

## Instructional Plan: Glacial Geology for Grades 3-5

The overlying objective of the Nassau BOCES Geology Program is to provide specific content aligned to each grades' science curriculum while also providing real world applications for NYS ELA and Math Common Core Standards. Alignments are on reverse side of this document.

### Vocabulary (teacher may add to list or request emphasis)

glacier	moraine	sorting
erosion	outwash	igneous
metamorphic	sedimentary	till
rock cycle	weathering	loess
deposition	erratic	

### Program Logistics:

- Group Size:  
15 students/naturalist
- 1 adult chaperone/student group
- 1.5-2 hr program and is typically combined with another program.
- The Pond is located at Caumsett State Historic Park. The Program is also possible at a location near your school.

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field trip...  
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environment for your students!*

Students using a transect line.

Students will also collect and identify rock specimens and observe the natural processes that have shaped Long Island

### Lesson Objectives: Students will be able to...

#### Explain the formation of Long Island in terms of:

- Glaciers
- Timeline
- Moraines
- Erosion
- Deposition
- North vs. South shore

#### Identify Rocks

- Sedimentary
- Igneous
- Metamorphic

#### Describe the origin of the large boulders on the beach

#### Describe the differences in wave action at north and south shore beaches

### Activities (can include but not limited to):

- Using the senses to observe earth's processes
- Observing properties of natural materials (color, shape, size, texture)
- Observing, collecting, and sorting rocks and minerals
- Modeling the action of a glacier and comparing observations of a south shore beach (Jones) to the north shore coastline and wave action.
- Use a rock hammer and goggles to break open rocks to observe signs of weathering and look for fossils.

### Assessment

- The program will end with a summative "Q & A."
- The teacher may elect to have students complete data sheets and/or writing activities back in the classroom.

## Standard Alignments for Glacial Geology Program for grades 3, 4 and 5

Standards Type	Key Standards or Code	Standard Description	Instructional Activities
NYS Science Core Curriculum	<b>Standard 1:</b> Analysis, Inquiry and Design <b>Scientific Inquiry</b>	<b>Key Idea 1:</b> To develop explanations of natural phenomena in a continuing creative process. <b>Key Idea 3:</b> The observations made while testing proposed explanations provide new insights into phenomena	The whole session is inquiry and discovery based. Students will use charts and topo maps to understand concepts such as contour lines. Students will observe natural sorting and deposition through a transect study and witness tidal changes using simple markers.
	<b>Standard 6</b> Interconnectedness: Common Themes <b>Magnitude/Scale;</b> <b>Patterns of Change</b>	<b>Key Idea 3:</b> The grouping of magnitudes of size, time, frequency and pressures or other units of measurement into a series of relative order provides a useful way to deal with the immense range and the changes in scale that affect the behavior and design of systems. <b>Key Idea 5:</b> Identifying patterns of change is necessary for making predictions about future behavior and conditions.	Students will use topographic map of Caumsett to determine distances and elevations. GPS units can be used to check for student accuracy.  Students will interpret the nature of cyclic change: tides, tidal ranges.
NYS Common Core	Supporting Standards	Description	Instructional Activities
Math	Measurement and Data:	<b>Grade 3.MD.4</b> Generate measurement data by measuring using rulers. <b>3. MD.5</b> Recognize area as an attribute of plane figures; understand concepts of area measurement. <b>3.MD.8</b> Solve real world and mathematical problems involving perimeters of polygons <b>Grade 4.MD.3</b> Apply the area and perimeter formulas for rectangles in real world and mathematical problems <b>Grade 5:</b> Represent and interpret data.	Activities involving transect studies aid in the observation of natural sorting by wind and water action along the shoreline and involve the use of numerical data to propose ideas of patterns and relationships and distributions. Data collected may be used in the classroom for further interpretation.
ELA Anchor Standards Grades K-5	Comprehension & Collaboration	1. Prepare for and participate effectively in a range of conversations and collaborations with diverse partners, building on others' ideas and expressing their own clearly and persuasively.	Students will participate in conversations related to their observations and data collection.
	Presentation of Knowledge and Ideas	4. Present information, findings, and supporting evidence such that listeners can follow the line of reasoning and the organization, development, and style are appropriate to task, purpose, and audience.	Students in pairs or in groups of 3-4 will be responsible for presenting their observations/collections of samples to the larger group
	Vocabulary Acquisition and Use	4. Determine or clarify the meaning of unknown and multiple-meaning words and phrases by using context clues, analyzing meaningful word parts, and consulting general and specialized reference materials, as appropriate.	Students will use content-driven vocabulary throughout the program and practice the use of root words, prefixes and suffixes to determine meaning (example: macro, micro)