






Sharpe Reservation Curriculum

Our classes integrate New York State and Next Generation Standards, icons represent the NYS and Next Generation standards integrated into each lesson.

Life Science		Engineering, Technology and Applications of Science	
Physical Science		Earth and Space Science	
Physical Education Standards			

ENVIRONMENTAL FOCUS

Bird Study (Ornithology):

This class introduces students to the birds that inhabit our forests. Bird adaptations, feeding patterns, identifying features, migration, and bird fun facts. If time allows, students will learn about the use and care of binoculars, basic bird songs and calls, and field observation.

Dirty Water:

Through a simulated historical reconstruction of the pollution of the Hudson River, students will learn about how human activities have affected the environment. They will then attempt a hands-on cleanup or remediation effort, followed by a discussion of ways that they can have a positive effect on the environment every day.

Environmental Solutions:

Students will discuss and explore ways to reduce their ecological footprint. They will make their own cleaning product from some common ingredients such as vinegar and baking soda, and learn the difference between recyclables, compost, and garbage.

Forest Ecology:

Students will take a close look at the interrelationships necessary for a healthy forest. An overview of the differences between deciduous and coniferous trees will be included, as well as exploration of the dynamic northern hardwood forest community, including food chains and carrying capacity.

Historical Trail:

Students are invited to take a trip into the past and discover the relationship that early settlers had with the land. The hike includes brief stops along the trail at various interpretive areas, including an early homestead site, timber harvest site, rock walls, Native American wigwam, a collier's hut, and a trapper's lean-to. Each stop features an interactive element that will focus on energy usage, primitive skills, wildlife, forest ecology and even geology.

Insect Study (Entomology):

Sweep-netting can reveal the diversity of insects that make the meadow their home. Students will identify insects using field guides, learn what makes an insect an insect, discover the role insects

the *Fresh Air* fund

because a summer can last a lifetime™

play in the natural environment and understand the insect life cycle.

Pond Study:

Students will discover the interdependence of living things as they catch, observe, and release the creatures that make ponds and streams their home. Students will determine the health of the pond based on the variety of species they identify by using dichotomous keys and field guides.

Tracks and Traces:

We do not always see the wildlife around us, but we know it exists by physical evidence in the environment. Students will become “nature detectives” in search of Sharpe’s animal inhabitants by reading tracks and other clues animals leave where they live, die, eat, and move.

Weather:

Students will become meteorologists and learn about what makes weather. Students will participate in experiments to understand the forces that create weather and how we measure and forecast weather. Students will give a weather report at the end of class.

Wildlife/Animal Adaptations:

Students will learn about animal adaptations by observing skulls and furs from the Sharpe collection. They will also participate in an activity called “Fill the Bill” to understand how different birds are equipped to eat different foods.

Worm Ecology:

Decomposers are fundamentally important to a functional food web. This class will explore the purpose and role of decomposers in the environment. We will examine Sharpe Reservation’s vermicomposting system to get a close-up look at how worms create soil. Students will also learn the difference between recyclables, compost, and garbage, and how we make changes to help the environment.

OUTDOOR SKILLS

Fishing (seasonal):

Students will learn the art of fishing with a simple bamboo fishing pole. They will learn about the distinctive characteristics used to identify fish and then identify the fish they catch using a dichotomous key. There will be discussions about the role fish play in an aquatic ecosystem along with the ecological effects of overfishing, and what we as individuals can do to reduce them.

Orienteering:

Orienteering is the use of a map and compass to find your way. Students will get a lesson in map reading, then put their skills to the test by navigating their way through a course set up throughout camp. Basic compass use may be taught to help students navigate the maps, based on student age and skill level.

Outdoor Café:

After a brief introduction to wild edible plants, students will assume the role of gatherers (foragers). In the forests and fields of Sharpe Reservation, under a Sharpe instructor's guidance, they will find and taste the wild foods once used regularly by early people. Each season offers a different menu. Early fall and late spring only.

Sensory Trail:

Students will travel blindfolded along a rope-guided course, focusing on sensory awareness and development. They will also explore the importance of other senses (such as hearing, smelling, and

touching) in gathering information about the world around them.

Wilderness Survival:    

Would you know what to do if you were lost in the woods? Could you survive? Students will learn some of the basic skills of staying alive in the wild, including the mental attitude necessary for surviving a crisis, what to carry in a survival or hiking kit, survival priorities, staying warm, building shelter, finding water, and more.

Primitive Skills: A twist on wilderness survival. This class will focus on primitive tools and their uses, and may include fire-making methods, ropemaking (cordage) and primitive hunting techniques. *Recommended for grades 6 and up.*

NATURE CRAFTS

Wool Felting:

Students will learn where wool comes from & the techniques necessary to change wool fibers into a textile. This program teaches how heat, moisture, and friction can be used to create a strong, cohesive fabric from wool fibers. The activity will culminate in students using the process of wool felting to create an art piece that they can take home.

