

Museum of Aviation Foundation Education Center

Science and Social Studies Curriculum Standards Correlations Pre K- High School



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Science and Social Studies Correlations

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Pre K-Kindergarten

Science: Physical Science:

SKP2. Students will investigate different types of motion.

- a. Sort objects into categories according to their motion. (straight, zigzag, round and round, back and forth, fast and slow, and motionless)
- b. Push, pull, and roll common objects and describe their motions.

SKP3. Students will observe and communicate effects of gravity on objects.

- a. Recognize that some things, such as airplanes and birds, are in the sky, but return to earth.
- b. Recognize that the sun, moon, and stars are in the sky, but don't come down.
- c. Explain why a book does not fall down if it is placed on a table, but will fall down if it is dropped.

Habits of Mind

SKCS1. the importance of curiosity, honesty, openness, and skepticism in science.

- a. Raise questions and seek answers using 5 senses

SKCS2. analyze data and following scientific explanations.

- a. Use whole numbers for counting, identifying, and describing things and experiences.
- b. Make quantitative estimates of nonstandard measurements (blocks, counters) and check by measuring.

SKCS3. Students will use tools and instruments for observing, measuring, and manipulating objects in scientific activities.

- a. Use ordinary hand tools to construct, measure, and look at objects
- b. Make something that can actually be used to perform a task, using paper, cardboard, wood, plastic, metal, or existing objects.

SKCS4. Students will use the ideas of system, model, change, and scale in exploring scientific and technological matters.

- a. Use a model—to describe a feature of the primary thing.
- b. Describe changes in size, weight, color, or movement, and note which of their other qualities remains the same.
- c. Compare very different sizes (large/small), ages (parent/baby), speeds (fast/slow), and weights (heavy/light) of manmade and natural things.

SKCS5. Students will communicate scientific ideas and activities clearly.

- a. Describe/ compare things in terms of number, shape, texture, size, weight, color, and motion.
- b. Begin to draw pictures that portray features of the thing being described.

Pre K-Kindergarten

Approaches to Play and Learning

STRAND: Initiative and Exploration

APL1 -The child will demonstrate initiative and self-direction.

APL1.4a Takes initiative to learn new concepts and try new experiences - Initiates and completes new tasks by himself/herself.

APL1.4b Selects and carries out activities without adult prompting.

APL1.4c Sets goals and develops and follows through on plans.

APL2 -The child will demonstrate interest and curiosity.

4a Demonstrates eagerness to learn about and discuss new topics, ideas and tasks

4b Asks questions and seeks new information With assistance, looks for new information and wants to know more.

4c Increasingly seeks out and explores unfamiliar objects in the environment.

2. Attentiveness and Persistence

APL3 -The child will sustain attention to a specific activity and demonstrate persistence.

4a Engages in independent activities and continues tasks over a period of time

4b Practices to improve skills that have been accomplished.

4c Works cooperatively with others to successfully achieve a goal or accomplish a task.

4d Persists in trying to complete a task after previous attempts have failed.

3. Play

APL4 -The child will engage in a progression of imaginative play.

4a Engages in elaborate and sustained imagined play, and can distinguish between real life and fantasy.

APL5 -The child will demonstrate a cooperative and flexible approach to play and learning.

4a Willingly joins in sustained cooperative play and learning with others to complete a task.

4b Demonstrates flexibility in taking on various roles in a group setting.

4c Demonstrates inventiveness, imagination and creativity to solve a problem.

4d Considers a variety of possible solutions and exhibits flexibility if an alternative approach is suggested by a peer or adult.

4e Recovers quickly from setbacks and differences in opinion in a group setting.

Cognitive Development: Science (CD-SC)

STRAND: Scientific Skills and Methods

Standard CD-SC1: The child will demonstrate scientific inquiry skills.

1.4a Uses senses to observe, classify, and learn about objects and environment.

1.4c Records observations through drawing pictures.

1.4d Experiments, compares, and formulates hypotheses related to scientific properties.

Physical Science

Standard CD-SC4: The child will demonstrate knowledge related to physical science.

4.4a Explores and describes position and movement of objects and toys.

4.4b Investigates and describes different types or speeds of motion.

