacy – RI.5.7** Draw on information from multiple print or digital sources, demonstrating the ability to locate an answer to a question quickly or to solve a problem efficiently. (5-PS3- 1) SL.5.5 Include multimedia components (e.g., graphics, sound) and visual displays in presentations when appropriate to enhance the development of main ideas or themes. (5- PS3-1)

Differentiation (IEPs / 504s)	Differentiation (ELL)	Differentiation (G &T)
Visual aids Sentence Frames Modeling Anchor charts Modify rubric Teacher directed grouping Chunk learning at teacher discretion Re-read text at teacher discretion Text in auditory format	Visual aids Sentence Frames Modeling Anchor charts Modify rubric Teacher directed grouping Chunk learning at teacher discretion Re-read text at teacher discretion Text in auditory format Pre-teach vocabulary Non-linguistic cues Manipulatives Graphic organizers Use of educational websites: www.khanacademy.org www.colorincolorado.org/	Independent research projects Advanced texts http://education.jlab.org/vocabhangman/ Science content vocabulary hangman http://kids.nationalgeographic.com/ National Geographic online http://www.bbc.co.uk/schools/scienceclips/ages/10_11/science_10_11.shtml Interactive science activities http://classroom.jc-schools.net/sci-units/plants-animals.htm#Interactive

21st Century Education	Career Education
THEMES: Global Awareness Financial, Economic, Business and Entrepreneurial Literacy Civic Literacy Health Literacy SKILLS: Creativity and Innovation Critical Thinking and Problem Solving Communication and Collaboration Information Literacy Media Literacy ICT Literacy Life and Career Skills	Career Ready Practices describe the career-ready skills that all educators in all content areas should seek to develop in their students. They are practices that have been linked to increase college, career, and life success. Career Ready Practices should be taught and reinforced in all career exploration and preparation programs with increasingly higher levels of complexity and expectation as a student advances through a program of study. CRP1. Act as a responsible and contributing citizen and employee. CRP2. Apply appropriate academic and technical skills. CRP3. Attend to personal health and financial well-being. CRP4. Communicate clearly and effectively and with reason. CRP5. Consider the environmental, social and economic impacts of decisions. CRP6. Demonstrate creativity and innovation. CRP7. Employ valid and reliable research strategies. CRP8. Utilize critical thinking to make sense of problems and persevere in solving them. CRP9. Model integrity, ethical leadership and effective management. CRP10. Plan education and career paths aligned to personal goals. CRP11. Use technology to enhance productivity. CRP12. Work productively in teams while using cultural global competence.

Alpha Public School
Science Curriculum Map

Standard: 5-LS1	**Content Topic:** From Molecules to Organisms: Structures and Processes

Strand	Disciplinary Core Ideas / Essential Statement	Objective / Essential Question	Science & Engineering Practices / Skills & Lesson
5-LS1-1	---plants acquire their material for growth chiefly from air and water (LS1.C)	Support an argument that plants get the materials they need for growth chiefly from air and water. How can I support an argument that plants get the materials they need for growth chiefly from air and water	---support an argument with evidence, data, or a model

Formative, Summative and Alternative Assessments	Benchmark Assessments	Core Instructional and Supplemental Materials (including various texts at each grade level)
Science journal Lab- Food Webs Lab- Food Web Cards Lab- Cleanup crew Lab- Rotten Bananas Lab- Energy and LImiting Factors Limiting Factors game Teacher created; guideline 15-25 questions Alternative Assessment- Performance Task	Assessment Rubric (pg 19)	Knowing Science- Life Science Unit 1.1 (activities 5-10) Knowing Science Literature Knowing Science Vocabulary Flashcards Holt Science Science Fusion

Technology	Crosscutting Concepts / Interdisciplinary Connections across grade levels and content areas (at least 1)
Mystery Science Web of Life mysteries 2,4 Google Classroom- Internet Research	---matter is transported into, out of, and within systems **ELA/Literacy – RI.5.1** Quote accurately from a text when explaining what the text says explicitly and when drawing inferences from the text. (5-LS1-1) RI.5.9

	Integrate information from several texts on the same topic in order to write or speak about the subject knowledgeably. (5-LS1-1) W.5.1 Write opinion pieces on topics or texts, supporting a point of view with reasons and information. (5-LS1-1) **Mathematics – MP.2** Reason abstractly and quantitatively. (5-LS1-1) MP.4 Model with mathematics. (5-LS1-1) MP.5 Use appropriate tools strategically. (5-LS1-1) 5.MD.A.1 Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real world problems. (5-LS1-1)

