Tuckahoe Union Free School District

Physical Science Curriculum Map

Spring 2012

Prepared by Frank Greco

6TH Grade Science Curriculum Map Mr. Greco

MONTH	CONTENT/ESSENTIAL QUESTION	NYS STANDARD/KEY IDEA/ PERFORMANCE INDICATORS	LAB ACTIVITIES	SKILLS	ASSESSMENTS
SEPTEMBER	**Unit 1: Introduction to Science** What are common stereotypes about scientists? How do stereotypes impact our lives? What are the major fields of study in science? How are the major scientific fields interrelated? How can we effectively use valid scientific references? What precautions can we take to be safe in the laboratory and at home? Why are laboratory safety rules essential? Why do we have seasons in the Northern and Southern Hemispheres? How are mathematics and science related? How can mathematics be used in science? How big is the sun? How can proportions be used in science? Why is percent error used in science	SD6,7: K1 S2.1a G1 S2.1d G3 M1.1 M3.1a S1.1a – c S2.3a SD2: 1.2, 2.1a – b SD2: K3 1.1a – d,h,i,j ---------- **COMMON CORE:** Reading Standards for Literacy in Science and Technical Subjects 6-12: 1 – 9 Writing Standards for Literacy in History/Social Studies, Science, and Technical Subjects 6 – 12: 1 – 10	Activity: Scientist Stereotype Illustration/ Gallery Walk Activity: Observing and Interpreting Major Scientific Fields through Images Inquiry Activity: Reference Scavenger Hunt Inquiry Lab: Autumnal Equinox Experiment	Determine the impacts of stereotypes. Determine the significance of the major areas of science. Utilize a variety of scientific resources to answer questions and solve problems. Create safety rules that are applicable both in and outside of the classroom. Investigate the cause for seasons. Use appropriate scientific tools to solve problems about the natural world. Collect, organize, analyze, and Interpret data. Assess the validity of data. Apply mathematical knowledge to solve problems.	Do Now Questions Classroom Participation Practice Question Sheets Homework Assignments Scientific Literacy Assignments Graphic Organizer Assignments Online: Flashcards/ Questions/Tests/Games Weekly Quizzes Individual/Group Lab Activity Assignments

MONTH	CONTENT/ESSENTIAL QUESTION	NYS STANDARD/KEY IDEA/ PERFORMANCE INDICATORS	LAB ACTIVITIES	SKILLS	ASSESSMENTS
OCTOBER	**Unit 2: The Scientific Method** What are the parts of the scientific method? What is a good hypothesis? How does an observation differ from an inference? How does the independent variable effect the dependent variable? How does a control group compare to an experimental group? How can data be organized, analyzed, and interpreted? How do qualitative and quantitative analyses compare? Why should one variable be tested at a time? How are valid experiments carried out? What are reliable results? What is the difference between accurate and precise results? What makes a conclusion valid? Why is the scientific method a continuous process? What are sources of error in an experiment? How can experiments be improved?	S1.2a S2.3c S1.2c S2.2d S3.2c S2.1c S1.3 S1.4 S2.1b S2.1d S2.2a – e S2.3a – c S3.1a,b S3.2a – h S3.3 ---------- **COMMON CORE:** Reading Standards for Literacy in Science and Technical Subjects 6-12: 1 – 9 Writing Standards for Literacy in History/Social Studies, Science, and Technical Subjects 6 – 12: 1 – 10	Activity: Evaluating Significant Experiments Lab: Designing/Conducting/ Evaluating Valid Experiments	Identify the steps of the scientific method. Compare and contrast scientific methods. Utilize the scientific method to carry out controlled/ uncontrolled investigations. Assess the validity of several experiments. Formulate hypotheses and design experiments to test them. Improve experimental design by critiquing sources of error. Determine the importance of sharing results.	Do Now Questions Classroom Participation Practice Question Sheets Homework Assignments Scientific Literacy Assignments Graphic Organizer Assignments Online: Flashcards/ Questions/Tests/Games Weekly Quizzes Individual/Group Lab Activity Assignments Skills/Scientific Method Test