4.4c Describes materials by their physical properties and states of matter.

1st Grade

Science Habits of Mind

S1CS1. Students will be aware of the importance of curiosity, honesty, openness, and skepticism in science and will exhibit these traits in their own efforts to understand how the world works.

a. Raise questions about the world around them and be willing to seek answers to some of the questions by making careful observations and measurements and trying to figure things out.

S1CS3. Students will use tools and instruments for observing, measuring, and manipulating objects in scientific activities.

a. Use ordinary hand tools and instruments to construct, measure, and look at objects.

c. Identify and practice accepted safety procedures in manipulating science materials and equipment.

S1CS5. Students will communicate scientific ideas and activities clearly.

a. Describe and compare things in terms of number, shape, texture, size, weight, color, and motion.

b. Draw pictures (grade level appropriate) that correctly portray features of the thing being described.

The Nature of Science

S1CS6. Students will be familiar with the character of scientific knowledge and how it is achieved. Students will recognize that:

a. When a science investigation is done the way it was done before, we expect to get a similar result.

b. Science involves collecting data and testing hypotheses.

c. Scientists often repeat experiments multiple times, and subject their ideas to criticism by other scientists who may disagree with them and do further tests.

d. All different kinds of people can be and are scientists.

Physical Science

S1P1. Students will investigate sound.

c. Investigate how vibrations produce sound.

d. Differentiate between various sounds in terms of (pitch) high or low and (volume) loud or soft.

e. Identify emergency sounds and sounds that help us stay safe.

S1P2. Students will demonstrate effects of magnets on other magnets and other objects.

a. Demonstrate how magnets attract and repel.

b. Identify common objects that are attracted to a magnet.

c. Identify objects and materials (air, water, wood, paper, your hand, etc.) that do not block magnetic force. Scientific investigations may take many different forms, including observing what things are like or what is happening somewhere, collecting specimens for analysis, and doing experiments.

b. Clear and active communication is an essential part of doing science. It enables scientists to inform others about their work, expose their ideas to criticism by

other scientists, and stay informed about scientific discoveries around the world.

c. Scientists use technology to increase their power to observe things and to measure and compare things accurately.

2nd Grade

Science Habits of Mind:

S2CS1. Students will be aware of the importance of curiosity, honesty, openness, and skepticism in science and will exhibit these traits in their own efforts to understand how the world works.

a. Raise questions about the world around them and be willing to seek answers to some of the questions by making careful observations and measurements and trying to figure things out.

S2CS3. Students will use tools and instruments for observing, measuring, and manipulating objects in scientific activities.

a Use ordinary hand tools and instruments to construct, measure, and look at objects.

S2CS5. Students will communicate scientific ideas and activities clearly.

a. Describe and compare things in terms of number, shape, texture, size, weight, color, and motion.

b. Draw pictures (grade level appropriate) that correctly portray features of the thing being described.

c. Use simple pictographs and bar graphs to communicate data.

The Nature of Science

S2CS6. Students will be familiar with the character of scientific knowledge and how it is achieved. Students will recognize that:

a. When a science investigation is done the way it was done before, we expect to get a similar result.

b. Science involves collecting data and testing hypotheses.

c. Scientists often repeat experiments multiple times and subject their ideas to criticism by other scientists who may disagree with them and do further tests.

d. All different kinds of people can be and are scientists.

S2CS7. Students will understand important features of the process of scientific inquiry. Students will apply the following to inquiry learning practices:

a. Scientists use a common language with precise definitions of terms to make it easier to communicate their observations to each other.

b. In doing science, it is often helpful to work as a team. All team members should reach their own individual conclusions and share their understandings with other members of the team in order to develop a consensus.

c. Tools such as thermometers, rulers and balances often give more information about things than can be obtained by just observing things without help.

Physical Science

S2P2. Students will identify sources of energy and how the energy is used.

a. Identify sources of motion energy.

b. Describe how motion energy is used.

S2P3. Students will demonstrate changes in speed and direction using pushes and pulls.

a. Demonstrate how pushing and pulling an object affects the motion of the object.

b. Demonstrate the effects of changes of speed on an object.