Differentiation (IEPs / 504s)	Differentiation (ELL)	Differentiation (G &T)
Visual aids Sentence Frames Modeling Anchor charts Modify rubric Teacher directed grouping Chunk learning at teacher discretion Re-read text at teacher discretion Text in auditory format	Visual aids Sentence Frames Modeling Anchor charts Modify rubric Teacher directed grouping Chunk learning at teacher discretion Re-read text at teacher discretion Text in auditory format Pre-teach vocabulary Non-linguistic cues Manipulatives Graphic organizers Use of educational websites: www.khanacademy.org www.colorincolorado.org/	Independent research projects Advanced texts http://education.jlab.org/vocabhangman/ Science content vocabulary hangman http://kids.nationalgeographic.com/ National Geographic online http://www.bbc.co.uk/schools/scienceclips/ages/10_11/science_10_11.shtml Interactive science activities http://classroom.jc-schools.net/sci-units/plants-animals.htm#Interactive

Alpha Public School
Science Curriculum Map

21st Century Education	Career Education
THEMES: Global Awareness Financial, Economic, Business and Entrepreneurial Literacy Civic Literacy Health Literacy SKILLS: Creativity and Innovation Critical Thinking and Problem Solving Communication and Collaboration Information Literacy Media Literacy ICT Literacy Life and Career Skills	Career Ready Practices describe the career-ready skills that all educators in all content areas should seek to develop in their students. They are practices that have been linked to increase college, career, and life success. Career Ready Practices should be taught and reinforced in all career exploration and preparation programs with increasingly higher levels of complexity and expectation as a student advances through a program of study. CRP1. Act as a responsible and contributing citizen and employee. CRP2. Apply appropriate academic and technical skills. CRP3. Attend to personal health and financial well-being. CRP4. Communicate clearly and effectively and with reason. CRP5. Consider the environmental, social and economic impacts of decisions. CRP6. Demonstrate creativity and innovation. CRP7. Employ valid and reliable research strategies. CRP8. Utilize critical thinking to make sense of problems and persevere in solving them. CRP9. Model integrity, ethical leadership and effective management. CRP10. Plan education and career paths aligned to personal goals. CRP11. Use technology to enhance productivity. CRP12. Work productively in teams while using cultural global competence.

Alpha Public School
Science Curriculum Map

Standard: 5-LS2	**Content Topic:** Ecosystems: Interactions, Energy and Dynamics

Strand	Disciplinary Core Ideas / Essential Statement	Objective / Essential Question	Science & Engineering Practices / Skills & Lesson
5-LS2-1	---The food of almost any kinds of animal can be traced back to plants. Organisms are related in food webs in which some animals eat plants for food and other animals eat the animals that eat the plants. Some organisms, such as fungi and bacteria, break down dead organisms (both plants or plants parts and animals) and therefore operate as "decomposers." Decomposition eventually restores (recycles) some materials back to the soil. Organisms can survive only in environments in which their particular needs are met. A healthy ecosystem is one in which multiple species of different types are each able to meet their needs in a relatively stable web of life. Newly introduced species can damage the balance of an ecosystem (LS2.A) ----Matter cycles between the air and soil and among plants, animals, and microbes as these organisms live and die. Organisms obtain gases, and water, from the environment, and release waste matter (gas, liquid, or solid) back into the environment (LS2.B)	Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment How can I develop a model to describe the movement of matter among plants, animals, decomposers, and the environment?	---develop a model to describe phenomena

Formative, Summative and Alternative Assessments	Benchmark Assessments	Core Instructional and Supplemental Materials (including various texts at each grade level)
Science journal Ecosystem Trading Cards Teacher created; guideline 15-25 questions Alternative Assessment: Performance task: Draw a model	Assessment Rubric (pg 19)	Knowing Science- Life Science Unit 1.1 (activity 11) Knowing Science Literature Knowing Science Vocabulary Flashcards Mystery Science Holt: Science Science Fusion

