

South Florida Science Center Educator Guide Aligned with  
PBC Next Generation Sunshine Standards Scope & Sequence 2019 - 2020

## Grades K – 5

*August-December Program Recommendations 2019 – 2020 Semester One*

The following Science Center programs align with assessed NGSS, and will complement and supplement classroom teaching.

| Grade              | PBCSD Recommended Pacing & Big Ideas  | NGSS Essential Question: Senses and Tools of Science   | SSS Benchmarks   | SFSC Program   | SFSCA Program Guide                                      |
|--------------------|---|--|--|--|--|
| Pre-K Kindergarten | <b>Aug 19 -Sept 17</b><br><i>Big Ideas:</i><br><i>Organization &amp; Development of Living Organisms, Practice of Science</i> | <u>What is Science?</u> Recognize the senses of sight, hearing, and smell and related body parts. Recognize and use tools of science.                                      | SC.K.L.14.1<br>SC.K.N.1.1<br>SC.K.N.1.2<br>SC.K.N.1.3<br>SC.N.N.1.5              | All About Me<br>One World One Sky<br>Touch Tank<br>Kaluaka’hina: The Enchanted Reef<br>Ocean Commotion<br>Creepy Crawlies      | Page 7<br>Page 7<br>Page 7<br>Page 7<br>Page 7<br>Page 7 |
| Pre-K Kindergarten | <b>Sept 18- Oct 30</b><br><i>Big Ideas:</i><br><i>Properties of Matter, Changes in Matter</i>                                 | <u>How are objects sorted and changed?</u> Properties of solid, liquids, gas. Compare, sort, color, size, temperature, shape. Physical changes -heating, cutting, tearing. | SC.K.P.8.1<br>SC.K.P.9.1   | Balloons and Bubbles<br>Space Explorers<br>Wacky Weather<br>We are the Dinosaurs   | Page 7<br>Page 7<br>Page 7<br>Page 7                     |
| Pre-K              | <b>Oct 31 – Jan 23</b><br><i>Big Ideas:</i><br><i>Energy &amp; Motion; Forms of Energy, Motion, Forces on objects.</i>        | <u>How are Sound and Motion Alike?</u> Physical changes of matter: Vibrations, Push & Pull, and Movement.  | SC.K.P.9.1<br>SC.K.P.10.1<br>SC.K.P.12.1<br>SC.K.P.13.1                          | Balloons & Bubbles   | Page 7   |
| 1 <sup>st</sup>    | <b>Aug 19 -Sept 24</b><br><i>Big Ideas:</i><br><i>Practice of science and how scientists work.</i>                            | <u>What are the senses and other tools?</u> Use senses to make observations, compare observations, inquiry skills, body parts & senses.                                    | SC.1.N.1.2-3<br>HE.1.C.1.5<br>SC.1.E.6.1<br>SC.1.L.17.1<br>SC.1.L.14.1           | Astronaut Bugs! A Rainforest Adventure<br>Solar System Odyssey<br>Investigating Insects<br>Everglades: All About the Alligator | Page 8<br>Page 8<br>Page 8<br>Page 9<br>Page 9<br>Page 9 |
| 1 <sup>st</sup>    | <b>Sept 25 – Oct 11</b><br><i>Big Ideas:</i><br><i>Investigation, Properties of &amp; changes in Matter</i>                   | <u>What can we observe about objects?</u> Identify & sort objects by physical properties, sink, float, measurement, temperature, technology                                | SC.1.P.8.1<br>SC.1.N.1.2<br>SC.2.P.8.1<br>SC.2.P.8.2<br>SC.4.P.8.1<br>SC.5.P.9.1 | What’s the Matter?<br>Nitromania<br>Chemical Concoctions   | Page 9<br>Page 9<br>Page 9                               |
| 1 <sup>st</sup>    | <b>Oct 14 – Nov 22</b><br><i>Big Ideas:</i><br><i>Motion, Forces &amp; Changes in Motion</i>                                  | <u>How do objects move?</u> Sort objects - size, shape, color, temperature, weight, texture, sink/float, push, pull  | SC.1.P.8.1<br>SC.1.P.12.1<br>SC.1.P.13.1   | Engineering is Elementary<br>Panther Physics<br>Technology Today   | Page 9<br>Page 9<br>Page 9                               |