3rd Grade

Science Habits of Mind:

S3CS1. Students will be aware of the importance of curiosity, honesty, openness, and skepticism in science and will exhibit these traits in their own efforts to understand how the world works.

- a. Keep records of investigations and observations and do not alter the records later.
- b. Offer reasons for findings and consider reasons suggested by others.
- c. Take responsibility for understanding the importance of being safety conscious.

S3CS3. Students will use tools and instruments for observing, measuring, and manipulating objects in scientific activities utilizing safe laboratory procedures.

- a. Choose appropriate common materials for making simple mechanical constructions and repairing things.
- c. Identify and practice accepted safety procedures in manipulating science materials and equipment.

S3CS5. Students will communicate scientific ideas and activities clearly.

- a. Write instructions that others can follow in carrying out a scientific procedure.
- b. Make sketches to aid in explaining scientific procedures or ideas.

S3CS6. Students will question scientific claims and arguments effectively.

- a. Support statements with facts found in books, articles, and databases, and identify the sources used.

The Nature of Science:

S3CS7. Students will be familiar with the character of scientific knowledge and how it is achieved.

Students will recognize that:

Similar scientific investigations seldom produce exactly the same results, which may differ due to unexpected differences in whatever is being investigated, unrecognized differences in the methods or circumstances of the investigation, or observational uncertainties.

Some scientific knowledge is very old and yet is still applicable today.

- d. Science involves many different kinds of work and engages men and women of all ages and backgrounds.

Physical Science

S3P2. Students will investigate magnets and how they affect other magnets and common objects.

- a. Investigate to find common objects that are attracted to magnets.
- b. Investigate how magnets attract and repel each other.

4th Grade

Habits of the Mind

S4CS1. Students will be aware of the importance of curiosity, honesty, openness, and skepticism in science and will exhibit these traits in their own efforts to understand how the world works.

- a. Keep records of investigations and observations and do not alter the records later.
- b. Carefully distinguish observations from ideas and speculation about those observations.
- c. Offer reasons for findings and consider reasons suggested by others.
- d. Take responsibility for understanding the importance of being safety conscious.

The Nature of Science

S4CS4. Students will use ideas of system, model, change, and scale in exploring scientific and technological matters.

- a. Observe and describe how parts influence one another in things with many parts.
- b. Use geometric figures, number sequences, graphs, diagrams, sketches, number lines, maps, and stories to represent corresponding features of objects, events, and processes in the real world. Identify ways in which the representations do not match their original counterparts.
- c. Identify patterns of change in things—such as steady, repetitive, or irregular change—using records, tables, or graphs of measurements where appropriate.

S4CS5. Students will communicate scientific ideas and activities clearly.

- a. Write instructions that others can follow in carrying out a scientific procedure.
- b. Make sketches to aid in explaining scientific procedures or ideas.
- c. Use numerical data in describing and comparing objects and events.
- d. Locate scientific information in reference books, back issues of newspapers and magazines, CD-ROMs, and computer databases.

S4CS6. Students will question scientific claims and arguments effectively.

- a. Support statements with facts found in books, articles, and databases, and identify the sources used.
- b. Identify when comparisons might not be fair because some conditions are different.

S4CS5. Students will communicate scientific ideas and activities clearly.

- a. Write instructions that others can follow in carrying out a scientific procedure.
- b. Make sketches to aid in explaining scientific procedures or ideas.
- c. Use numerical data in describing and comparing objects and events.
- d. Locate scientific information in reference books, back issues of newspapers and magazines, CD-ROMs, and computer databases.

S4CS6. Students will question scientific claims and arguments effectively.

- a. Support statements with facts found in books, articles, and databases, and identify the resources used.
- b. Identify when comparisons might not be fair because some conditions are different.

The Nature of Science

4th Grade

S4CS7. Students will be familiar with the character of scientific knowledge and how it is achieved. Students will recognize that:

- a. Similar scientific investigations seldom produce exactly the same results, which may differ due to unexpected differences in whatever is being investigated, unrecognized differences in the methods or circumstances of the investigation, or observational uncertainties.
- b. Some scientific knowledge is very old and yet is still applicable today.