Technology	Crosscutting Concepts / Interdisciplinary Connections across grade levels and content areas (at least 1)
Mystery Science Web of Life mysteries 1-5	---A system can be described in terms of its components and their interactions. ---Science explanations describe the mechanisms for natural events. **ELA/Literacy – RI.5.7** Draw on information from multiple print or digital sources, demonstrating the ability to locate an answer to a question quickly or to solve a problem efficiently. (5-LS2- 1) SL.5.5 Include multimedia components (e.g., graphics, sound) and visual displays in presentations when appropriate to enhance the development of main ideas or themes. (5- LS2-1) **Mathematics – MP.2** Reason abstractly and quantitatively. (5-LS2-1) MP.4 Model with mathematics. (5-LS2-1)

Differentiation (IEPs / 504s)	Differentiation (ELL)	Differentiation (G &T)
Visual aids Sentence Frames Modeling Anchor charts Modify rubric Teacher directed grouping Chunk learning at teacher discretion Re-read text at teacher discretion Text in auditory format	Visual aids Sentence Frames Modeling Anchor charts Modify rubric Teacher directed grouping Chunk learning at teacher discretion Re-read text at teacher discretion Text in auditory format Pre-teach vocabulary Non-linguistic cues Manipulatives Graphic organizers Use of educational websites: www.khanacademy.org www.colorincolorado.org/	Independent research projects Advanced texts http://education.jlab.org/vocabhangman/ Science content vocabulary hangman http://kids.nationalgeographic.com/ National Geographic online http://www.bbc.co.uk/schools/scienceclips/ages/10_11/science_10_11.shtml Interactive science activities http://classroom.jc-schools.net/sci-units/plants-animals.htm#Interactive

21st Century Education	Career Education
THEMES: Global Awareness Financial, Economic, Business and Entrepreneurial Literacy Civic Literacy Health Literacy SKILLS: Creativity and Innovation Critical Thinking and Problem Solving Communication and Collaboration Information Literacy Media Literacy ICT Literacy Life and Career Skills	Career Ready Practices describe the career-ready skills that all educators in all content areas should seek to develop in their students. They are practices that have been linked to increase college, career, and life success. Career Ready Practices should be taught and reinforced in all career exploration and preparation programs with increasingly higher levels of complexity and expectation as a student advances through a program of study. CRP1. Act as a responsible and contributing citizen and employee. CRP2. Apply appropriate academic and technical skills. CRP3. Attend to personal health and financial well-being. CRP4. Communicate clearly and effectively and with reason. CRP5. Consider the environmental, social and economic impacts of decisions. CRP6. Demonstrate creativity and innovation. CRP7. Employ valid and reliable research strategies. CRP8. Utilize critical thinking to make sense of problems and persevere in solving them. CRP9. Model integrity, ethical leadership and effective management. CRP10. Plan education and career paths aligned to personal goals. CRP11. Use technology to enhance productivity. CRP12. Work productively in teams while using cultural global competence.

Alpha Public School
Science Curriculum Map

Standard: 5-ESS1	**Content Topic:** Earth's Place in the Universe

Strand	Disciplinary Core Ideas / Essential Statement	Objective/ Essential Question	Science & Engineering Practices / Skills & Lesson
5-ESS1-1	---The sun is a star that appears larger and brighter than other stars because it is closer. Stars range greatly in their distance from Earth (ESS1.A)	---Support an argument that differences in the apparent brightness of the sun compared to other stars is due to their relative distances from Earth. How can I support an argument that differences in the apparent brightness of the sun compared to other stars is due to their relative distances from Earth	---support and argument with evidence, data, or a model
5-ESS1-2	---the orbits of Earth around the sun and of the moon around Earth, together with the rotation of Earth about an axis between its North and South poles, causes observable patterns. These include day and night; daily changes in the length and direction of shadows; and different positions of the sun, moon, and stars at different times of the day, month, and year (ESS1.B)	---Represent data in graphical displays to reveal patterns of daily changes in length and direction of shadows, day and night, and the seasonal appearance of some stars in the night sky How can I represent data in graphical displays to reveal patterns of daily changes in length and direction of shadows, day and night, and the seasonal appearance of some stars in the night sky?	---represent data in graphical displays (bar graphs, pictographs and / or pie charts) to reveal patterns that indicate relationships