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|-----------------|---|---|--|---|--|
| 1 <sup>st</sup> | <b>Dec 2-Jan 24</b><br><i>Big Ideas:</i><br><i>Earth Structures</i>                           | <u>What can we find on Earth?</u><br>Earth is made of water, rocks soil, living organisms & natural resources.  | SC.1.E.6.1<br>SC. 1. E. 6.2<br>SC. 1. E. 6.3<br>SC.1.N.1.2<br>SC.1.L.14.1              | Touch Tank<br>Digging Around the World<br>Solar System<br>Odyssey<br>Stars &<br>Constellations<br>Shark Tooth Lab<br>Kalouka'hina:The Enchanted Reef  | Page 9<br>Page 9<br>Page 8<br>Page 9<br>Page 8<br>Page 8                     |
| 2 <sup>nd</sup> | <b>Aug 12 -Sept 23</b><br><i>Big Ideas:</i><br><i>The Practice of Science</i>                 | <u>How do we use inquiry skills?</u><br>Ask questions, make observations, tools of science, communicate, collect and analyze data.  | SC.2.N.1.1-6<br>SC.2.E.6.2<br>SC.2.P.13.1<br>SC.2.L.17.2                               | Digging Around the World<br>Investigating Insects<br>Touch Tank<br>Bugs! A Rainforest Adventure<br>Astronaut  | Page 9<br>Page 9<br>Page 9<br>Page 8<br>Page 8                               |
| 2 <sup>nd</sup> | <b>Sept 24 – Oct 30</b><br><i>Big Ideas:</i><br><i>All about Matter</i>                       | <u>What are the properties of Matter?</u> Identify, & describe properties of matter. Group objects by length, weight: mass volume, & temperature.                                 | SC.2.P.8.1-6   | Nitromania  | Page 9   |
| 2 <sup>nd</sup> | <b>Oct 31 - Nov 15</b><br><i>Big Ideas:</i><br><i>Changes in Matter</i>                       | <u>How does matter change?</u><br>Cutting, breaking, dissolving, freezing, melting. Chemical & physical properties of matter  | SC.2.P.9.1<br>SC.2.8.1-6   | Nitromania  | Page 9<br>Page 9   |
| 2 <sup>nd</sup> | <b>Nov 18 - Dec 5</b><br><i>Big Ideas:</i><br><i>Forms of Energy</i>                          | <u>How do we use energy?</u><br>Identify forms and sources of energy, how people use energy, sun's energy.  | SC.2.P.10.1<br>SC.2.P.13.1   | Exciting Electrons<br>Circuit Science   | Page 9<br>Page 9   |
| 3 <sup>rd</sup> | <b>Sept 19 – Oct 25</b><br><i>Big Ideas:</i><br><i>The Practice of Science</i>                | <u>How do Scientists Investigate Questions?</u> Scientific inquiry, observations, inferences, using models, tools of science, measurements, record, analyze, communicate results. | SC.3.N.1.1-7<br>SC.3.N3.2-3<br>SC.3.L.15.1<br>SC.3.L.17.2<br>SC.3.P.10.1<br>SC.3.P.9.1 | Shark Tooth Lab<br>Touch Tank<br>Technology Today<br>Investigating Insects<br>Bugs! A Rainforest Adventure<br>Dinosaurs Alive<br>Engineering is Elementary<br>Everglades: All About the Alligator | Page 9<br>Page 9<br>Page 9<br>Page 9<br>Page 8<br>Page 8<br>Page 9<br>Page 9 |
| 3 <sup>rd</sup> | <b>Oct 28 – Dec 13</b><br><i>Big Ideas:</i><br><i>Properties of Matter, Changes in Matter</i> | <u>What is matter?</u> Physical properties; size, shape, mass, volume, color, texture, temperature, properties of metals, change in state, evaporation, condensation.             | SC.3.P.8.1<br>SC.3.P.8.2<br>SC.3.P.8.3<br>SC.3.P.9.1                                   | Nitromania<br>Chemical Concoctions  | Page 9<br>Page 9   |

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| 3 <sup>rd</sup> | <b>Dec 16 – Feb 7</b><br><i>Big Ideas:</i><br><i>Forms of Energy, Energy Transfer &amp; Transformation.</i> | <u>What is energy?</u> Types of energy, potential, kinetic, light & heat energy.   | SC.3.P.10.1<br>SC.3.P.10.2<br>SC.3.P.10.3<br>SC.3.P.10.4<br>SC.3.E.5.4<br>SC.3.P.11.1<br>SC.3.P.11.2               | Technology Today<br>Exciting Electrons<br>Circuit Science<br>Engineering is Elem.  | Page 9<br>Page 9<br>Page 9<br>Page 9   |
| 4 <sup>th</sup> | <b>Aug 12 -Sept 6</b><br><i>Big Ideas:</i><br><i>The Practice of Science</i>                                | <u>What do Scientists do?</u> Inquiry of natural world. Investigate, observe, use tools of science, measure, and record data, communicate, & use models.                   | SC.4.N.1.1-7<br>SC.4.N.3.1<br>SC.4.N.2.1<br>SC.4.N.3.1<br>SC.4.L.16.2;3<br>SC.4.E.6.1<br>SC.4.E.6.3<br>SC.4.P.10.4 | Touch Tank<br>Shark Tooth Lab<br>Engineering is Elementary<br>Investigating Insects<br>Bugs! A Rainforest Adventure<br>Dinosaurs Alive<br>Digging Around the World<br>Pollinating Plants & Flower Dissection | Page 9<br>Page 9<br>Page 9<br>Page 9<br>Page 8<br>Page 8<br>Page 8<br>Page 9 |
| 4 <sup>th</sup> | <b>Sept 9 -Oct 17</b><br><i>Big Ideas:</i><br><i>Properties of Matter, Changes in Matter</i>                | <u>What are physical properties of matter?</u> Matter, mass, volume, density, states of matter, magnets, physical changes, chemical changes.                               | SC.4.P.8.1-4<br>SC.4.P.9.1<br>SC.4.P.10.1 – 4  | What's the Matter?<br>Nitromania<br>Exciting Electrons<br>Chemical Concoctions   | Page 9<br>Page 9<br>Page 9<br>Page 9   |
| 4 <sup>th</sup> | <b>Oct 21 – Nov 15</b><br><i>Big Ideas:</i><br><i>Forms of Energy</i>                                       | <u>What are some forms of energy?</u> Sources & use of energy - mechanical, light, heat, sound, chemical ; vibrations, water, wind, electrical energy.                     | SC.4.P.10.1<br>SC.4.P.10.2<br>SC.4.P. 10.3<br>SC.4.P.10.4<br>SC.4.P.11.1<br>SC.4.P.11.2<br>SC.4.12.2               | Technology Today<br>Panthers Physics Lab<br>Circuit Science<br>Exciting Electrons  | Page 9<br>Page 9<br>Page 9<br>Page 9   |
| 4 <sup>th</sup> | <b>Nov 18 – Dec 20</b><br><i>Big Ideas: Energy Transfer and Transformations, Motion of Objects</i>          | <u>What is heat?</u> Flow of heat from hot to cold – change in temperature of objects; object in motion changes position; how can we measure speed of an object in motion. | SC.4.P.11.1<br>SC.4.P.11.2<br>SC.4.12.1<br>SC.4.12.2   | Circuit Science<br>Newton Olympics<br>Lab  | Page 9<br>Page 9   |