S4CS8. Students will understand important features of the process of scientific inquiry. Students will apply the following to inquiry learning practices:

- a. Scientific investigations may take many different forms, including observing what things are like or what is happening somewhere, collecting specimens for analysis, and doing experiments.
- b. Clear and active communication is an essential part of doing science. It enables scientists to inform others about their work, expose their ideas to criticism by other scientists, and stay informed about scientific discoveries around the world.
- c. Scientists use technology to increase their power to observe things and to measure and compare things accurately.
- d. Science involves many different kinds of work and engages men and women of all ages and backgrounds.

Physical Science

S4P3. Students will demonstrate the relationship between the application of a force and the resulting change in position and motion on an object.

- a. Identify simple machines and explain their uses (lever, pulley, wedge, inclined plane, screw, wheel and axle).
- b. Using different size objects, observe how force affects speed and motion.
- c. Explain what happens to the speed or direction of an object when a greater force than the initial one is applied.
- d. Demonstrate the effect of gravitational force on the motion of an object.

5th Grade

Science Habits of the Mind:

S5CS1. Students will be aware of the importance of curiosity, honesty, openness, and skepticism in science and will exhibit these traits in their own efforts to understand how the world works.

- a. Keep records of investigations and observations and do not alter the records later.
- b. Carefully distinguish observations from ideas and speculation about those observations.
- c. Offer reasons for findings and consider reasons suggested by others.
- d. Take responsibility for understanding the importance of being safety conscious.

S5CS3. Students will use tools and instruments for observing, measuring, and manipulating objects in scientific activities.

- a. Choose appropriate common materials for making simple mechanical constructions and repairing things.
- b. Measure and mix dry and liquid materials in prescribed amounts, exercising reasonable safety.
- c. Use computers, cameras and recording devices for capturing information.
- d. Identify and practice accepted safety procedures in manipulating science materials and equipment

S5CS4. Students will use ideas of system, model, change, and scale in exploring scientific and technological matters.

Observe and describe how parts influence one another in things with many parts.

S5CS5. Students will communicate scientific ideas and activities clearly.

- a. Write instructions that others can follow in carrying out a scientific procedure.
- b. Make sketches to aid in explaining scientific procedures or ideas.

5th Grade

The Nature of Science

S5CS7. Students will be familiar with the character of scientific knowledge and how it is achieved. Students will recognize that:

- a. Similar scientific investigations seldom produce exactly the same results, which may differ due to unexpected differences in whatever is being investigated, unrecognized differences in the methods or circumstances of the investigation, or observational uncertainties.
- b. Some scientific knowledge is very old and yet is still applicable today.

S5CS8. Students will understand important features of the process of scientific inquiry. Students will apply the following to inquiry learning practices:

- a. Scientific investigations may take many different forms, including observing what things are like or what is happening somewhere, collecting specimens for analysis, and doing experiments.
- b. Clear and active communication is an essential part of doing science. It enables scientists to inform others about their work, expose their ideas to criticism by other scientists, and stay informed about scientific discoveries around the world.
- c. Scientists use technology to increase their power to observe things and to measure and compare things accurately.
- d. Science involves many different kinds of work and engages men and women of all ages and backgrounds.

S5P3. Students will investigate the electricity, magnetism, and their relationship.

- a. Investigate static electricity.
- b. Determine the necessary components for completing an electric circuit.
- c. Investigate common materials to determine if they are insulators or conductors of electricity.
- d. Compare a bar magnet to an electromagnet.

6th Grade

Science Habits of Mind

S6CS1. Students will explore the importance of curiosity, honesty, openness, and skepticism in science and will exhibit these traits in their own efforts to understand how the world works.

- a. Understand the importance of—and keep—honest, clear, and accurate records in science.
- b. Understand that hypotheses are valuable if they lead to fruitful investigations, even if the hypotheses turn out not to be completely accurate descriptions.

S6CS3. Students will use computation and estimation skills necessary for analyzing data and following scientific explanations.

- a. Analyze scientific data by using, interpreting, and comparing numbers in several equivalent forms, such as integers and decimals.
- b. Use metric input units (such as seconds, meters, or grams per milliliter) of scientific calculations to determine the proper unit for expressing the answer.
- c. Address the relationship between accuracy and precision and the importance of each.
- d. Draw conclusions based on analyzed data.