Formative, Summative and Alternative Assessments	Benchmark Assessments	Core Instructional and Supplemental Materials (including various texts at each grade level)
Science journal Lab- Staring the Sun Lab- Sagittarius Star Cloud Lab- Relative Star Sizes and Colors Lab- Our Sun is a Star Lab- What is a Light Year Lab-Building a Model	Assessment Rubric (pg 185) Assessment Rubric (pg 242) Assessment Rubric (pg 208	Knowing Science- Earth Science Unit 2.2 and 2.4 Knowing Science- 2.3 Knowing Science Literature Knowing Science Vocabulary Flashcards Mystery Science Holt: Science

Lab- Earth's Travels Lab- Sunrise, sunset Lab- Shadows and Time Lab- The Moon Lab- Lunar Calendar Moon Phase Project Lab- Constellations Lab- Making an Astrolabe Teacher created; guideline 15-25 questions Alternative Assessments: Performance task- graph		Science Fusion

Technology	Crosscutting Concepts / Interdisciplinary Connections across grade levels and content areas (at least 1)
Mystery Science Spaceship Earth mysteries 1-6 Google Classroom- Internet Research	---natural objects exist from the very small to the immensely large ---similarities and differences in patterns can be used to sort, classify, communicate and analyze simple rates of change for natural phenomena **ELA/Literacy – RI.5.1** Quote accurately from a text when explaining what the text says explicitly and when drawing inferences from the text. (5-ESS1-1) RI.5.7 Draw on information from multiple print or digital sources, demonstrating the ability to locate an answer to a question quickly or to solve a problem efficiently. (5-ESS1-1) RI.5.8 Explain how an author uses reasons and evidence to support particular points in a text, identifying which reasons and evidence support which point(s). (5-ESS1-1) RI.5.9 Integrate information from several texts on the same topic in order to write or speak about the subject knowledgeably. (5-ESS1-1) W.5.1 Write opinion pieces on topics or texts, supporting a point of view with reasons and information. (5-ESS1-1) SL.5.5 Include multimedia components (e.g., graphics, sound) and visual displays in presentations when appropriate to enhance the development of main ideas or themes. (5- ESS1-2) **Mathematics – MP.2** Reason abstractly and quantitatively. (5-ESS1-1),(5-ESS1-2) MP.4

	Model with mathematics. (5-ESS1-1),(5-ESS1-2) 5.NBT.A.2 Explain patterns in the number of zeros of the product when multiplying a number by powers of 10, and explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. Use whole-number exponents to denote powers of 10. (5-ESS1-1) 5.G.A.2 Represent real world and mathematical problems by graphing points in the first quadrant of the coordinate plane, and interpret coordinate values of points in the context of the situation. (5-ESS1-2)

Differentiation (IEPs / 504s)	Differentiation (ELL)	Differentiation (G &T)
Visual aids Sentence Frames Modeling Anchor charts Modify rubric Teacher directed grouping Chunk learning at teacher discretion Re-read text at teacher discretion Text in auditory format	Visual aids Sentence Frames Modeling Anchor charts Modify rubric Teacher directed grouping Chunk learning at teacher discretion Re-read text at teacher discretion Text in auditory format Pre-teach vocabulary Non-linguistic cues Manipulatives Graphic organizers Use of educational websites: www.khanacademy.org www.colorincolorado.org/	Independent research projects Advanced texts http://education.jlab.org/vocabhangman/ Science content vocabulary hangman http://kids.nationalgeographic.com/ National Geographic online http://www.bbc.co.uk/schools/scienceclips/ages/10_11/science_10_11.shtml Interactive science activities http://classroom.jc-schools.net/sci-units/plants-animals.htm#Interactive

21st Century Education	Career Education
THEMES: Global Awareness Financial, Economic, Business and Entrepreneurial Literacy Civic Literacy Health Literacy SKILLS:	Career Ready Practices describe the career-ready skills that all educators in all content areas should seek to develop in their students. They are practices that have been linked to increase college, career, and life success. Career Ready Practices should be taught and reinforced in all career exploration and preparation programs with increasingly higher levels of complexity and expectation as a student advances through a program of study. CRP1. Act as a responsible and contributing citizen and employee. CRP2. Apply appropriate academic and technical skills.

