

Tuckahoe Union Free School District
Earth Science Curriculum Map/Scope and Sequence

Compiled by: Mark Dineen

Tuckahoe Union Free School District Curriculum Map- Earth Science Mr. Dineen

Texts: Prentice Hall Earth Science, Glencoe Earth Science, McDougal Littell Earth Science

MONTH	CONTENT/ESSENTIAL QUESTION	NYS STANDARD/KEY IDEA/PERFORMANCE INDICATORS	LAB ACTIVITIES	SKILLS	ASSESSMENTS
SEPTEMBER	<p>Unit 1: Hurricanes and Weather</p> <p>Introduction to earth science</p> <p>How do hurricanes form?</p> <p>What are the dangers associated with hurricanes?</p> <p>How do we prepare for a hurricane?</p> <p>How do we measure weather?</p> <p>How do we record weather data on a map?</p> <p>How do air masses form?</p> <p>How do fronts form?</p> <p>What are the characteristics of pressure systems?</p> <p>How does water enter and leave the atmosphere?</p> <p>How do we determine relative humidity and dew point?</p>	<p>1.1c, 1.1e, 1.2g, 2.1a, 2.1b, 2.1c, 2.1d, 2.1e, 2.1f, 2.1g, 2.1h, 2.1l</p> <p>Common Core Standards Reading 1-10 Writing 1-10</p>	<p>Lab: Hurricanes</p> <p>Lab: Station Models</p> <p>Lab: Reading and Interpreting large scale weather maps</p> <p>Lab: Homemade Clouds</p>	<p>Plotting and locating points using latitude and longitude on both large and small scale maps.</p> <p>Organize, graph and analyze data from a variety of sources.</p> <p>Read and interpret real time weather data, maps and satellite images from a variety of sources.</p> <p>Develop explanations of natural phenomena.</p> <p>Information technology is used to retrieve process and communicate information.</p> <p>Modeling systems or processes.</p> <p>Identify patterns of change to make predictions about future behavior or conditions.</p> <p>Develop strategies for dealing with severe weather events that involve data collection, risk analysis and development of a safety plan.</p>	<p>Skill-based handouts ex. Relative Humidity and Dew Point Practice</p> <p>Lab Write-ups</p> <p>Quiz: Interpreting station models and weather maps</p> <p>Homework</p> <p>Castle Learning</p> <p>Classroom participation</p> <p>Vocabulary Tests</p> <p>Exams based on previous regents questions. Eduware Wizard</p> <p>Read and Interpret Current Event Articles</p>

MONTH	CONTENT/ESSENTIAL QUESTION	NYS STANDARD/KEY IDEA/PERFORMANCE INDICATOR	LAB ACTIVITIES	SKILLS	ASSESSMENTS
OCTOBER	<p>Unit 2: Climate and Soil Water Movement</p> <p>How are climate and weather different?</p> <p>What factors affect climate?</p> <p>What is the water cycle?</p> <p>How does water enter and leave soil?</p> <p>What factors affect permeability, porosity and capillarity?</p> <p>How do we calculate water budgets?</p> <p>What is the relationship between a water budget and stream discharge?</p>	<p>1.2g, 2.2a, 2.2b, 2.2c, 2.2d</p> <p>Common Core Standards Reading 1-10 Writing 1-10</p>	<p>Lab: What factors affect climate?</p> <p>Lab: Soil Water Movement</p> <p>Lab: Water budgets</p> <p>Lab: Stream Discharge</p>	<p>Mathematical analysis of water budget data.</p> <p>Develop explanations of natural phenomena.</p> <p>Information technology is used to access climate data for analysis and comparison.</p> <p>Modeling systems or processes.</p> <p>Organize, graph and analyze data from a variety of sources.</p>	<p>Skill-based handouts ex. Physical vs Chemical Weathering</p> <p>Lab Write-ups</p> <p>Homework</p> <p>Castle Learning</p> <p>Classroom participation</p> <p>Vocabulary Tests</p> <p>Exams based on previous regents questions. Eduware Wizard</p> <p>Read and Interpret Current Event Articles</p>