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| 5 <sup>th</sup> | <b>Aug 13 – Aug 30</b><br><i>Big Ideas:</i><br><i>The Practice of Science, The Characteristics of Scientific Knowledge.</i> | <u>How can we use science to answer questions about the natural world?</u> Observe, Inquiry; scientific method, predict, hypothesize, experiment, collect data, analyze, communicate, use models.                       | SC.5.N.1.1-6<br>SC.5.L.15.1<br>SC.5.L.17.1<br>SC.5.N.2.1<br>SC.5.N.2.2                  | <b>Shark Tooth Lab</b><br><b>Touch Tank</b><br><b>Investigating Insects</b><br><b>Everglades: All About the Alligator</b><br><b>Dinosaurs Alive</b> | Page 9<br>Page 9<br>Page 9<br>Page 9<br>Page 8 |
| 5 <sup>th</sup> | <b>Sept 3- Oct 3</b><br><i>Big Ideas:</i><br><i>Physical Science Properties in Matter, Changes in Matter</i>                | <u>How can changes in matter be observed &amp; measured?</u> Physical properties & states of matter; mixtures, solutions, physical, chemical changes in matter, temperature. Atoms make up matter; elements, compounds. | SC.5.P.8.1-4<br>SC.5.P.9.1<br>SC.5.L.15.1<br>SC.5.L.17.1                                | <b>Nitromania</b><br><b>Chemical Concoctions</b>  | Page 9<br>Page 9                               |
| 5 <sup>th</sup> | <b>Oct 4 – Nov 14</b><br><i>Big Ideas:</i><br><i>Forms of Energy, Energy Transfer &amp; Transformations.</i>                | <u>What is energy &amp; how does it work?</u> Forms & uses of energy; charged particles, electricity, light, heat, sound, solar energy; motion; circuits, conductors, insulators.                                       | SC.5.P.10.1<br>SC.5.P.10.2<br>SC.5.P.10.3<br>SC.5.P.10.4<br>SC.5.P.11.1-3<br>SC.5.P.8.4 | <b>Exciting Electrons</b><br><b>Technology Today</b><br><b>Circuit Science</b><br><b>Engineering is Elementary</b>                                  | Page 9<br>Page 9<br>Page 9<br>Page 9           |
| 5 <sup>th</sup> | <b>Nov 15 –Dec 13</b><br><i>Big Ideas:</i><br><i>Motion of Objects, Forces &amp; Changes in Motion.</i>                     | <u>What are the forces and changes that affect the motion of an object?</u> Gravity, friction, mass, forces on spacecraft   | SC.5.P.13.1<br>SC.5.P.13.2<br>SC.5.P.13.3<br>SC.5.P.13.4                                | <b>Panthers Physics Lab</b><br><b>Technology Today</b>  | Page 9<br>Page 9                               |

## Grades 6<sup>th</sup> through 8<sup>th</sup>

*August-December Program Recommendations – Semester One August – December 2019*

The following Science Center programs align with the NGSS benchmarks being assessed and will complement and supplement classroom teaching.