Creativity and Innovation Critical Thinking and Problem Solving Communication and Collaboration Information Literacy Media Literacy ICT Literacy Life and Career Skills	CRP3. Attend to personal health and financial well-being. CRP4. Communicate clearly and effectively and with reason. CRP5. Consider the environmental, social and economic impacts of decisions. CRP6. Demonstrate creativity and innovation. CRP7. Employ valid and reliable research strategies. CRP8. Utilize critical thinking to make sense of problems and persevere in solving them. CRP9. Model integrity, ethical leadership and effective management. CRP10. Plan education and career paths aligned to personal goals. CRP11. Use technology to enhance productivity. CRP12. Work productively in teams while using cultural global competence.

Alpha Public School
Science Curriculum Map

Standard: 5-ESS2	**Content Topic:** Earth's Systems

Strand	Disciplinary Core Ideas / Essential Statement	Objective / Essential Question	Science & Engineering Practices / Skills & Lesson
5-ESS1	---Earth's major systems are the geosphere (solid and molten rock, soil, and sediments), the hydrosphere (water and ice), the atmosphere (air), and the biosphere (living things, including humans). These systems interact in multiple ways to affect Earth's surface materials and processes. The ocean supports a variety of ecosystems and organisms, shapes landforms, and influences climate. Winds and clouds in the atmosphere interact with the landforms to determine patterns of weather (ESS2.A)	Develop a model using an example to describe the ways the geosphere, biosphere, hydrosphere, and / or atmosphere interact How can I develop a model using an example to describe ways the geosphere, biosphere, hydrosphere, and/or atmosphere interact?	---develop a model using an example to describe a scientific principle
5-ESS2-2	---Nearly all of Earth's available water is in the ocean. Most fresh water is in glaciers or underground; only a tiny fraction is in streams, lakes, wetlands, and the atmosphere (ESS2.C)	Describe and graph the amounts of salt water and fresh water in various reservoirs to provide evidence about the distribution of water on Earth How can I describe and graph the amounts of saltwater and fresh water in various reservoirs to provide evidence about the distribution of water on Earth?	---describe and graph quantities such as area and volume to address scientific questions

Formative, Summative and Alternative Assessments	Benchmark Assessments	Core Instructional and Supplemental Materials (including various texts at each grade level)
Science journal Lab- The School System Lab- System Folktales Lab- Static and Dynamic Systems Lab- Dynamic Living Systems	Assessment Rubric (pg 18) Assessment Rubric (pg 37) Assessment Rubric (pg 62) Make a Circle Graph	Knowing Science- Earth Science Unit 1.1, 1.2 and 1.3 Knowing Science Literature Knowing Science Vocabulary Flashcards Mystery Science

Lab- Earth's Systems Part 1 Lab- Earth's Systems Part 2 Lab- Local Spheres Lab- Illustrating Connections Lab- The Hydrosphere Lab- Ocean Layers Writing a Summary Teacher created; guideline 15-25 questions Alternative Assessment: Performance task- graph		Holt: Science Science Fusion Better Lessons-Hydrosphere, Water Distribution on Earth

Technology	Crosscutting Concepts / Interdisciplinary Connections across grade levels and content areas (at least 1)
Mystery Science Watery Planet mysteries 1,2 Video Mystery Science Watery Planet mysteries 3,4 Google Classroom- Internet Research	---A system can be described in terms of its components and their interactions ---Standard units are used to measure and describe physical quantities such as weight and volume **ELA/Literacy – RI.5.7** Draw on information from multiple print or digital sources, demonstrating the ability to locate an answer to a question quickly or to solve a problem efficiently. (5-ESS2- 1),(5-ESS2-2) W.5.8 Recall relevant information from experiences or gather relevant information from print and digital sources; summarize or paraphrase information in notes and finished work, and provide a list of sources. (5-ESS2-2) SL.5.5 Include multimedia components (e.g., graphics, sound) and visual displays in presentations when appropriate to enhance the development of main ideas or themes. (5- ESS2-1),(5-ESS2-2) **Mathematics – MP.2** Reason abstractly and quantitatively. (5-ESS2-1),(5-ESS2-2) MP.4 Model with mathematics. (5-ESS2-1),(5-ESS2-2) 5.G.A.2 Represent real world and mathematical problems by graphing points in the first quadrant of the coordinate plane, and interpret coordinate values of points in the context of the situation. (5-ESS2-1)