MONTH	CONTENT/ESSENTIAL QUESTION	NYS STANDARD/KEY IDEA/PERFORMANCE INDICATOR	LAB ACTIVITIES	SKILLS	ASSESSMENTS
NOVEMBER	<p style="text-align: center;">Unit 3: Weathering, Erosion and Deposition</p> <p>What factors affect weathering?</p> <p>What are the products of weathering?</p> <p>What are the characteristics of erosion by running water (rivers)?</p> <p>What are the characteristics of stream deposition?</p> <p>What are the characteristics of glacial erosion and deposition?</p> <p>What are the characteristics of wind erosion and deposition?</p>	<p>1.2g, 2.1s, 2.1t, 2.1u, 2.1v, 2.1w</p> <p>Common Core Standards Reading 1-10 Writing 1-10</p>	<p>Lab: Composition of Soil</p> <p>Lab: Settling Rate</p> <p>Lab: Modeling Continental Glaciations</p> <p>Time permitting: Cave Models</p>	<p>Design an experiment to determine the factors that affect the settling rate of sediments in quiet water.</p> <p>Mathematical analysis of settling rate data.</p> <p>Information technology is used to identify areas of the world where glaciers are advancing and retreating.</p> <p>Modeling systems or processes.</p> <p>Organize, graph and analyze data from a variety of sources.</p> <p>Analyze an erosional-depositional system</p>	<p>Skill-based Handouts ex. Rates of Weathering</p> <p>Lab Write-ups</p> <p>Homework</p> <p>Castle Learning</p> <p>Classroom participation</p> <p>Vocabulary Tests</p> <p>Exams based on previous regents questions. Eduware Wizard</p> <p>Read and Interpret Current Event Articles</p>

MONTH	CONTENT/ESSENTIAL QUESTION	NYS STANDARD/KEY IDEA/PERFORMANCE INDICATOR	LAB ACTIVITIES	SKILLS	ASSESSMENTS
DECEMBER	Unit 4: Mapping				
	How do we determine latitude and longitude?	1.1c, 1.1d	Lab: Locating points on the earth's surface	Mathematical analysis of map data such as calculating gradient and determining longitude.	Skill-based Handouts ex. Drawing Profiles, Drawing Isolines, Reading and Interpreting Contour maps
	How do we read and interpret field maps?	Common Core Standards Reading 1-10 Writing 1-10	Lab: Drawing Profiles	Information technology is used to overlay contour maps onto Google Earth to model local topography.	Lab Write-ups Homework
	How do we calculate gradient?		Lab: Constructing a Contour Map	Modeling systems or processes such as creating contour maps from plastic landforms.	Castle Learning
	How do we draw a profile?			Organize, graph and analyze data from a variety of sources.	Classroom participation
	Unit 5 Minerals and Rocks				
How do we define and identify minerals?	2.1w, 3.1a, 3.1b, 3.1c Common Core Standards Reading 1-10 Writing 1-10	Lab: Identifying the physical properties of minerals	Use of flow charts to identify minerals	Vocabulary Tests Exams based on previous regents questions.	
How do we describe and identify the physical properties of minerals?		Lab: Mineral Identification Mineral Pamphlet	Information technology is used to research a mineral and develop a pamphlet which describes its properties and uses.	Eduware Wizard Read and Interpret Current Event Articles	

MONTH	CONTENT/ESSENTIAL QUESTION	NYS STANDARD/KEY IDEA/PERFORMANCE INDICATOR	LAB ACTIVITIES	SKILLS	ASSESSMENTS
<h1 style="writing-mode: vertical-rl; transform: rotate(180deg); text-align: center;">January</h1>	<p>Unit 5 Minerals and Rocks (cont.) How do igneous rocks form?</p> <p>How do sedimentary rocks form?</p> <p>How do metamorphic rocks form?</p> <p>What is the rock cycle?</p> <p>High School- Midterm Exam</p> <hr/>	<p>2.1a, 2.1m, 2.1w, 3.1a, 3.1b, 3.1c</p> <p>Common Core Standards Reading 1-10 Writing 1-10</p> <hr/>	<p>Lab: Characteristics of Igneous Rocks</p> <p>Lab: Characteristics of Sedimentary Rocks</p> <p>Lab: Characteristics of Metamorphic Rocks</p> <p>Rock Pamphlet</p> <hr/>	<p>Organize, graph and analyze data from a variety of sources</p> <p>Use of flow charts to identify rocks</p> <p>Information technology is used to research a rock and develop a pamphlet which describes its formation and uses.</p> <p>Using USGS Rock Cycle diagram, relate the distribution and location of rock types on the earth with the forces that create and transform them.</p> <p>Debate the effect of human activities as they relate to quality of life on earth systems. Ex. Hydrofracking, energy consumption, land use, and global warming.</p> <hr/>	<p>Skill-based Handouts ex. Inferred Properties of the Earth, Plate Tectonics Worksheet</p> <p>Lab Write-ups</p> <p>Homework</p> <p>Castle Learning</p> <p>Classroom participation</p> <p>Vocabulary Tests</p>
	<p>Unit 6 Plate Tectonics and Earthquakes</p> <p>What is the structure of the earth?</p> <p>What evidence supports the theory of plate tectonics?</p>	<p>2.1a, 2.1j, 2.1k, 2.1l, 2.1m, 2.1n, 2.1o</p> <p>Common Core Standards Reading 1-10 Writing 1-10</p>	<p>Lab: Real time earthquake and volcanic activity</p> <p>Lab: Google Earth Tour of the Hartford Basin</p>	<p>Use of real time data from the USGS to access and map the locations of earthquakes and volcanoes on earth</p> <p>Information technology is used to show the regional evidence of plate tectonics.</p>	<p>Exams based on previous regents questions. Eduware Wizard</p> <p>End of January- High School Midterms</p> <p>Read and Interpret Current Event Articles</p>