Wet Felting: Craft an art piece that uses soap, water, and friction to create felt from wool fibers.

Recommended for grades k-8

Needle Felting: Craft an art piece by using a barbed needle to entangle the wool fibers and cause them to bond together. *Recommended grades 9 and up.*


Papermaking:   

Students will learn techniques of papermaking using recycled and natural materials. This program teaches the entire papermaking process from the forest to a final product of paper that students will take home. The activity will focus on waste reduction and help students develop awareness of their impact on the environment.

SPECIAL HALF-DAY PROGRAMS and ADVENTURE COURSES

Fresh Air Farm Hike:

With a visit to the Fresh Air Farm, students will learn about domestic livestock and organic gardening. They will learn the origin of basic foods and other household products, as well as principles of composting and sustainable living. (May-June and September-early October only).

Group Dynamics: 

Small groups will participate in active games and tasks involving problem solving ideas that develop cooperation and trust.

Teams Course: 

Sharpe Reservation has two separate challenge courses containing a variety of low ropes elements, each designed to encourage a group to work together as a team in a positive and creative social environment. Activities can be adapted for different age levels ranging from fifth grade through adults. We usually include group dynamics games with this. (We recommend 14 students per Sharpe instructor—please discuss with our Program Office if your ratio will vary from this).

High Ropes Course: 

This course is a series of individual and group physical challenges that require a combination of

teamwork skills and individual commitment. Elements are constructed of rope, cables, and wood. Participants are on a belay system with the Fresh Air Fund staff. (*Students must be age 11 and up; we require a minimum of two instructors and will add additional staff according to your group size*).

LARGE GROUP ACTIVITIES

Engineering Lander:

Become an Engineer! Participants will work in small groups as engineers, managing a limited budget to purchase supplies and build a landing craft, protecting their explorer (an egg). Once created the landers will be dropped from a height to see if the explorer (egg) survives the landing.

Predator/Prey:

Students will become part of the world of animals and actively experience the daily challenges of survival, learning the principles of population dynamics and food chains. Active participation is required from teacher/chaperones, as each team must have an adult leader to answer questions, encourage team decision-making, explain the site map, keep time, and regroup the team. (This class requires a double class period and works best with groups of 50 or more. Ideal for an end-of-trip activity).

Road Rally:

In this team building activity groups are given a large bag of PVC pipes and fittings and challenged to build a go kart style car. Groups must work together to build their car, create an infomercial style ad, and race for two laps around a circular track. This activity encourages communication, creative thinking, and compromise.

Pipe Dreams:

In this team building activity groups are given a large bag of PVC pipes and fittings and are tasked with constructing different challenges using the supplies given. Groups must work together to build their challenges which range from building a chair, a house, a pipe system, car, and potentially even creating a car! This activity encourages communication, creative thinking, and compromise.

Hiking Programs

Climate Change Hike:

Scientists agree that the climate and weather patterns are changing worldwide. Students will learn the theory behind global warming, its causes, and its effects. The class will participate in hands-on demonstrations and will go on a “global warming hike” to look at some of the local species and habitats that have been, or are, affected by climate change.

Interpretive Hike:

Explore the trails of Sharpe Reservation while learning about leave no trace principles and best practices for hiking preparedness and safety.

Interpretive Ecological Hike:

Explore the trails of Sharpe Reservation while discovering local flora and fauna. Students will stop along the trail for teachable moments including vernal pools, forest succession, animal food caches and homes, scat, and geological formations. Many of the trails at Sharpe include a lookout or water feature.

Night Hike:

Engage your night vision! Explore the forest of Sharpe at night (without flashlights!) Explore your senses at night, including vision, and how the evening changes which sense works harder. This is an experience not to be missed (*additional fee of \$110.00 per instructor— no more than 15 people per night hike*).