S6CS4. Students will use tools and instruments for observing, measuring, and manipulating equipment and materials in scientific activities.

- a. Use appropriate technology to store and retrieve scientific information in topical, alphabetical, numerical, and keyword files, and create simple files.
- b. Estimate the effect of making a change in one part of a system on the system as a whole.
- c. Read analog and digital meters on instruments used to make direct measurements of length, volume, weight, elapsed time, rates, and temperature, and choose appropriate units for reporting various quantities.

S6CS5. Students will use the ideas of system, model, change, and scale in exploring scientific and technological matters.

- b. Identify several different models (such as physical replicas, pictures, and analogies) that could be used to represent the same thing, and evaluate their usefulness, taking into account such things as the model's purpose and complexity.

S6CS6. Students will communicate scientific ideas and activities clearly.

- a. Write clear, step-by-step instructions for conducting scientific investigations, operating a piece of equipment, or following a procedure.
- c. Organize scientific information using appropriate tables, charts, and graphs, and identify relationships they reveal.

Content

S6E1. Students will explore current scientific views of the universe and how those views evolved.

- e. Explain that gravity is the force that governs the motion in the solar system.

While the focus in 6th grade is Earth Science, our programs can be flexible to meet the needs of your classroom. Contact us for more information on how you can give your students real world opportunities to apply their knowledge of Earth systems via flight.

7th Grade

Science Habits of Mind

S7CS1. Students will explore of the importance of curiosity, honesty, openness, and skepticism in science and will exhibit these traits in their own efforts to understand how the world works.

- a. Understand the importance of—and keep—honest, clear, and accurate records in science.
- b. Understand that hypotheses can be valuable, even if they turn out not to be completely accurate.

S7CS2. Students will use standard safety practices for all classroom laboratory and field investigations.

- a. Follow correct procedures for use of scientific apparatus.
- b. Demonstrate appropriate techniques in all laboratory situations.
- c. Follow correct protocol for identifying and reporting safety problems and violations.

S7CS3. Students will have the computation and estimation skills necessary for analyzing data and following scientific explanations.

- a. Analyze scientific data by using, interpreting, and comparing numbers in several equivalent forms, such as integers, fractions, decimals, and percent's.
- b. Use the mean, median, and mode to analyze a set of scientific data.
- c. Apply the metric system to a scientific investigation that includes metric to metric conversion. (i.e. centimeters to meters)
- d. Draw conclusions based on analyzed data.
- e. Decide what degree of precision is adequate, and round off appropriately.
- f. Address the relationship between accuracy and precision and the importance of each.

S7CS4. Students will use tools and instruments for observing, measuring, and manipulating equipment and materials in scientific activities.

- a. Use appropriate technology to store and retrieve scientific information in topical, alphabetical, numerical, and keyword files, and create simple files.
- b. Use appropriate tools for measuring objects and/or substances.
- c. Learn and use on a regular basis standard safety practices for scientific investigations.

S7CS5. Students will use the ideas of system, model, change, and scale in exploring scientific and technological matters.

- b. Understand that different models (such as physical replicas, pictures, and analogies) can be used to represent the same thing.

S7CS6. Students will communicate scientific ideas and activities clearly.

- c. Organize scientific information using appropriate simple tables, charts, and graphs, and identify relationships they reveal.

S7CS7. Students will question scientific claims and arguments effectively.

- d. Recognize that there may be more than one way to interpret a given set of findings.

7th Grade

The Nature of Science

S7CS8. Students will investigate the characteristics of scientific knowledge and how that knowledge is achieved. Students will apply the following to scientific concepts:

- a. When similar investigations give different results, the scientific challenge is to judge whether the differences are trivial or significant, which often requires further study. Even with similar results, scientists may wait until an investigation has been repeated many times before accepting the results as meaningful.
- b. When new experimental results are inconsistent with an existing, well-established theory, scientists may pursue further experimentation to determine whether the results are flawed or the theory requires modification.
- c. As prevailing theories are challenged by new information, scientific knowledge may change.