| Grade           | PBCSD<br>Recommended<br>Pacing / Big<br>Ideas   | Scope & Sequence Unit Goals   | SSS<br>Benchmarks  | SFSCA Program   | SFSCA<br>Program<br>Guide                                      |
|-----------------|---|---|--|---|--|
| 6 <sup>th</sup> | <b>Aug 13 – Aug 30</b><br><i>Big Ideas:</i><br><i>Organization &amp; Development of Living Organisms</i>  | <u>Unit 1 Nature of Science:</u> Scientific inquiry is multifaceted; formation of scientifically investigable questions, construction of investigations into those questions.                               | <b>SC.6.N.1.1</b><br><b>SC.6.N.1.5</b>   | <b>Digging Around the World</b><br><b>Heart in Motion Lab</b><br><b>Brain in Action</b><br><b>Cleaning the Everglades</b>                                     | Page 11<br>Page 11<br>Page 11<br>Page 11                       |
| 6 <sup>th</sup> | <b>Sept 3 -Oct 11</b><br><i>Big Ideas:</i><br><i>Theories, Laws, Hypotheses, Models. Forms of energy. Motion, Forces &amp; changes of motion of objects</i> | <u>Unit 2 Energy, Force &amp; Motion:</u> Energy is conserved as it is transferred from one object to another and it is required to alter an object's motion, which can be changed by forces.               | <b>SC.6.P.11.1</b><br><b>SC.6.P.12.1</b><br><b>SC.6.P.13.1</b><br><b>SC.6.P.13.2</b><br><b>SC.6.P.13.3</b>                   | <b>Newton Olympics lab</b><br><b>Exciting Electrons</b><br><b>Engineering is Elementary</b>   | Page 11<br>Page 11<br>Page 11                                  |
| 6 <sup>th</sup> | <b>Oct 14-Nov 7</b><br><i>Big Ideas:</i><br><i>The practice of Science, Diversity and Development of Living Things.</i>                                     | <u>Unit 3 Shaping Earth's Surface:</u> Weathering, erosion, and deposition affects Earth's surface.   | <b>SC.6.E.6.1</b><br><b>SC.6.L.14.5</b>  | <b>Digging Around the World</b><br><b>Dinosaurs Alive</b><br><b>Dissections</b><br><b>Dynamic Earth</b><br><b>Mining for Treasures</b>                        | Page 11<br>Page 10<br>Page 11<br>Page 10                       |
| 6 <sup>th</sup> | <b>Nov 11 -Dec 18</b><br><i>Big Ideas:</i><br><i>Characteristics &amp; Practice of Science; Society; Earth in Space &amp; Time. Earth Systems,Patterns.</i> | <u>Unit 4 Earth's Systems:</u> Changes in our planet are driven by the flow of energy and cycling of matter through dynamic interactions among geosphere, hydrosphere, cryosphere, atmosphere, & biosphere. | <b>SC.6.N.2.2</b><br><b>SC.6.E.7.4</b><br><b>SC.6.E.7.5</b><br><b>HE.6.C.1.3</b>   | <b>Stars and Constellations</b><br><b>Dynamic Earth</b><br><b>Cleaning the Everglades</b><br><b>Technology Today</b>  | Page 10<br>Page 10<br>Page 11<br>Page 11                       |
| 7 <sup>th</sup> | <b>Aug 13-Aug 30</b><br><i>Big Ideas:</i><br><i>Practice of Science, Organization &amp; Development of Living Organisms. Science &amp; Society.</i>         | <u>Unit 1 Nature of Science Goal:</u> Scientific inquiry is multifaceted; includes questioning, construction of investigations, collection, analysis, evaluation and communication of data.                 | <b>SC.7.N.1.1</b><br><b>SC.7.N. 1.2</b><br><b>SC.7.N.1.3</b><br><b>SC. 7.N.1.4</b><br><b>SC.7.N.1.5</b><br><b>SC.7.N.1.6</b> | <b>Dynamic Earth</b><br><b>Digging Around the World</b><br><b>Heart in Motion Lab</b><br><b>Brain in Action</b><br><b>Dissections</b><br><b>DNA in Motion</b> | Page 10<br>Page 11<br>Page 11<br>Page 11<br>Page 11<br>Page 11 |

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| 7 <sup>th</sup> | <b>Sept 3 -Sept 20</b><br><i>Big Ideas:</i><br><i>Role of Theories, Laws, Hypotheses, Models. Motion, Forces of Objects. Properties, &amp; Changes in matter.</i> | <u>Unit 2 Energy and Heat:</u> Energy transforms from one form to another through the change in the amount of heat applied to or removed from a system.   | <b>SC.7.P.11.1</b><br><b>SC.7.P.11.2</b><br><b>SC.7.P.11.3</b><br><b>SC.7.N.1.1</b><br><b>SC.7.N.1.4</b><br><b>SC.7.N.3.2</b> | <b>Newton Olympics Lab</b><br><b>Exciting Electrons</b><br><b>Nitromania</b><br><b>Engineering is Elementary</b><br><b>Chemical Concoctions</b><br><b>Technology Today</b><br><b>3D Printing &amp; Design</b> | Page 11<br>Page 11<br>Page 11<br>Page 11<br>Page 11<br>Page 11<br>Page 11 |
| 7 <sup>th</sup> | <b>Sept 23- Oct 15</b><br><i>Big Ideas:</i><br><i>Characteristics of Scientific Knowledge. Earth in Space &amp; Time</i>  | <u>Unit 3 Waves and Light:</u> Waves transfer energy without transferring matter. Waves are classified on how or through what they move.  | <b>SC.7.P.10.3</b><br><b>SC.7.10.1</b><br><b>SC.7.P.10.2</b><br><b>SC.7.N.1.7</b>   | <b>Black Holes: The Other Side of Infinity</b>  | Page 10   |
| 7 <sup>th</sup> | <b>Oct 21-Nov 15</b><br><i>Big Ideas: Earth in Space &amp; Time; Earth Systems and Patterns</i>   | <u>Unit 4 The Dynamic Earth:</u> Internal & external sources of energy have continuously altered the features of the Earth by means constructive and destructive forces, plate tectonics, volcanoes, earthquakes. | <b>SC.7.E.6.1</b><br><b>SC.7.E.6.7</b><br><b>SC.7.E.6.5</b>   | <b>Dynamic Earth</b><br><b>Stars and Constellations</b>   | Page 10<br>Page 10  |
| 7 <sup>th</sup> | <b>Nov 18-Dec 18</b><br><i>Big Ideas:</i><br><i>Practice of science. Diversity &amp; Development of Living Organisms. Properties &amp; changes of matter.</i>     | <u>Unit 5 The Rock Cycle:</u> Components of rocks cycle due to change over time influenced by weathering, erosion, pressure & heat.   | <b>SC.7.E.6.1</b><br><b>SC.7.E.6.2</b><br><b>SC.7.6.5</b><br><b>SC.7.6.7</b><br><b>SC.7.N.3.1</b>                             | <b>Dinosaurs Alive</b><br><b>Digging Around the World</b><br><b>Shark Tooth Lab</b><br><b>Nitromania</b><br><b>Mining for Treasures</b>   | Page 10<br>Page 11<br>Page 11<br>Page 11<br>Page 11                       |
| 8 <sup>th</sup> | <b>Aug 15- Aug30</b><br><i>Big Ideas:</i><br><i>Development and Organization of Living Organisms.</i>   | <u>Unit 1 Nature of Science:</u> Scientific inquiry is multifaceted; formulation of investigable questions, investigation, collection of and evaluation and communication of data.                                | <b>SC.8.N.1.1-6</b><br><b>SC.8.N.2.1</b><br><b>SC.8.N.2.2</b>   | <b>Digging Around the World</b><br><b>Heart in Motion Lab</b><br><b>Engineering is Elementary</b><br><b>Brain in Action</b><br><b>Newton Olympics Lab</b><br><b>Cleaning the Everglades</b>                   | Page 11<br>Page 11<br>Page 11<br>Page 11<br>Page 11<br>Page 11            |
| 8 <sup>th</sup> | <b>Sept 3 -Sep 25</b><br><i>Big Ideas:</i><br><i>Theories, Laws, Hypotheses, &amp; Models. Properties &amp; Changes in Matter; Forces of Objects.</i>             | <u>Unit 2 Structure &amp; Properties of Matter:</u> All objects in world are made of matter that can be classified by their chemical and physical properties; periodic table.                                     | <b>SC.8.P.8.1-6</b><br><b>SC.8.N.3.2</b>  | <b>Exciting Electrons</b><br><b>Newton Olympics Lab</b><br><b>Mining for Treasures</b>  | Page 11<br>Page 11<br>Page 11   |