MONTH	CONTENT/ESSENTIAL QUESTION	NYS STANDARD/KEY IDEA/ PERFORMANCE INDICATORS	LAB ACTIVITIES	SKILLS	ASSESSMENTS
NOVEMBER/DECEMBER	**Unit 3: Matter and Changes** What are the properties of matter? How do mass and weight differ? How can matter be measured efficiently? What are the differences between the four states of matter? How does matter undergo changes? What causes matter to undergo changes? Why does temperature remain constant at the phase changes? How do density and buoyancy have an effect on floating and sinking? How does temperature and pressure affect density? How can density be used to identify a substance? What characteristics are used to determine the difference between physical and chemical properties/changes? What is known about dark matter and dark energy? How does dark matter/energy affect surroundings?	S1.1,a,c 1.2a 1.4 G7 K3 3.2d 3.1c 3.3a 3.1d – f 3.1a 3.3 P10 3.1h,i 2.1b 3.2a,c ---------- **COMMON CORE:** Reading Standards for Literacy in Science and Technical Subjects 6-12: 1 – 9 Writing Standards for Literacy in History/Social Studies, Science, and Technical Subjects 6 – 12: 1 – 10	Lab: Investigating with scientific tools Activity: Introduction to Matter: Leveled Readers Team Project Lab: Density and Buoyancy Experiment Activity: Density and Buoyancy Demonstration Inquiry Activity: Physical/Chemical Properties/ Changes Demonstration Inquiry Lab: Making Ice Cream	Use appropriate scientific tools to solve problems about the natural world. Utilize a variety of scientific resources to answer questions and solve problems. Apply mathematical knowledge to solve problems. Compare, contrast, and organize varying forms of matter. Analyze and interpret heating/cooling curve for water. Measure the density of regular/irregular shaped solids and liquids. Differentiate between physical/chemical properties and changes. Compare and contrast ordinary and dark matter.	Do Now Questions Classroom Participation Practice Question Sheets Homework Assignments Scientific Literacy Assignments Graphic Organizer Assignments Online: Flashcards/ Questions/Tests/Games Weekly Quizzes Individual/Group Lab Activity Assignments Binder Check

MONTH	CONTENT/ESSENTIAL QUESTION	NYS STANDARD/KEY IDEA/ PERFORMANCE INDICATORS	LAB ACTIVITIES	SKILLS	ASSESSMENTS
JANUARY	**Unit 4: Building Blocks of Matter** What makes up matter? Describe the history of the atomic model. How can matter be classified? How is the periodic table organized? What is a chemical formula? What are the components of a solution? What variables have an effect on solubility? How can mixtures be separated? What are the applications of chromatography? Why is concentration important? Compare and contrast acids and bases. What is the pH scale? What are the four types of chemical reactions? How are chemical equations balanced? What is the law of conservation of mass?	S1.1,a,c 1.2a 1.4 3.2d 3.3g T1.1a 3.3f T1.4b 3.3c 3.2b P14 3.1g 3.2e,f S1.2a 2.1b 3.3 M1.1 3.2d ---------- **COMMON CORE:** Reading Standards for Literacy in Science and Technical Subjects 6-12: 1 – 9 Writing Standards for Literacy in History/Social Studies, Science, and Technical Subjects 6 – 12: 1 – 10	Activity: Identifying, Labeling, and illustrating atoms Activity: Periodic Table Scavenger Hunt Project Lab: Chromatography Experiment Lab: Household Acids and Bases Experiment Activity: Identifying, Labeling, and Balancing Chemical Reactions	Review historical experiments and determine their importance to modern day science. Use appropriate scientific tools to solve problems about the natural world. Utilize a variety of scientific resources to answer questions and solve problems. Apply mathematical knowledge to solve problems. Compare, contrast, and organize varying forms of matter. Construct atomic models. Analyze and interpret solubility curves. Separate mixtures using chromatography. Test the pH of common acids and bases. Analyze and interpret chemical reactions.	Do Now Questions Classroom Participation Practice Question Sheets Homework Assignments Scientific Literacy Assignments Graphic Organizer Assignments Online: Flashcards/ Questions/Tests/Games Weekly Quizzes Individual/Group Lab Activity Assignments Binder Check Cumulative Chemistry Test