Alpha Public School
Science Curriculum Map

Differentiation (IEPs / 504s)	Differentiation (ELL)	Differentiation (G &T)
Visual aids Sentence Frames Modeling Anchor charts Modify rubric Teacher directed grouping Chunk learning at teacher discretion Re-read text at teacher discretion Text in auditory format	Visual aids Sentence Frames Modeling Anchor charts Modify rubric Teacher directed grouping Chunk learning at teacher discretion Re-read text at teacher discretion Text in auditory format Pre-teach vocabulary Non-linguistic cues Manipulatives Graphic organizers Use of educational websites: www.khanacademy.org www.colorincolorado.org/	Independent research projects Advanced texts http://education.jlab.org/vocabhangman/ Science content vocabulary hangman http://kids.nationalgeographic.com/ National Geographic online http://www.bbc.co.uk/schools/scienceclips/ages/10_11/science_10_11.shtml Interactive science activities http://classroom.jc-schools.net/sci-units/plants-animals.htm#Interactive

21st Century Education	Career Education
THEMES: Global Awareness Financial, Economic, Business and Entrepreneurial Literacy Civic Literacy Health Literacy SKILLS: Creativity and Innovation Critical Thinking and Problem Solving Communication and Collaboration Information Literacy Media Literacy ICT Literacy Life and Career Skills	Career Ready Practices describe the career-ready skills that all educators in all content areas should seek to develop in their students. They are practices that have been linked to increase college, career, and life success. Career Ready Practices should be taught and reinforced in all career exploration and preparation programs with increasingly higher levels of complexity and expectation as a student advances through a program of study. CRP1. Act as a responsible and contributing citizen and employee. CRP2. Apply appropriate academic and technical skills. CRP3. Attend to personal health and financial well-being. CRP4. Communicate clearly and effectively and with reason. CRP5. Consider the environmental, social and economic impacts of decisions. CRP6. Demonstrate creativity and innovation. CRP7. Employ valid and reliable research strategies. CRP8. Utilize critical thinking to make sense of problems and persevere in solving them. CRP9. Model integrity, ethical leadership and effective management. CRP10. Plan education and career paths aligned to personal goals. CRP11. Use technology to enhance productivity. CRP12. Work productively in teams while using cultural global competence.

Alpha Public School
Science Curriculum Map

Standard: 5-ESS3	**Content Topic:** Earth and Human Activity

Strand	Disciplinary Core Ideas / Essential Statement	Objective / Essential Question	Science & Engineering Practices / Skills & Lesson
5-ESS3-1	---Human activities in agriculture, industry, and everyday life have had major effects on the land, vegetation, streams, ocean, air and even outer space. But individuals and communities are doing things to help protect Earth's resources and environments (ESS3.C)	Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources, environment, and address climate change issues How can I obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment?	---obtain and combine information from books and / or other reliable media to explain phenomena or solutions to a design problem

Formative, Summative and Alternative Assessments	Benchmark Assessments	Core Instructional and Supplemental Materials (including various texts at each grade level)
Science journal Lab- Earth's Material Resources Material Resource Notes Lab- Earth's Energy Resources Energy Resource Notes Lab- The Problem with Trash Lab- Lunchtime at the Lanfil Part 1 Lab- Lunchtime at the Lanfil Part 2 Lab- Pollution Lab- Water Treatment Lab- Protecting our Resources Lab- 4 R's Thinking Lab- Plastic Hunt Lab- Oil Spill Resource Project	Assessment Rubric (pg 113)	Knowing Science- Earth Science Unit 1.5 Knowing Science Literature Knowing Science Vocabulary Flashcards Mystery Science Holt: Science Science Fusion

Teacher created; guideline 15-25 questions Alternative Assessment: Performance task		

Technology	Crosscutting Concepts / Interdisciplinary Connections across grade levels and content areas (at least 1)
Mystery Science Watery Planet mystery 2 Google Classroom- Internet Research	---a system can be described in terms of its components and their interactions ----Science findings are limited to questions that can be answered with empirical evidence **ELA/Literacy – RI.5.1** Quote accurately from a text when explaining what the text says explicitly and when drawing inferences from the text. (5-ESS3-1) RI.5.7 Draw on information from multiple print or digital sources, demonstrating the ability to locate an answer to a question quickly or to solve a problem efficiently.(5-ESS3-1) RI.5.9 Integrate information from several texts on the same topic in order to write or speak about the subject knowledgeably. (5-ESS3-1) W.5.8 Recall relevant information from experiences or gather relevant information from print and digital sources; summarize or paraphrase information in notes and finished work, and provide a list of sources. (5-ESS3-1) W.5.9 Draw evidence from literary or informational texts to support analysis, reflection, and research. (5-ESS3-1) **Mathematics – MP.2** Reason abstractly and quantitatively. (5-ESS3-1) MP.4 Model with mathematics. (5-ESS3-1)