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| 8 <sup>th</sup> | <b>Sept 26 -Oct 25</b><br><i>Big Ideas:</i><br><i>Forms of Energy.</i><br><i>Changes in Matter.</i>                              | <u>Unit 3 Changes in Matter:</u> Matter can undergo a variety of changes – physical and chemical changes; acids and bases; atoms and elements.                                       | <b>SC.8.P.8.5- 9</b><br><b>SC.8.P.9.1-3</b><br><b>SC.8.N.3.2</b><br><b>SC.8.N.1</b> | <b>Cleaning the Everglades</b><br><b>Exciting Electrons</b><br><b>Nitromania</b><br><b>Chemical Concoctions</b> | Page 11<br>Page 11<br>Page 11<br>Page 11 |
| 8 <sup>th</sup> | <b>Oct 28-Nov 15</b><br><i>Big Ideas:</i><br><i>Diversity &amp; Development of living things</i>                                 | <u>Unit 4 Matter &amp; Energy Transformations:</u> Living organisms need energy and acquire it as matter and energy move through ecosystems; Photosynthesis; reactants and products. | <b>SC.8.L.18.1</b><br><b>SC.912.L.18.7</b>  | <b>Shark Tooth Lab</b><br><b>Dissections</b><br><b>DNA in Motion</b><br><b>Investigating Insects</b>            | Page 11<br>Page 11<br>Page 11<br>Page 11 |
| 8 <sup>th</sup> | <b>Nov 18-Dec18</b><br><i>Big Ideas:</i><br><i>Characteristics of Scientific Knowledge.</i><br><i>Earth in Space &amp; Time.</i> | <u>Unit 5 The Earth-Moon-Sun System:</u> The Earth-Moon-Sun system determines Earth’s days, years, seasons, and produces Moon phases and eclipses, and causes Earth’s tides.         | <b>SC.8.E.5.9</b><br><b>SC.8.E.5.9</b>  | <b>Solar System Odyssey</b><br><b>Stars and Constellations</b><br><b>Dynamic Earth</b>                          | Page 10<br>Page 10<br>Page 10            |

# Grades 9<sup>th</sup> through 12<sup>th</sup>

August-December 2019 - 2020 Program Recommendation

The following Science Center programs align with the assessment benchmarks, and will complement and supplement classroom instruction.



*\*Note: Many MS Programs & Labs might be appropriate for HS courses where no specific HS Program is noted and/or are appropriate for Unit goals & Topics.*

| Grades 9-12 Biology                                    | PBCSD Recommended Pacing | Scope & Sequence Unit Goals / Topics  | SSS Benchmarks  | SFSC Program  | SFSC Program Guide Page               |
|--|--------------------------|---|---|---|---------------------------------------|
| <u>Unit 1:</u><br><i>Chemistry of Life</i>             | Aug 13- Aug 30           | <i>Chemical compounds &amp; macromolecules have unique properties utilized in living systems - Biological molecules &amp; Properties of Water.</i>  | SC.912.L.18.1<br>SC.912.L.18.2<br>SC.912.L.18.3<br>SC.912.L.18.4<br>SC.912.L.18.11<br>SC.912.L.18.12<br>SC.912.P.8.7<br>SC.912.P.10.1 | <b>Cleaning the Everglades<br/>Dynamic Earth</b>                                  | Page 12<br>Page 12                    |
| <u>Unit 2:</u><br><i>Cell Structure &amp; Function</i> | Sept 3- Sept 27          | <i>Cell's role in growth, maintenance, homeostasis of living organisms; Microscopes, Cell theory, Compare animal and plant cell structures; cell processes – photosynthesis &amp; respiration.</i>                                    | SC.912.L.14.1-4<br>SC.912.L.14.7<br>SC.912.L.18.7<br>SC.912.L.18.8<br>SC.912.L.18.9<br>SC.912.L.18.10                                 | <b>Brain in Action<br/>Dissections</b><br><br>*See Plant & Flower Dissection (MS) | Page 12<br>Page 12<br><br>Page 11     |
| <u>Unit 3:</u><br><i>Cell Reproduction</i>             | Oct.1 - Oct 17           | <i>Cell reproduction is essential for growth, maintenance, &amp; survival of living things. Cell cycle &amp; Mitosis; Binary Fission; Meiosis</i>   | SC.912.L.16.14<br>SC.912.L.16.15<br>SC.912.L.16.16<br>SC.912.L.16.17  | <b>Cleaning the Everglades<br/>The Great Shark Trek</b>                           | Page 12<br><br>Page 12<br><br>Page 11 |
| <u>Unit 4:</u><br><i>DNA : The Central Dogma</i>       | Oct21 – Nov 17           | <i>Genes are sets of instruction, coded in DNA; which stores and transmits genetic information; passed from generation to generation – DNA processes: replication, transcription, translation; mutations, Universal genetic code.</i> | SC.912.L.16.3-5<br>SC. 912.L.16.8<br>SC.912.L.16.6.9  | *See MS Programs & Labs<br><b>DNA in Motion</b>                                   | Page 11                               |