MONTH	CONTENT/ESSENTIAL QUESTION	NYS STANDARD/KEY IDEA/PERFORMANCE INDICATOR	LAB ACTIVITIES	SKILLS	ASSESSMENTS
<h1 style="writing-mode: vertical-rl; transform: rotate(180deg);">February</h1>	<p>How do we locate the epicenter of an earthquake?</p> <p>How do tsunamis occur?</p> <p>What is the difference between earthquake risk and hazard?</p> <hr/>	<hr/>	<p>Lab: Locating an epicenter</p> <hr/>	<p>Abstraction and symbolic relationships are used to communicate mathematically and determine the origin of an earthquake as well as its origin time and magnitude.</p> <hr/>	<p>Skill-based Handouts ex. P-wave and S-wave Worksheet, Locating an Epicenter Practice</p>
	<p>Unit 7 Geologic Time and Geologic Dating</p> <p>How do we determine the age of rocks and fossils using relative dating?</p> <p>How can fossils be used in relative dating?</p> <p>How do we determine the age of rocks using radioactive decay?</p> <p>What does the rock record tell us about earth's history? (Reading and Interpreting the Geologic time Scale)</p> <p>Time Permitting: Fossil Footprint Puzzles</p>	<p>1.2a, 1.2e, 1.2f, 1.2g, 1.2h, 1.2i, 1.2j</p> <p>Common Core Standards Reading 1-10 Writing 1-10</p>	<p>Lab: Geologic Block Diagram Analysis</p> <p>Lab: Fossil and Rock Correlation</p> <p>Lab: Modeling Radioactive Decay</p>	<p>Critical thinking and math skills are used to build models representing geologic time.</p> <p>Build explanations of rock outcrops in a logical and sequential order.</p> <p>Model the process of radioactive decay and use math skills graph and determine the half-life of a system.</p> <p>Connections are developed between the rock cycle and is usefulness in determining the relative age of rocks.</p>	<p>Geologic Timeline Bedrock Geology Map</p> <p>Lab Write-ups</p> <p>Homework</p> <p>Castle Learning</p> <p>Classroom participation</p> <p>Vocabulary Tests</p> <p>Exams based on previous regents questions. Eduware Wizard</p> <p>Read and Interpret Current Event Articles</p>

MONTH	CONTENT/ESSENTIAL QUESTION	NYS STANDARD/KEY IDEA/PERFORMANCE INDICATOR	LAB ACTIVITIES	SKILLS	ASSESSMENTS
March	<p>Unit 8 Energy</p> <p>What are the characteristics of electromagnetic energy?</p> <p>How is heat transferred by radiation?</p> <p>How is heat transferred by conduction?</p> <p>How is heat transferred by convection?</p>	<p>2.1a, 2.1b, 2.1k, 2.2a, 2.2b</p> <p>Common Core Standards Reading 1-10 Writing 1-10</p>	<p>Lab: Electromagnetic Spectrum</p> <p>Lab: Heat Transfer by Radiation</p> <p>Lab: Heat Transfer by Conduction</p> <p>Lab: Heat Transfer by Convection</p> <p>Lab: Heating of Land vs. Water</p>	<p>After experimenting with conduction of heat (using calorimeters), make recommendations to create a more efficient system.</p> <p>Mathematical analysis of heat experiments through graphing and Calculation of the rate of heat gained or loss.</p> <p>Calculate heat lost and gain during an energy transfer.</p>	<p>Skill-based Handouts ex. Atmosphere: Earth's Delicate Veil Heat Calculations, Latent Heat and Phase Changes</p> <p>Lab Write-ups</p> <p>Homework</p> <p>Castle Learning</p> <p>Classroom participation</p> <p>Vocabulary Tests</p> <p>Exams based on previous regents questions. Eduware Wizard</p> <p>Read and Interpret Current Event Articles</p>