Differentiation (IEPs / 504s)	Differentiation (ELL)	Differentiation (G &T)
Visual aids Sentence Frames Modeling Anchor charts Modify rubric Teacher directed grouping	Visual aids Sentence Frames Modeling Anchor charts Modify rubric Teacher directed grouping	Independent research projects Advanced texts http://education.jlab.org/vocabhangman/ Science content vocabulary hangman http://kids.nationalgeographic.com/ National Geographic online

Chunk learning at teacher discretion Re-read text at teacher discretion Text in auditory format	Chunk learning at teacher discretion Re-read text at teacher discretion Text in auditory format Pre-teach vocabulary Non-linguistic cues Manipulatives Graphic organizers Use of educational websites: www.khanacademy.org www.colorincolorado.org/	http://www.bbc.co.uk/schools/scienceclips/ages/10_11/science_10_11.shtml Interactive science activities http://classroom.jc-schools.net/sci-units/plants-animals.htm#Interactive

21st Century Education	Career Education
THEMES: Global Awareness Financial, Economic, Business and Entrepreneurial Literacy Civic Literacy Health Literacy SKILLS: Creativity and Innovation Critical Thinking and Problem Solving Communication and Collaboration Information Literacy Media Literacy ICT Literacy Life and Career Skills	Career Ready Practices describe the career-ready skills that all educators in all content areas should seek to develop in their students. They are practices that have been linked to increase college, career, and life success. Career Ready Practices should be taught and reinforced in all career exploration and preparation programs with increasingly higher levels of complexity and expectation as a student advances through a program of study. CRP1. Act as a responsible and contributing citizen and employee. CRP2. Apply appropriate academic and technical skills. CRP3. Attend to personal health and financial well-being. CRP4. Communicate clearly and effectively and with reason. CRP5. Consider the environmental, social and economic impacts of decisions. CRP6. Demonstrate creativity and innovation. CRP7. Employ valid and reliable research strategies. CRP8. Utilize critical thinking to make sense of problems and persevere in solving them. CRP9. Model integrity, ethical leadership and effective management. CRP10. Plan education and career paths aligned to personal goals. CRP11. Use technology to enhance productivity. CRP12. Work productively in teams while using cultural global competence.

Alpha Public School
Science Curriculum Map

Standard: 3-5 ETS1	**Content Topic:** Engineering Design

Strand	Disciplinary Core Ideas / Essential Statement	Objective / Essential Question	Science & Engineering Practices / Skills & Lesson
3-5-ETS1-1	---possible solutions to a problem are limited by available materials and resources (constraints). The success of a designed solution is determined by considering the desired features of a solution (criteria). Different proposals for solutions can be compared on the basis of how well each one meets the specified criteria for success or how well each takes the constraints into account (ETS1.A)	Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost How can I define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost?	---define a simple design problem that can be solved through the development of an object, tool, process, or system and includes several criteria for success and constraints on materials, time, or cost
3-5-ETS1-2	---Research on a problem, such as climate change, should be carried out before beginning to design a solution. Testing a solution involves investigating how well it performs under a range of likely conditions (ETS1.B) ---at whatever stage, communicating with peers about proposed solutions is an important part of the design process, and shared ideas can lead to improved designs (ETS1.B)	Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem	---generate and compare multiple solutions to a problem based on how well they meet the criteria and constraints of the design problem
3-5-ETS1-3	---tests are often designed to identify failure points or difficulties, which suggest the elements of the design that need to be improved (ETS1.B) ---different solutions need to be tested in order to determine which of them best solves the problem, given the criteria, and the constraints (ETS1.C)	Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved	---plan and conduct an investigation collaboratively to produce data to serve as the basis for evidence, using fair tests in which variables are controlled and the number of trials considered