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| <u>Unit 5:</u><br><i>Genetics &amp; Biotechnology</i> | Nov 18-Dec 13   | <i>Similarities in related individuals can be attributed to genetic information passed from generation to generation through DNA, which can be manipulated, thus impacting the individual, society, and the environment.</i><br><br><i>Mendel's Laws of Inheritance; Patterns of inheritance, impact on personal health; Techniques in Biotechnology and ethical issues on society.</i> | <b>SC.912.L.16.1</b><br><b>SC.912.L.16.2</b><br><b>HE.912.C.1.7</b>  | <b>*See MS Programs &amp; Labs Printing &amp; Design DNA in Motion</b> | Page 12<br>Page 11 |
| <b>Grades 9-12 Chemistry</b>                          |                 |   |  |  |                    |
| <u>Unit 1:</u><br><i>Intro to Chemistry</i>           | Aug 13-Aug 30   | <i>Scientific inquiry: question, investigate, collect, analyze, evaluate, &amp; share data – The practice of science; Graphing.</i>   | <b>SC.912.N.1.1</b><br><b>SC.912.N.1.2</b><br><b>SC.912.N.1.4</b><br><b>SC.912.N.1.5</b><br><b>SC.912.N.2.2</b><br><b>MAFS.912.F.3.7</b> | <b>Cleaning the Everglades</b>   | Page 12            |
| <u>Unit 2:</u><br><i>Changes in Matter</i>            | Sept 3-Sept 13  | <i>Changing the specific conditions of matter can affect the behavior of the particles &amp; its physical and chemical properties; Molecular kinetic energy, physical and chemical changes; Law of Conservation of Energy.</i>  | <b>SC.912.P.8.1-2</b><br><b>SC.912.P.10.1</b><br><b>SC.912.P.10.2</b><br><b>SC.912.10.5</b>  | <b>*See MS programs &amp; labs</b>                                     | Page 11            |
| <u>Unit 3:</u><br><i>Atomic Structure</i>             | Sept 16- Oct 17 | <i>Structure &amp; composition of the atom; how energy is absorbed and released at the atomic and subatomic level; Electromagnetism.</i>  | <b>SC.912.P.8.3-4</b><br><b>SC.912.P.10.9</b><br><b>SC.912.P.10.10</b><br><b>SC.912.P.10.8</b>   | <b>*See MS Programs &amp; labs</b>                                     | Page 11            |

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| <u>Unit 4:</u><br><i>Periodic Trends</i>                   | Oct 21-Nov1    | <i>The arrangement of the modern periodic table and how properties of elements can be predicted based on this arrangement</i>  | <b>SC.912.P.8.4</b><br><b>SC.912.P.8.5</b>  | <b>*See MS Programs &amp; labs</b> | Page 11 |
| <u>Unit 5:</u><br><i>Chemical Bonding</i>                  | Nov 4 – Dec 16 | <i>Bonds hold elements together in specific ways forming new compounds- represented by specific chemical formulas and nomenclature; attractive forces, representation of molecules and compounds by chemical formulas</i>  | <b>SC.912.P.8.6-7</b><br><b>SC.012.N.3.5</b>  | <b>*See MS Programs &amp; labs</b> | Page 11 |
| <b>Grades 9-12 Physical Science</b>                        |                |  |   |                                    |         |
| <u>Unit 1:</u><br><i>Matter, Chemistry, Periodic Table</i> | Aug 13-Sept 6  | <i>Substances in the universe are made of atoms, consisting of protons, neutrons, electrons; each element has a specific place on the periodic table based on its unique properties.</i>   | <b>SC.912.P.8.1-5</b><br><b>SC.912.P.8.7</b><br><b>SC.912.P.8.12</b><br><b>SC.912.N.1.1</b><br><b>SC.912.N.1.2</b>  | <b>*See MS Programs &amp; labs</b> | Page 11 |
| <u>Unit 2:</u><br><i>Chemistry &amp; Nuclear Reactions</i> | Sept.9-Oct.15  | <i>Atoms combine in predictable ways at specific rates; some elements can be changed into another element through radioactivity &amp; nuclear reactions. Movement of matter &amp; energy through biogeochemical cycles; factors affecting chemical reactions; formulas; nuclear reactions.</i> | <b>SC.912.E.7.1</b><br><b>SC.912.P.8.7</b><br><b>SC.912.P.10.7</b><br><b>SC.912.P.10.10</b><br><b>SC.912.P.10.12</b><br><b>SC.912.P.12.12</b><br><b>SC.912.L.18.7-8</b> | <b>*See MS Programs &amp; Labs</b> | Page 11 |