S7CS9. Students will investigate the features of the process of scientific inquiry. Students will apply the following to inquiry learning practices:

- a. Investigations are conducted for different reasons, which include exploring new phenomena, confirming previous results, testing how well a theory predicts, and comparing competing theories.
- b. Scientific investigations usually involve collecting evidence, reasoning, devising hypotheses, and formulating explanations to make sense of collected evidence.
- c. Scientific experiments investigate the effect of one variable on another. All other variables are kept constant.
- d. Scientists often collaborate to design research. To prevent this bias, scientists conduct independent studies of the same questions.
- e. Accurate record keeping, data sharing, and replication of results are essential for maintaining an investigator's credibility with other scientists and society.
- f. Scientists use technology and mathematics to enhance the process of scientific inquiry.
- g. The ethics of science require that special care must be taken and used for human subjects and animals in scientific research. Scientists must adhere to the appropriate rules and guidelines when conducting research.

8th Grade

Science: The Nature of Science

S8CS1. Students will explore the importance of curiosity, honesty, openness, and skepticism in science and will exhibit these traits in their own efforts to understand how the world works.

Understand the importance of—and keep—honest, clear, and accurate records in science.

- b Understand that hypotheses can be valuable even if they turn out not to be completely accurate.

S8CS2. Students will use standard safety practices for all classroom laboratory and field investigations.

- a. Follow correct procedures for use of scientific apparatus.
- b. Demonstrate appropriate techniques in all laboratory situations.
- c. Follow correct protocol for identifying and reporting safety problems and violations.

S8CS3. Students will have the computation and estimation skills necessary for analyzing data and following scientific explanations.

- a. Analyze scientific data by using, interpreting, and comparing numbers in several equivalent forms, such as integers, fractions, decimals, and percents.
- b. Find the mean, median, and mode and use them to analyze a set of scientific data.
- c. Apply the metric system to scientific investigations that include metric to metric conversions (i.e., centimeters to meters).
- d. Decide what degree of precision is adequate, and round off appropriately.
- e. Address the relationship between accuracy and precision.
- f. Use ratios and proportions, including constant rates, in appropriate problems.

S8CS4. Students will use tools and instruments for observing, measuring, and manipulating equipment and materials in scientific activities utilizing safe laboratory procedures.

- a. Use appropriate technology to store and retrieve scientific information in topical, alphabetical, numerical, and keyword files, and create simple files.
- b. Use appropriate tools and units for measuring objects and/or substances.
- c. Learn and use standard safety practices when conducting scientific investigations.

S8CS5. Students will use the ideas of system, model, change, and scale in exploring scientific and technological matters.

- a. Observe and explain how parts can be related to other parts in a system such as the role of simple machines in complex machines.
- b. Understand that different models (such as physical replicas, pictures, and analogies)

S8CS6. Students will communicate scientific ideas and activities clearly.

- a. Write clear, step-by-step instructions for conducting scientific investigations, operating a piece of equipment, or following a procedure.
- b. Write for scientific purposes incorporating information from a circle, bar, or line graph, data tables, diagrams, and symbols.
- c. Organize scientific information in appropriate tables, charts, and graphs, and identify relationships they reveal.

Physical Science

S8P3. Students will investigate relationship between force, mass, and the motion of objects.

- a. Determine the relationship between velocity and acceleration.
- b. Demonstrate the effect of balanced and unbalanced forces on an object in terms of gravity, inertia, and friction.
- c. Demonstrate the effect of simple machines (lever, inclined plane, pulley, wedge, screw, and wheel and axle) on work.

S8P5. Students will recognize characteristics of gravity as major force acting in nature.

Recognize that every object exerts gravitational force on every other object and that the force exerted depends on how much mass the objects have and how far apart they are.

SPS8. Students will determine relationships among force, mass, and motion.

- a. Calculate velocity and acceleration.
- b. Apply Newton's three laws to everyday situations by explaining the following:
 - Inertia
 - Relationship between force, mass and acceleration
 - Equal and opposite forces
- c. Relate falling objects to gravitational force
- d. Explain the difference in mass and weight.