Alpha Public School
Science Curriculum Map

Formative, Summative and Alternative Assessments	Benchmark Assessments	Core Instructional and Supplemental Materials (including various texts at each grade level)
Science journal Teacher created; guideline 15-25 questions Alternative Assessment: Performance task	Two text to life questions A Jacket for Frosty	Knowing Science Knowing Science Literature Knowing Science Vocabulary Flashcards Better Lessons- A Jacket for Frosty Mystery Science Holt: Science Science Fusion

Technology	Crosscutting Concepts / Interdisciplinary Connections across grade levels and content areas (at least 1)
Mystery Science Watery Planet mystery 4 Google classroom- Internet Research	---people's needs and wants change over time, as do their demands for new and improved technologies ---engineers improve existing technologies or develop new ones to increase their benefits, decrease known risks, and meet societal demands **ELA/Literacy – RI.5.1** Quote accurately from a text when explaining what the text says explicitly and when drawing inferences from the text. (3-5-ETS1-2) RI.5.7 Draw on information from multiple print or digital sources, demonstrating the ability to locate an answer to a question quickly or to solve a problem efficiently. (3-5- ETS1-2) RI.5.9 Integrate information from several texts on the same topic in order to write or speak about the subject knowledgeably. (3-5-ETS1-2) W.5.7 Conduct short research projects that use several sources to build knowledge through investigation of different aspects of a topic. (3-5-ETS1-1),(3-5-ETS1-3) W.5.8 Recall relevant information from experiences or gather relevant information from print and digital sources; summarize or paraphrase information in notes and finished work, and provide a list of sources. (3-5-ETS1-1),(3-5-ETS1-3) W.5.9 Draw evidence from literary or informational texts to support analysis, reflection, and research. (3-5-ETS1-1),(3-5-ETS1-3) **Mathematics – MP.2** Reason abstractly and quantitatively. (3-5-ETS1-1),(3-5-ETS1-2),(3-5-ETS1-3) MP.4 Model with mathematics. (3-5-ETS1-1),(3-5-ETS1-2),(3-5-ETS1-3) MP.5 Use appropriate tools strategically. (3-5-ETS1-1),(3-5-ETS1-2),(3-5-ETS1-3) 3-5.OA Operations and Algebraic Thinking (3-5-ETS1-1),(3-5-ETS1-2)

Differentiation (IEPs / 504s)	Differentiation (ELL)	Differentiation (G &T)
Visual aids Sentence Frames Modeling Anchor charts Modify rubric Teacher directed grouping Chunk learning at teacher discretion Re-read text at teacher discretion Text in auditory format	Visual aids Sentence Frames Modeling Anchor charts Modify rubric Teacher directed grouping Chunk learning at teacher discretion Re-read text at teacher discretion Text in auditory format Pre-teach vocabulary Non-linguistic cues Manipulatives Graphic organizers Use of educational websites: www.khanacademy.org www.colorincolorado.org/	Independent research projects Advanced texts http://education.jlab.org/vocabhangman/ Science content vocabulary hangman http://kids.nationalgeographic.com/ National Geographic online http://www.bbc.co.uk/schools/scienceclips/ages/10_11/science_10_11.shtml Interactive science activities http://classroom.jc-schools.net/sci-units/plants-animals.htm#Interactive

21st Century Education	Career Education
THEMES: Global Awareness Financial, Economic, Business and Entrepreneurial Literacy Civic Literacy Health Literacy SKILLS: Creativity and Innovation Critical Thinking and Problem Solving Communication and Collaboration Information Literacy Media Literacy ICT Literacy Life and Career Skills	Career Ready Practices describe the career-ready skills that all educators in all content areas should seek to develop in their students. They are practices that have been linked to increase college, career, and life success. Career Ready Practices should be taught and reinforced in all career exploration and preparation programs with increasingly higher levels of complexity and expectation as a student advances through a program of study. CRP1. Act as a responsible and contributing citizen and employee. CRP2. Apply appropriate academic and technical skills. CRP3. Attend to personal health and financial well-being. CRP4. Communicate clearly and effectively and with reason. CRP5. Consider the environmental, social and economic impacts of decisions. CRP6. Demonstrate creativity and innovation. CRP7. Employ valid and reliable research strategies. CRP8. Utilize critical thinking to make sense of problems and persevere in solving them. CRP9. Model integrity, ethical leadership and effective management. CRP10. Plan education and career paths aligned to personal goals. CRP11. Use technology to enhance productivity. CRP12. Work productively in teams while using cultural global competence.