MONTH	CONTENT/ESSENTIAL QUESTION	NYS STANDARD/KEY IDEA/ PERFORMANCE INDICATORS	LAB ACTIVITIES	SKILLS	ASSESSMENTS
FEBRUARY/MARCH	**Unit 5: Forces and Motion** What is a force? What types of forces exist? What happens when forces act on objects? How are forces illustrated in diagrams? How does friction affect motion? Describe ways friction be helpful/harmful? How does gravity affect objects? What variables affect gravity? How can motion be described? What does displacement mean? How are graphs about motion interpreted? Explain and give examples of Newton's laws of motion. What variables affect momentum? What is the law of conservation of momentum?	S2.1d 5.1a – e S1.1,a,c 1.2a 1.4 3.2d P16 5.2a – d 3.3 T1.5a,b ---------- **COMMON CORE:** Reading Standards for Literacy in Science and Technical Subjects 6-12: 1 – 9 Writing Standards for Literacy in History/Social Studies, Science, and Technical Subjects 6 – 12: 1 – 10	Lab: Testing the Friction of Various Surfaces Lab: Falling Objects Experiment Activity: Newton's Laws Demonstration Inquiry	Use appropriate scientific tools to solve problems about the natural world. Utilize a variety of scientific resources to answer questions and solve problems. Apply mathematical knowledge to solve problems. Compare the force of friction for different surfaces. Determine the gravitational effects of small and large objects. Determine the speed, velocity, and acceleration of objects. Analyze and interpret a variety of motion graphs. Provide evidence that supports various scientific laws.	Do Now Questions Classroom Participation Practice Question Sheets Homework Assignments Scientific Literacy Assignments Graphic Organizer Assignments Online: Flashcards/ Questions/Tests/Games Weekly Quizzes Individual/Group Lab Activity Assignments Binder Check

MONTH	CONTENT/ESSENTIAL QUESTION	NYS STANDARD/KEY IDEA/ PERFORMANCE INDICATORS	LAB ACTIVITIES	SKILLS	ASSESSMENTS
APRIL	**Unit 6: Machines** What does it mean to carry out work? What is a machine? Why do we use machines? Identify and describe the six types of simple machines. How are the effort force, load, and fulcrum related? How does the amount of work you put into a machine compare to the amount of work carried out by the machine? How do first-class, second-class, and third-class levers differ? How can you make machines? What is the difference between a simple and a compound machine?	S1.1,a,c 1.2a 1.4 3.2d 5.2 5.2e-g ---------- **COMMON CORE:** Reading Standards for Literacy in Science and Technical Subjects 6-12: 1 – 9 Writing Standards for Literacy in History/Social Studies, Science, and Technical Subjects 6 – 12: 1 – 10	Activity: Introduction to Machines: Leveled Readers Team Project Lab: Building/Testing/Evaluating Simple Machines Experiment	Use appropriate scientific tools to solve problems about the natural world. Utilize a variety of scientific resources to answer questions and solve problems. Apply mathematical knowledge to solve problems. Determine the benefit of simple and compound machines. Construct/test/evaluate a variety of machines.	Do Now Questions Classroom Participation Practice Question Sheets Homework Assignments Scientific Literacy Assignments Graphic Organizer Assignments Online: Flashcards/ Questions/Tests/Games Weekly Quizzes Individual/Group Lab Activity Assignments

MONTH	CONTENT/ESSENTIAL QUESTION	NYS STANDARD/KEY IDEA/ PERFORMANCE INDICATORS	LAB ACTIVITIES	SKILLS	ASSESSMENTS
MAY/JUNE	**Unit 7: Changing Energy Forms** What is energy? What types of energies exist? What is the difference between potential and kinetic energy? How does energy change from one form to another? Why is mass and energy conserved? How does electricity flow? How can an electric motor be built? What happens in a magnetic field? How are magnetism and electricity related? How does an electromagnet work? Why are generators important? How does a circuit board work? What can people do to better conserve energy?	S2.1d 4.1a – e S1.1,a,c 1.2a 1.4 3.2d SD6: K1.2 4.5a,b SD6: K1.2 5a,b 4.4d – g 3.3 S1.2a 2.1b P15 4.3a T1.5a,b SD2: 3.3 S1.2 T1.4b 5.2b ---------- **COMMON CORE:** Reading Standards for Literacy in Science and Technical Subjects 6-12: 1 – 9 Writing Standards for Literacy in History/Social Studies, Science, and Technical Subjects 6 – 12: 1 – 10	Lab: Designing/Building/Testing/ Evaluating Roller Coasters Lab: Evaluating Magnetic Fields Experiment Lab: Designing/Building/Testing Magnetic/Electrical Devices	Use appropriate scientific tools to solve problems about the natural world. Utilize a variety of scientific resources to answer questions and solve problems. Apply mathematical knowledge to solve problems. Construct/test/evaluate magnetic/electrical devices. Illustrate and explain a variety of energy conversions.	Do Now Questions Classroom Participation Practice Question Sheets Homework Assignments Scientific Literacy Assignments Graphic Organizer Assignments Online: Flashcards/ Questions/Tests/Games Weekly Quizzes Individual/Group Lab Activity Assignments Binder Check Final Exam