Habits of Mind:

SCSh8. Students will understand important features of the process of scientific inquiry. Students will apply the following to inquiry learning practices:

- a. Scientific investigators control the conditions of their experiments in order to produce valuable data.
- b. Scientific researchers are expected to critically assess the quality of data including possible sources of bias in their investigations' hypotheses, observations, data analyses, and interpretations.
- c. Scientists use practices such as peer review and publication to reinforce the integrity of scientific activity and reporting.
- d. The merit of a new theory is judged by how well scientific data are explained by the new theory.

High School

Science Habits of Mind

SCSh1. Students will evaluate the importance of curiosity, honesty, openness, and skepticism in science.

- a. Exhibit the above traits in their own scientific activities.
- b. Recognize that different explanations often can be given for the same evidence.
- c. Explain that further understanding of scientific problems relies on the design and execution of new experiments which may reinforce or weaken opposing explanations.

SCSh2. Students will use standard safety practices for all classroom laboratory and field investigations.

- a. Follow correct procedures for use of scientific apparatus.
- b. Demonstrate appropriate techniques in all laboratory situations.
- c. Follow correct protocol for identifying and reporting safety problems and violations.

SCSh3. Students will identify and investigate problems scientifically.

Suggest reasonable hypotheses for identified problems.

- b. Develop procedures for solving scientific problems.
- c. Collect, organize and record appropriate data.
- d. Graphically compare and analyze data points and/or summary statistics.
- e. Develop reasonable conclusions based on data collected.
- f. Evaluate whether conclusions are reasonable by reviewing the process and checking against other available information.

SCSh4. Students will use tools and instruments for observing, measuring, and manipulating scientific equipment and materials.

- a. Develop and use systematic procedures for recording and organizing information.
- c. Use technology to develop, test, and revise experimental or mathematical models.

SCSh5. Students will demonstrate the computation and estimation skills necessary for analyzing data and developing reasonable scientific explanations.

- a. Trace the source on any large disparity between estimated and calculated answers to problems.
- b. Consider possible effects of measurement errors on calculations.
- c. Recognize the relationship between accuracy and precision.
- d. Express appropriate numbers of significant figures for calculated data, using scientific notation where appropriate.
- e. Solve scientific problems by substituting quantitative values, using dimensional analysis, and/or simple algebraic formulas as appropriate.
- c. Use data as evidence to support scientific arguments and claims in written or oral presentations.
- d. Participate in group discussions of scientific investigation and current scientific issues

SCSh6. Students will communicate scientific investigations and information clearly.

- a. Write clear, coherent laboratory reports related to scientific investigations.
- b. Write clear, coherent accounts of current scientific issues, including possible alternative interpretations of the data.

High School

The Nature of Science

SCSh7. Students will analyze how scientific knowledge is developed. Students will recognize that:

- a. The universe is a vast single system in which the basic principles are the same everywhere.
- b. Universal principles are discovered through observation and experimental verification.
- c. From time to time, major shifts occur in the scientific view of how the world works. More often, however, the changes that take place in the body of scientific knowledge are small modifications of prior knowledge. Major shifts in scientific views typically occur after the observation of a new phenomenon or an insightful interpretation of existing data by an individual or research group.
- d. Hypotheses often cause scientists to develop new experiments that produce additional data.
- e. Testing, revising, and occasionally rejecting new and old theories never ends.

SCSh8. Students will understand important features of the process of scientific inquiry. Students will apply the following to inquiry learning practices:

- a. Scientific investigators control the conditions of their experiments in order to produce valuable data.
- b. Scientific researchers are expected to critically assess the quality of data including possible sources of bias in their investigations' hypotheses, observations, data analyses, and interpretations.
- c. Scientists use practices such as peer review and publication to reinforce the integrity of scientific activity and reporting.
- d. The merit of a new theory is judged by how well scientific data are explained by the new theory.
- e. The ultimate goal of science is to develop an understanding of the natural universe which is free of biases.
- f. Science disciplines and traditions differ from one another in what is studied, techniques used, and outcomes sought.

CONTENT

SPS8. Students will determine relationships among force, mass, and motion.

