Colgate Science Outreach
Activities and Demos
2012-13

Grades Pre-K – 1

Solar System
✓ Night Sky Talk
Find seasonal constellations in the night sky and hear stories about how they got up there. Watch the moon change shape in the sky and take a close-up look at other planets.

NYS Physical Setting Standard 4, Key Idea 1: The Earth and celestial phenomena can be described by principles of relative motion and perspective.
Performance Indicator 1.1: Describe patterns of daily, monthly, and seasonal changes in their environment.

Grades 1-3

Solar System
✓ Meteorite Show and Tell
Touch real meteorites and talk about what they are, where they come from and where we can find them!
✓ A Look at the Night Sky
Learn why we have day and night and watch the shape of the moon change as it moves around the Earth. Find out what constellations are in the night sky and hear stories about them. Take a close-up look at other planets.

NYS Physical Setting Standard 4, Key Idea 1: The Earth and celestial phenomena can be described by principles of relative motion and perspective.
Performance Indicator 1.1: Describe patterns of daily, monthly, and seasonal changes in their environment.

The Changing Earth
✓ Linsley Geology Museum Scavenger Hunt
Take a short tour of our museum and learn about the rock cycle, then explore the displays on your own to complete the scavenger hunt

NYS Physical Setting Standard 4, Key Idea 2: Many of the phenomena that we observe on Earth involve interactions among components of air, water, and land.
Performance Indicator 2.1: Describe the relationship among air, water, and land on Earth.

✓ Florescent Minerals display
Be sure to check out our new display of amazing florescent minerals while exiting the Ho Tung Vis Lab!

**Matter**

✓ Oobleck and Glurk

Is it a solid, or is it a liquid? Observe and describe the physical properties of matter and learn about phase changes by making and playing with Oobleck – a substance that behaves in strange ways!

**NYS Physical Setting Standard 4, Key Idea 3**: Matter is made up of particles whose properties determine the observable characteristics of matter and its reactivity.

**Performance Indicator 3.2**: Describe chemical and physical changes, including changes in states of matter.

**Plants**

✓ GreenhouseTour

Take a tour of our tropical and temperate greenhouses to see some amazing plants! Smell nutmeg scented geraniums, look at an ancient cycad tree, and learn about the unique adaptations of carnivorous plants. Plant a seed or scented geranium cutting to take home. Learn about the parts of a plant and do the “Life-cycle dance.”

**NYS Living Environment Standard 4, Key Idea 1**: Living things are both similar to and different from each other and from nonliving things.

**Performance Indicator 1.1**: Describe the characteristics of and variations between living and nonliving things.

**NYS Living Environment Standard, Key Idea 3**: Individual organisms and species change over time.

**Performance Indicator 3.1**: Describe how the structures of plants and animals complement the environment of the plant or animal.

**NYS Living Environment Standard 4, Key Idea 4**: The continuity of life is sustained through reproduction and development.

**Performance Indicator 4.1**: Describe the major stages in the life cycles of selected plants and animals.

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**Grades 3-4**

**Solar System**

✓ Meteorite Show and Tell

Touch real meteorites and talk about what they are, where they come from and where we can find them!

✓ A Look at the Night Sky

Learn why we have day and night and watch the shape of the moon change as it moves around the Earth. Find out what constellations are in the night sky and hear stories about them. Take a close-up look at other planets.
**NYS Physical Setting Standard 4, Key Idea 1:** The Earth and celestial phenomena can be described by principles of relative motion and perspective.

*Performance Indicator 1.1:* Describe patterns of daily, monthly, and seasonal changes in their environment.

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**The Changing Earth**

- **Linsley Geology Museum Scavenger Hunt**
  Take a short tour of our museum and learn about the rock cycle, then explore the displays on your own to complete the scavenger hunt.

- **Florescent Minerals display**
  Be sure to check out our new display of amazing florescent minerals while exiting the Ho Tung Vis Lab!

**Matter**

- **Make your own Slime (Physical Setting S4.3.1)**
  Investigate the properties of homemade slime to determine if it is a solid or liquid...or both!

- **NYS Physical Setting Standard 4, Key Idea 3:** Matter is made up of particles whose properties determine the observable characteristics of matter and its reactivity.
  
  *Performance Indicator 3.2:* Describe chemical and physical changes, including changes in states of matter.

**Energy**

- **Van Der Graaf Generator**
  Get ready for a shocking experience! We’ll discuss the transfer of energy and the many ways we humans use of it while playing around with static electricity created by the Van Der Graaf generator.

- **NYS Physical Setting Standard 4, Key Idea 4:** Energy exists in many forms, and when these forms change energy is conserved.
  