MONTH	CONTENT/ESSENTIAL QUESTION	NYS STANDARD/KEY IDEA/PERFORMANCE INDICATOR	LAB ACTIVITIES	SKILLS	ASSESSMENTS
April	<p>Unit 9 Earth in Space</p> <p>How do the seasons occur?</p> <p>How does the daily and annual path of the sun change with the seasons?</p> <p>How do we measure and calculate the eccentricity of an ellipse?</p>	<p>1.1a, 1.1b, 1.1c, 1.1d, 1.1e</p> <p>Common Core Standards Reading 1-10 Writing 1-10</p>	<p>Lab: Path of the Sun (paper lab)</p> <p>Lab: Path of the Sun (plastic hemispheres)</p> <p>Lab: Path of the Sun (computer animation)</p> <p>Time permitting: Solar System Scale Model</p>	<p>Develop a model of the path of the sun through the day time sky, and demonstrate how that path changes seasonally.</p> <p>Abstraction and symbolic representation is used to communicate mathematically ex. Draw measure and calculate the eccentricity of an ellipse. Information technology is used to learn the ways in which astronomers use various satellite based sensors to identify and classify stars and star motion.</p>	<p>Skill-based Handouts ex. Star Classification Chart</p> <p>Lab Write-ups</p> <p>Homework</p> <p>Castle Learning</p> <p>Classroom participation</p> <p>Vocabulary Tests</p>
	<p>Grade 8 Performance Exam Review Activities</p> <p>Administer Grade 8 State Performance Exam</p>		<p>Lab: Soaps and Water</p> <p>Lab: Cell Size</p> <p>Lab: Ball and Ramp</p>	<p>Collaboration with Math Teacher, Measure and Calculate the Circumference of the earth using Erasthene's Method.</p>	<p>Exams based on previous regents questions. Eduware Wizard</p> <p>Read and Interpret Current Event Articles</p>

MONTH	CONTENT/ESSENTIAL QUESTION	NYS STANDARD/KEY IDEA/PERFORMANCE INDICATOR	LAB ACTIVITIES	SKILLS	ASSESSMENTS
May	<p>Unit 10 Astronomy</p> <p>How is the universe organized?</p> <p>How do astronomers study stars?</p> <p>How do stars form?</p> <p>What is the organization of the solar system?</p> <p>How do the phases of the moon occur?</p> <p>How does the moon affect earth?</p> <p style="text-align: center;">PERFORMANCE TEST REVIEW ACTIVITIES</p> <p>Rocks and Minerals</p> <p>Locating and Epicenter</p> <p>Ellipses and Eccentricity</p> <p>High School: Administer Earth Science Regents Performance Exam at the end of May</p>	<p>1.2a, 1.2b, 1.2c, 1.2d</p> <p>Common Core Standards Reading 1-10 Writing 1-10</p> <hr/>	<p>Lab: Ellipses and Eccentricity</p> <p>Lab: Web Animations-Doppler Effect and Star Classification</p> <p>Lab: Star Classification</p> <p>Lab: Phases of the Moon</p> <p>Lab: Tides</p> <hr/> <p>Lab: Rock and Mineral Identification²</p> <p>Lab: Locating an Epicenter²</p> <p>Lab: Ellipses and Eccentricity²</p>	<p>Group and classify stars based on brightness and luminosity as in the Hertzsprung Russell Diagram.</p> <p>Identify patterns of change for making predictions about future behavior or conditions. ex. Predict tide times and magnitudes based on real time tide data.</p>	<p>Review Sheets (see topics below)</p> <p>Lab Write-ups</p> <p>Homework</p> <p>Castle Learning</p> <p>Classroom participation</p> <p>Vocabulary Tests</p> <p>Exams based on previous regents questions. Eduware Wizard</p> <p>State Performance Tests</p>

MONTH	CONTENT/ESSENTIAL QUESTION	NYS STANDARD/KEY IDEA/PERFORMANCE INDICATOR	LAB ACTIVITIES	SKILLS	ASSESSMENTS
<h1>June</h1>	<p>Regents Review</p> <p>Grade 8 Administer Earth Science Regents Performance Exam two weeks prior to the end of classes.</p> <p>Administer Regents Exam- Regents Week</p>	<p>All key ideas are emphasized during reviews and practice exams.</p>	<p>(see lab activities above)</p>	<p>Test taking skills are emphasized such as highlighting, process of elimination, answer analysis, and use of the reference tables.</p>	<p>Review Packets: I Weather II Soil Water Movement and Climate III Mapping IV Geologic Time V Earthquakes and Plate Tectonics VI Earth in Space/Astronomy VII Energy</p> <p>Practice Regents</p> <p>Lab Write-ups</p> <p>Homework</p> <p>Castle Learning</p> <p>Classroom participation</p> <p>State Performance Tests</p> <p>Regents Exam</p>