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| <u>Unit 3:</u><br>Acids & Bases    | Oct21-Nov15    | <i>Chemical properties of acids &amp; bases are based on the arrangements of their atoms-all living organisms &amp; many natural resources are made of organic compounds. Effect of pH, temperature and other factors on rate of reactions, biogeochemical cycles.</i> | SC.912.P.8.8<br>SC.912.P.8.11<br>SC.912.P.11-12<br>SC.912.E.7.1                                     | *See MS Programs & labs   | Page 11            |
| <u>Unit 4:</u><br>Motion & Forces  | Nov 18-Dec 18  | <i>Motion can be analyzed in terms of position, velocity &amp; acceleration relative to a frame of reference as a function of time and that objects that interact will exert forces on one another. Newton's Laws of motion.</i>                                       | SC.912.P.12.1<br>SC.912.P.12.2<br>SC.912.P.12.5<br>SC.912.P.12.6<br>SC.912.P.10.10<br>SC.912.P.12.4 | *See MS Programs & labs   | Page 11            |
| <b>Grades 9-12<br/>Physics</b>     |                |  |   |   |                    |
| <u>Unit 1:</u><br>Motion & Vectors | Aug 13-Sept 13 | <i>The motion of objects in terms of position, velocity, acceleration, distinguish between use of scalar and vector quantities.</i>  | SC.9.12.1-2<br>SC.9.12.P.12.9<br>SC.912.N.3.5   | *See MS Programs & Labs   | Page 11            |
| <u>Unit 2:</u><br>Forces & Motion  | Sept 16-Oct 17 | <i>create &amp; interpret diagrams of potential energy, describe &amp; explain wave relationships &amp; behavior.</i>  | SC.9.12.E.5.2<br>SC.912.P.12.3<br>SC.912.P.12.5<br>SC.912.P.12.6<br>SC.912.N.3.3                    | *See MS Programs & Labs   | Page 11            |
| <u>Unit 3:</u><br>Energy & Systems | Oct 21 -Nov 22 | <i>Transformation of energy; work, power, Kepler's &amp; Newton's Laws related to celestial bodies on each other.</i>  | SC.912.P.10.1<br>SC.912.P.10.3<br>SC.912.E.5.6<br>SC.912.P.12.4                                     | Dynamic Earth<br>Black Holes : The<br>Other Side of<br>Infinity | Page 12<br>Page 12 |

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| <u>Unit 4:</u><br><i>Vibrations, Waves, Sound &amp; Potential Energy</i> | Dec 2 – Dec 16 | <i>students will create and interpret diagrams of potential energy, describe and explain wave relationships and behavior.</i>  | <b>SC.912.P.10.6</b><br><b>SC.912.P.10.20</b><br><b>SC.912.P.10.21</b>   | <b>*See MS Programs &amp; Labs</b>  | Page 11                       |
| <b>Grades 9-12 Environmental Science</b>                                 |                |  |  |   |                               |
| <u>Unit 1:</u><br><i>Intro to Environmental Science</i>                  | Aug 13- Aug 30 | <i>Introduction to Scientific Method – question, investigate, collect, analyze, evaluate, &amp; communicate data. Dynamic Earth – biochemical cycles; climate.</i>   | <b>SC.912.N.1.1-2</b><br><b>SC.912.N.1.4</b><br><b>SC.912.N.2.1-2</b><br><b>SC.912.N.3.5</b><br><b>SC.912.L.17.10</b><br><b>SC.912.P.10.2</b><br><b>SC.912.N.3.5</b><br><b>SC.912.E.7.4</b>  | <b>Dinosaurs Alive</b><br><b>The Great Shark Trek</b><br><b>Dynamic Earth</b> | Page 12<br>Page 12<br>Page 12 |
| <u>Unit2:</u><br><i>Interdependence</i>                                  | Sept 3-Oct 15  | <i>All organisms on Earth interact and depend upon each other and their environment to satisfy their basic needs. Flow of energy through food web; Aquatic ecosystems; Biodiversity and Human impact; Natural Selection.</i> | <b>SC.912.L.17.4</b><br><b>SC.912.L.17.6</b><br><b>SC.912.L.17.7</b><br><b>SC.912.L.17.8</b><br><b>SC.912.L.17.9</b><br><b>SC.912.L.15.3</b><br><b>SC.912.L.15.13</b><br><b>SS.912.G.5.4</b>   | <b>Dinosaurs Alive</b><br><b>The Great Shark Trek</b><br><b>Dissections</b>   | Page 12<br>Page 12<br>Page 12 |
| <u>Unit 3:</u><br><i>Humans &amp; the Environment</i>                    | Oct 21-Dec.13  | <i>Impact of human population on the environment; Populations, Resources, Sustainability; Human health related to health of the environment.</i>   | <b>SC.912.L.17.1</b><br><b>SC.912.L.17.5</b><br><b>SC.912.L.17.15</b><br><b>SC.912.L.17.16</b><br><b>SC.912.L.17.18</b><br><b>SC.912.L.17.20</b><br><b>SS.912.G.5.1</b><br><b>SS.912.G.5.3</b><br><b>HE.912.C.1.3</b><br><b>HE.912.L.14.6</b><br><b>HE.912.L.16.10</b> | <b>Cleaning the Everglades</b><br><b>Dynamic Earth</b>                        | Page 12<br>Page 12            |