  *Performance Indicator 4.1:* Describe a variety of forms of energy (e.g., heat, chemical, light) and the changes that occur in objects when they interact with those forms of energy.

  *Performance Indicator 4.2:* Observe the way one form of energy can be transferred into another form of energy present in common situations (e.g., mechanical to heat energy, mechanical to electrical energy, chemical to heat energy).

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**Evolution**
✓ Linsley Geology Museum Fossil Scavenger Hunt
Take a short tour of our Geology Museum displays, and then embark on a scavenger hunt with a focus on fossils. Learn what central New York was like 450 million years ago by observing the fossilized remains of creatures preserved in our rocks.

   NYS Living Environment Standard 4, Key Idea 3: Individual organisms and species change over time.
   Performance Indicator 3.1: Describe how the structures of plants and animals complement the environment of the plant or animal.

✓ Paleontological Dig
Go on a fossil dig, right here at Colgate! Hunt for fossiliferous rocks in the science center courtyard, weather permitting (Alternately, we will pick through buckets of fossils in an indoor classroom). Use clues from the fossils you find and your background knowledge to figure out the environment these creatures inhabited.

   NYS Living Environment Standard 4, Key Idea 3: Individual organisms and species change over time.
   Performance Indicator 3.1: Describe how the structures of plants and animals complement the environment of the plant or animal.

Plants
✓ Greenhouse Tour
Take a tour of our tropical and temperate greenhouses to see some amazing plants! Smell nutmeg scented geraniums, look at an ancient cycad tree, and learn about the unique adaptations of carnivorous plants. Plant a seed or scented geranium cutting to take home. Learn about the parts of a plant and do the “Life-cycle dance.”

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   Performance Indicator 1.1: Describe the characteristics of and variations between living and nonliving things.

   NYS Living Environment Standard, Key Idea 3: Individual organisms and species change over time.
   Performance Indicator 3.1: Describe how the structures of plants and animals complement the environment of the plant or animal.

   NYS Living Environment Standard 4, Key Idea 4: The continuity of life is sustained through reproduction and development.
   Performance Indicator 4.1: Describe the major stages in the life cycles of selected plants and animals.

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Grades 5-6

Solar System
✓ Meteorite Display/Linsley Geology Museum
We’ll pass around real meteorites and talk about what they are, where they come from and where we can find them. Then we’ll move into the geology museum, where we will search for the minerals that make up a meteorite.

**NYS Physical Setting Standard 4, Key Idea 1:** The Earth and celestial phenomena can be described by principles of relative motion and perspective.

**Performance Indicator 1.1:** Explain daily, monthly, and seasonal changes on Earth.

✓ **A Look at the Night Sky**

Learn about the sun, the stars, and other common bodies in our solar system. We’ll talk about Earth’s rotation and revolution and observe lunar phases. You’ll learn to pick out seasonal constellations and hear the stories and legends behind them.

**NYS Physical Setting Standard 4, Key Idea 1:** The Earth and celestial phenomena can be described by principles of relative motion and perspective.

**Performance Indicator 1.1:** Explain daily, monthly, and seasonal changes on Earth.

✓ **Make a Comet**

Make your own comet out of everyday materials and dry ice!

**NYS Physical Setting Standard 4, Key Idea 1:** The Earth and celestial phenomena can be described by principles of relative motion and perspective.

**Performance Indicator 1.1:** Explain daily, monthly, and seasonal changes on Earth.

**The Changing Earth**

✓ **Linsley Geology Museum Scavenger Hunt**

Take a short guided tour of our geology museum, then explore the displays on your own to complete the scavenger hunt!

**NYS Physical Setting Standard 4, Key Idea 2:** Many of the phenomena that we observe on Earth involve interactions among components of air, water, and land.

**Performance Indicator 2.1:** Explain how the atmosphere (air), hydrosphere (water), and lithosphere (land) interact, evolve, and change.

**Performance Indicator 2.2:** Describe volcano and earthquake patterns, the rock cycle, and weather and climate changes.

✓ **Minerals in Our Lives**

We don’t think much about the minerals surrounding us at home and at school, at work and at play…but the number of minerals we use on a daily basis is astounding! Learn about some common minerals and the surprising places that they show up...

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**Performance Indicator 2.1:** Explain how the atmosphere (air), hydrosphere (water), and lithosphere (land) interact, evolve, and change.
**Florescent Minerals display**
Be sure to check out our new display of amazing florescent minerals while exiting the Ho Tung Vis Lab!