GUSTAFSON PLANETARIUM AT SHARPE RESERVATION

The Gustafson Planetarium is a fully equipped 48-seat theatre where audiences can learn about the wonders of the night sky. Our operators will present a show that best suits each topic. The cost per show is \$200 for a 45-minute to one-hour presentation. **All shows will point out familiar constellations and current objects visible in the sky (planet locations, comets, meteor showers and other celestial events).**

- ★ The Solar System full-dome shows:
 - **“Rusty the Rocket”** (*ideal for preschool and kindergarten*): Join “Rusty the Rocket” as he teaches young rockets how to navigate the solar system.
 - **“Perfect Little Planet”** (*recommended for elementary students*): An alien family searches for the perfect planet to take a vacation.
 - **“New Horizons”** (*general audiences*): Follows a comet’s journey through the solar system.
 - **“Nine Planets and Counting”** (*recommended for middle school and up*): Discusses our evolving definition of a planet, their moons, and new facts about them.
- ★ **Beyond the Solar System:**
 - **“IBEX, The Search for the Edge of the Solar System”** (*recommended for middle school and up*): “IBEX” delves into how spacecraft are built and launched into space as well as the invisible bubble that surrounds the solar system and the sun’s place and journey through the Milky Way galaxy.
 - **“Dark Matter Mystery”** (*recommended for middle school and up*): Delve into the unseen force that holds the Universe together and discover how scientists' study what they cannot see by studying what they can.
- ★ **The Search for Life**
 - **“Cosmic Safari”** (*general audiences / 5th and up*): Let your imagination take flight as we imagine life on hypothetical planets based on astro- biology; learn about the Kepler Space Telescope and its search for exoplanets and “Earth-like” planets and solar systems around other stars in the Milky Way.
- ★ **The Telescope –**
 - **“Two Small Pieces of Glass”** (*general audiences / 5th and up*): An introduction to spectroscopy, “the study of light” and the historical invention of the telescope. Discover how it transformed our view of the cosmos. Includes a brief overview of the Milky Way galaxy and its place in the universe.
- ★ **Focus on Stars and the Sun**
 - **“Solar Quest”** and **“The Incredible Sun”** (*recommended for 5th grade and up*): Covers “Space Weather,” the sun as a dynamic thermal fusion generator as well as the Northern lights and the electromagnetic spectrum. Stars come in all shapes, sizes and colors.

the *Fresh Air* fund

because a summer can last a lifetime™

★ Stars and Light

- “Cosmic Colors” (general audiences): Learn about light and the spectrum of light generated by stars. Also features other types of energy in the electromagnetic spectrum including UV, Infrared, Radio, X-rays, and Gamma Rays.

★ Highlights of the Solar System

- **“Back to the Moon for Good”, “Moons of the Solar System” and “Mars Update”** (*general audiences*): “Back to the Moon for Good” features Lunar X Prize, a friendly worldwide competition to invent technology and spacecraft to return to the moon—a great inspiration to young inventors. “Mars Update” is a historical look at the parade of discoveries from telescopic observations to spacecraft that have visited the red planet. The show may also include a clip of the “Landing of Curiosity.”

To enhance your planetarium experience, other activities can be added, including:
Each activity requires additional time

- **Solar System Walk (daytime shows only):** Imagine taking a walk through the solar system to get an idea of its expanse. When the sun and its planets are reduced to a manageable scale, the solar system is easily traversed at Sharpe Reservation. Students will get a new perspective of the inner rocky planets as tiny objects closely circling the sun, while the outer gas giants revolve around it at vastly greater distances.
- **Planispheres (daytime shows only):** Create your own planisphere—a simple tool used to discover which stars and constellations are visible in your area on a specific date. Planispheres can be used for many tasks including navigation and storytelling (*additional fee of \$0.50 per planisphere made on card stock paper*).

Standards at a Glance

Lessons	LS	ESS	ETS	PS	PE(NYS)
Animal Adaptations	✓	✓			
Bird Study (Ornithology)	✓	✓			
Climate Change Hike		✓			
Dirty Water	✓	✓			
Wool Felting			✓	✓	
Engineering Lander					
Environmental Solutions	✓	✓			
Fishing (Seasonal)	✓	✓	✓		
Forest ECOLOGY	✓	✓			
Historical Trail	✓	✓			
Insect Study (Entomology)	✓	✓			
Interpretive Hike	✓			✓	✓
Night Hike	✓			✓	✓
Orienteering		✓			
Outdoor Café	✓	✓			
Papermaking		✓	✓	✓	
Pipe Dreams			✓	✓	✓
Planetarium					
Pond Study	✓	✓			
Predator/Prey	✓			✓	✓
Primitive Skills	✓	✓	✓	✓	✓
Road Rally			✓	✓	✓
Sensory Trail	✓	✓			
Tracks and Traces	✓	✓			
Weather		✓		✓	
Wilderness Survival	✓	✓	✓	✓	✓
Worm Ecology	✓	✓			

the *Fresh Air* fund
because a summer can last a lifetime™

Teambuilding					✓
High Ropes					✓

Key:

LS: Life Science

ETS: Engineering, Technology and
 Applications of Science

PS: Physical Science

ESS: Earth and Space Science

PE: Physical Education

NG: Next Gen Science Standards

NYS: New York State Science Standards

A checkmark indicates both NYS and NG standards