| <b>Grades 9-12<br/>Earth &amp; Space<br/>Science</b>                                  |               |  |  |  |                    |
|---|---------------|--|--|--|--------------------|
| <u>Unit 1:</u><br><i>Earth's Dynamic<br/>Atmosphere</i>                               | Aug 13-Sept 6 | <i>Changes in our planet are driven by flow of energy &amp; cycling of matter; interactions among Earth's spheres; Atmosphere, Water in atmosphere, Air Pressure, Wind, Weather.</i> | SC.912.E.7.1<br>SC.9.12.E.7.3<br>SC.912.E.7.5<br>SC.912.E.7.6<br>SC.912.E.7.8<br>SC.912.E.10.4<br>SC.912.N.1.5   | <b>Dynamic Earth</b>                                   | Page 12            |
| <u>Unit 2:</u><br><i>Climate</i>  | Sept 9-Sept20 | <i>Human impact on global climates; interactions among various Earth's systems; differentiate between climate &amp; weather.</i>   | SC.912.E.7.3<br>SC.912.E.7.4<br>SC.912.E.7.7<br>SC.912.E.7.8<br>SC.912.N.4.1                                     | <b>Dynamic Earth<br/>Cleaning the<br/>Everglades</b>   | Page 12<br>Page 12 |
| <u>Unit 3:</u><br><i>Earth as a<br/>System</i>  | Sept 23-Oct 4 | <i>Solid Earth and its structure within its system; interactions in Earth's systems, layers of Earth, biogeochemical cycles.</i>   | SC.912.N.3.5<br>SC.912.E.6.1<br>SC.912.E.7.1<br>SC.912.E.7.3   | <b>Black Holes: The<br/>Other Side of<br/>Infinity</b> | Page 12            |
| <u>Unit 4:</u><br><i>Earth's<br/>Materials and<br/>Resources</i>                      | Oct 4-Oct 18  | <i>Chemistry related to the formation of rocks and minerals; states of matter; atomic theory; Periodic table, elements, compounds, common formulas.</i>                              | SC.912.P.8.1<br>SC.912.P.8.4<br>SC.912.P.8.5<br>SC.912.P.8.6<br>SC.912.P.8.7<br>SC.912.N.3.1                     | <b>Stars and<br/>Constellations<br/>Dynamic Earth</b>  | Page 12<br>Page 12 |
| <u>Unit 5:</u><br><i>Rocks &amp;<br/>Minerals-<br/>Geological<br/>Building Blocks</i> | Oct 21-Nov 7  | <i>Rocks and minerals – the unique building blocks of the geosphere, have unique physical properties; geological building blocks – rock formation; geological cycles.</i>            | SC.912.E. 6.4<br>SC.912.E.7.1<br>SC.912.E.7.3<br>SC.9.12.N.1.5   | <b>Stars and<br/>Constellations<br/>Dynamic Earth</b>  | Page 12<br>Page 12 |
| <u>Unit 6:</u><br><i>Earth Structures<br/>– Internal<br/>Processes</i>                | Nov 11-Dec 16 | <i>How internal geologic processes shape the geosphere; plate tectonics- interactions in layers of Earth; Waves and Earthquakes.</i>   | SC.912.E.6.1<br>SC.912.E.6.3<br>SC.912.E.6.4<br>SC.912.P.7.3<br>SC.912.P.10.16<br>SC.912.N.2.4<br>SC.912.P.10.20 | <b>Dynamic Earth</b>                                   | Page 12            |

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| <b>Grades 9-12<br/>Marine Science</b>        |              |  |   |  |                    |
| <u>Unit 1:</u><br><i>Blue Planet</i>         | Aug 13-Aug30 | <i>chemical composition of oceans and the historical context which has led to the development of the modern concept of marine science and exploration.</i>                                     | <b>SC.912.N.1.7<br/>SC.912.N.17.2<br/>SC.912.N.18.12</b>                  | <b>Cleaning the Everglades</b>                 | Page 12            |
| <u>Unit 2:</u><br><i>Marine Geology</i>      | Sept4-Sept21 | <i>geologic features of the ocean floor are produced through the movement of tectonics plates and are shaped by physical and biological processes.</i>   | <b>SC.912.E.6.1-3<br/>SC.912.E.6.5</b>                                    | <b>The Great Shark Trek</b>                    | Page 12            |
| <u>Unit 3:</u><br><i>Dynamic Ocean</i>       | Sept24-Oct18 | <i>interactions among the ocean, atmosphere, and gravitational influences that lead to the distribution of energy around the planet through waves, currents, tides, and cyclonic activity.</i> | <b>SC.912.P.10.20<br/>SC.912.E.7.2-4<br/>SC.912.E.7.7-9</b>               | <b>The Great Shark Trek<br/>Dynamic Earth</b>  | Page 12<br>Page 12 |
| <u>Unit 4:</u><br><i>Marine Ecology</i>      | Oct22-Nov19  | <i>the interaction between biotic and abiotic factors controlling the abundance and distribution of marine organisms.</i>  | <b>SC.912.L.17.1<br/>SC.912.L.17.4<br/>SC.912.L.7.6-9</b>                 | <b>Dissections<br/>Cleaning the Everglades</b> | Page 12<br>Page 12 |
| <u>Unit 5:</u><br><i>Marine Productivity</i> | Nov12-Dec10  | <i>productivity in the marine environment is dependent on the distribution of resources and results in a range of food web complexity.</i>   | <b>SC.912.L.17.9<br/>SC.912.L.17.10<br/>SC.912.L.19<br/>SC.912.P.10.2</b> | <b>Dynamic Earth</b>                           | Page 12            |