*NYS Physical Setting Standard 4, Key Idea 2: Many of the phenomena that we observe on Earth involve interactions among components of air, water, and land.*

*Performance Indicator 2.1: Explain how the atmosphere (air), hydrosphere (water), and lithosphere (land) interact, evolve, and change.*

**Energy**

**Van der Graaf generator**
Get ready for a shocking experience! Learn about the production and transfer of electrical energy and the properties of electrically charged materials with the Van der Graaf generator.

*NYS Physical Setting Standard 4, Key Idea 4: Energy exists in many forms, and when these forms change energy is conserved.*

*Performance Indicator 4.4: Observe and describe the properties of sound, light, magnetism, and electricity.*

**Forces**

**Bottle Rockets**
See Newton’s Laws in action as we blast off water rockets! (weather permitting – please choose an alternate activity in case of bad weather)

*NYS Physical Setting Standard 4, Key Idea 5: Energy and matter interact through forces that result in changes in motion.*

*Performance Indicator 5.1: Describe different patterns of motion of objects.*

**Can Crush**
Predict what will happen when the forces acting on a regular aluminum soda can are thrown out of whack, and then watch what actually happens in this exciting demo! Why did the can behave as it did?

*NYS Physical Setting Standard 4, Key Idea 5: Energy and matter interact through forces that result in changes in motion.*

**Evolution**

**Linsley Geology Museum Fossil Scavenger Hunt**
Take a short tour of our Geology Museum displays, and then embark on a scavenger hunt with a focus on fossils. Why are some fossilized species still thriving today, while others have gone extinct? Use your background knowledge and clues in the Linsley Museum to find out!

*NYS Living Environment Standard 4, Key Idea 3: Individual organisms and species change over time.*
Performance Indicator 3.2: Describe factors responsible for competition within species and the significance of that competition.

- **Paleontological Dig**
  Go on a fossil dig, right here at Colgate! Hunt for fossiliferous rocks in the science center courtyard, weather permitting (Alternately, we will pick through buckets of fossils in an indoor classroom). Learn about the diversity of life that existed in central New York 450 million years ago.

  **NYS Living Environment Standard 4, Key Idea 3**: Individual organisms and species change over time.
  **Performance Indicator 3.2**: Describe factors responsible for competition within species and the significance of that competition.

- **Plants**
  - **Greenhouse Tour/Make Cytoplasm**
    Visit our tropical and temperate greenhouses to get a glimpse at the immense diversity of plant life on Earth and the adaptations that allow these plants to survive. We’ll also make cytoplasm while discussing the parts of a cell - the building blocks of all life.

  **NYS Living Environment Standard 4, Key Idea 1**: Living things are both similar to and different from each other and from nonliving things.
  **Performance Indicator 1.1**: Compare and contrast the parts of plants, animals, and one-celled organisms

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**Grades 7-8**

- **Solar System**
  - **Meteorite Display/Linsley Geology Museum**
    We’ll pass around real meteorites and talk about what they are, where they come from and where we can find them. Then we’ll move into the geology museum, where we will search for the minerals that make up a meteorite.

  **NYS Physical Setting Standard 4, Key Idea 1**: The Earth and celestial phenomena can be described by principles of relative motion and perspective.
  **Performance Indicator 1.1**: Explain daily, monthly, and seasonal changes on Earth.

- **A Look at the Night Sky**
  Learn about the sun, the stars, and other common bodies in our solar system. We’ll talk about Earth’s rotation and revolution and observe lunar phases. You’ll learn to pick out seasonal constellations and hear the stories and legends behind them.

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The Changing Earth

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Performance Indicator 2.1: Explain how the atmosphere (air), hydrosphere (water), and lithosphere (land) interact, evolve, and change.

✓ Linsley Geology Museum *(Physical Setting S4.2.2 and S4.2.2)*
  Take a walk through Geologic time on a guided tour of the Linsley Geology museum!
  We’ll look at gemstones and minerals, discuss the rock cycle and examine fossils collected near and far.

*NYS Physical Setting Standard 4, Key Idea 2: Many of the phenomena that we observe on Earth involve interactions among components of air, water, and land.

Performance Indicator 2.1: Explain how the atmosphere (air), hydrosphere (water), and lithosphere (land) interact, evolve, and change.

Performance Indicator 2.2: Describe volcano and earthquake patterns, the rock cycle, and weather and climate changes.

Energy

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**NYS Living Environment Standard 4, Key Idea 3:** Individual organisms and species change over time.

*Performance Indicator 3.2:* Describe factors responsible for competition within species and the significance of that competition.

**Plants**

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*Performance Indicator 1.1:* Compare and contrast the parts of plants, animals, and one-celled organisms.