- a. Calculate velocity and acceleration.
- b. Apply Newton's three laws to everyday situations by explaining the following:
 - Inertia
 - Relationship between force, mass and acceleration
 - Equal and opposite forces
- c. Relate falling objects to gravitational force
- d. Explain the difference in mass and weight.

SP1. Students will analyze the relationships between force, mass, gravity, and the motion of objects.

- a. Calculate average velocity, instantaneous velocity, and acceleration in a given frame of reference.
- b. Compare and contrast scalar and vector quantities.
- c. Compare graphically and algebraically the relationships among position, velocity, acceleration, and time.
- d. Measure and calculate the magnitude of frictional forces and Newton's three Laws of Motion.
- e. Measure and calculate the magnitude of gravitational forces.
- f. Measure and calculate two-dimensional motion (projectile and circular) by using component vectors.
- g. Measure and calculate centripetal force.
- h. Determine the conditions required to maintain a body in a state of static equilibrium.

Next Generation Science Standards (NGSS)

*Though not adopted by the state of Georgia to date, the Museum of Aviation's National STEM Academy's programs can be adapted to the NGSS upon request, including but not limited to the Engineering Design Standards. For a complete list of NGSS, please visit the [NGSS Website](#). For more information on the National STEM Academy's programs and how they may be adapted to meet the NGSS, please refer to [page 21](#) for contact information. Thank you.

Social Studies

GRADE	GPS #		BUILDING	
Kindergarten	SSKH2 (g)	Pledge of Allegiance	C-130 Classroom - Flag	Students will demonstrate patriotism by learning facts about our US Flag
Grade 1	SS1H1 (a) (b)	(a)WWII (b)Tuskegee; Rationing	(a)Scott Hangar (b)Eagle	Students will learn contributions of Pres Roosevelt. Discuss Rationing and Tuskegee Airmen.
Grade 3	SS3H2 (a) (b)	(a) Pres Roosevelt and wife (b) Tuskegee Airmen	Scott Hangar, Tuskegee Airmen Exhibit	Discuss Tuskegee Airmen Under the Presidency of Roosevelt; their obstacle and how his wife supported them
Grade 5	SS5H6 (b)(c)(e)	America's Involvement WWII	WWII Eagle Bldg.	(b)(c)Students will learn major events in the war to include Viewing pictures of the atomic bombs dropped on Nagasaki and Hiroshima. (e)Students will learn the roles of Women of the Armed Forces during WWII
Grade 5	SS5H8	Key People and events between 1950-1975	Vietnam Bldg. Eagle Bldg.	The student will describe the importance of key people, events, and developments between 1950-1975. a. Discuss the importance of the Cuban Missile Crisis and the Vietnam War. d. Discuss the significance of the technologies of television and space exploration.
Grade 7	SS7H9 (d)(e)	Korean/VN War	Eagle Building	(d) (e) Students will view the F-84 Airplane and learn the significance of the plane in the Korean War. Students will go inside the C-130 Airplane and learn the significance of this plane during the Vietnam War
Grade 8	SS8H9	The impact of World War II on Georgia's development economically, socially, and politically.	WWII Eagle Bldg.	(a) Describe the impact of events leading up to American involvement in World War II; include Lend-Lease and the bombing of Pearl Harbor. (b) Evaluate the importance of Bell Aircraft, military bases, Richard Russell, and Carl Vinson.

References & Contact Information:

Education programs within the Museum of Aviation's Education Center address (where appropriate) the following Georgia Early Learning and Development Standards, (GELDS), the Common Core Georgia Performance Standards (CCGPS), and the Georgia Performance Standards (GPS) adopted by the Georgia Department of Education.

For more information on the Education Center's Science & Mathematics Curriculum or how to request a specific curriculum for your scheduled program, please contact Liz Skinner at the National STEM Academy at 478-222-7575 or lskinner@museumofaviation.org.

For more information on the Education Center's Social Studies and History Curriculum or how to request a specific curriculum for your scheduled program, please contact Candi James in the Aviation Heritage Center at 478-926-5558 or cjames@museumofaviation.org.

For more information on the GELDS, CCGPS and/or GPS please visit the Georgia Department of Education Standards website at: <https://www.georgiastandards.org>