2016-2017 Education Programs for Grades PreK-12

Blandy Experimental Farm
an Ecology Research Station of the University of Virginia

Our programs can help you meet your environmental literacy watershed requirements!

Hands-on, STEM learning in our outdoor classroom

We welcome public, private, and home school groups.

For more information call (540) 837-1758 Ext. 242 or e-mail schprog@virginia.edu
NOTE TO EDUCATORS:

Blandy Experimental Farm Education programs:
- Virginia Standards of Learning Correlated
- Aligned with the National Framework for K-12 Science Education
- Designed to Emphasize Hands–On, Experiential Learning
- Grade Level Targeted & Discipline Integrated
- Structured to Incorporate Elements of STEM
- Provide Environmental Literacy Connections
- Generate student interest in career possibilities

A visit to the State Arboretum of Virginia provides authentic learning in an outdoor setting. This is a place to get students excited about science! Our programs feature hands-on learning and investigations to provide children positive and meaningful experiences with the natural world. We are dedicated to teaching science by making it engaging and fun!

All of our programs are designed to meet Virginia Standards of Learning (SOL) requirements; science and math standards are listed with each program. You may notice that most programs are offered for a range of grades; rest assured that activities are tailored to the specific grade visiting. We use an integrative scientific approach; our programs incorporate science and math, and develop technology and engineering skills. All programs are designed to support your classroom teaching; they can be used to introduce new concepts, explore current lessons, or review a unit. There are many options for how to use programs to provide an optimal learning experience for your students.

We look forward to participating with you in providing the best possible STEM learning!

Our facilities include:
- 175-acre Arboretum collection featuring over 1000 species of trees, shrubs, and herbaceous plants
- Parking area designated for school buses
- Picnic area with tables (seats about 60)
- Three classrooms: Parkfield Learning Center, Peetwood Pavilion for Environmental Education (seasonal, covered outdoor classroom), and Blandy Community Classroom
- Wheelchair-accessible restrooms in the Quarters (our main office building) and Peetwood Pavilion
- A variety of outdoor learning locations including wetlands, woodlands, meadows, and thematic gardens

Program Structure

For 3 to 5 classes visiting Blandy:
Classes are assigned to a rotation schedule. With these schedules, Blandy educators and teachers share the responsibility for leading students through the program activities. The rotation schedule is:
- Intended for schools bringing 3-5 classes (from one grade) in one day
- Set up as a series of stations the classes move through using a predetermined schedule
- Planned for maximum student engagement & Designed to enhance students’ learning experiences
- Available for ALL programs except: Water Quality Technology, Science Explorations, and Careers at the Arboretum
- Arrival time is 9:40 a.m. for program briefing & restroom visits. Departure times vary based on your schedule.

For 1 to 2 classes visiting Blandy:
Programs are 75 minutes unless otherwise stated in the program description. We can accommodate two classes at one time— one in the Parkfield Learning Center and one in the outdoor classroom, Peetwood Pavilion. Three time slots are available (10:00 a.m., 11:30 a.m., and 1:30 p.m.).

Please plan to arrive 20 minutes before your program is scheduled to allow time for a program briefing and a restroom visit.

To see our Programs at a Glance, go to pages 6-7.
RESERVING A FIELD INVESTIGATION

Program Registration

Registration for Blandy Education programs is online. To register for programs, use the link at the top of this page. **A few important notes about registering:**

- Please be sure to enter the most accurate number of children attending each program as well as each teacher’s name and email address to help us prepare for your groups.
- Once you have submitted a registration request, you will receive an email to confirm the program date and time requested or alternative dates. You must respond to this email within 48 business hours to reserve your time slot. Call us at 540-837-1758 Ext. 242 for assistance.
- Please call us with any questions you have about program structure, content, etc.

**Class size:** Minimum class size for a program is 10 students. For groups spanning several grade levels, please limit the group to three consecutive grades, e.g. grades 3, 4, & 5 or K, 1, & 2. Please refer to page 2 for program structure.

**Cancellation Fee:** If you cancel your program(s) 3 weeks or less before your scheduled date, you will be charged the minimum program fee (which is ten students) for each program. (For example, one class of Let’s Sprout cancellation fee would be $40. Three classes of Watershed Investigations cancellation fee would be $180). We are unable to fill timeslots vacated within 3 weeks of a program date due to the lead time needed for schools to schedule visits to the Arboretum. Programs will be held rain or shine, except for severe weather. If weather does seem questionable, we will contact you.

**Chaperones:** One per 5-6 students; chaperones come for free! Click here for Chaperone Guidelines.

**Special Needs:** Please advise us as soon as possible if you have students with special needs (i.e. allergies, physical limitations, behavioral or developmental exceptionalities, etc.). We will make every effort to accommodate your students. NOTE: We can not provide on-site transportation for students with crutches or other physical limitations.

**Be Prepared:** Maximize your students’ experiences at Blandy! Call or email us to schedule a program preview. We also provide pre- and post-program resources that can be used in your classroom to reinforce or introduce program concepts. [http://blandy.virginia.edu/education/education-resources](http://blandy.virginia.edu/education/education-resources) As our activities are outdoor based, activity location(s) may change to maintain a safe learning environment for students and teachers; Blandy Education Instructors maintain first aid certifications.

**Restrooms:** Allow 20 minutes for the whole class to visit the restroom. Restrooms are located in the Quarters Building and at the Peetwood Pavilion.

**Picnic Grove:** Seats about 60 people. First-come, first-serve basis; no reservations are taken.

**Who is in charge?** Teachers PLEASE remember: Teachers and Chaperones are expected to manage students behavior at ALL times. Please abide by arboretum rules and etiquette.

Please go to our registration website at [http://www.blandy.virginia.edu/education/registration](http://www.blandy.virginia.edu/education/registration)

Click here for Directions
Early Elementary (PreK-2nd)

Early Explorers (PreK-K)
Choose one of the following themes for your young scientists.
In each, students investigate and explore parts of our watershed using their senses and powers of observation through a variety of activities.

- Plants and Trees – Examine trees and plants up close and personal! This program incorporates literacy and observation elements to learn about animals that live on & use trees.
- Weather – Observe clouds, wind, and how the weather affects animals and nature. This program highlights weather observation skills and tools.

VA Foundation Blocks for Early Learning
Science Block 1, 3, 4, 6  Mathematics Block 3, 4, 5, 6
Fee: $4 per student

Mammals (preK–2nd)
Students learn about Virginia mammals native to the Chesapeake Bay Watershed. They learn where mammals live and how to tell the difference between fox and bobcat prints; they investigate the geometry of mammal tracks and compare track details such as number of toes and shape. Students explore Blandy looking for signs mammals leave behind. This program also focuses on the senses mammals use to find food, seek prey, and define territories.

Science SOL:  K.1, K.2, K.4, K.6, K.7, K.9; 1.1, 1.5, 1.7; 2.1, 2.4, 2.5, 2.7
Math SOL: K.2, K.4, K.11, K.13; 1.13, 1.14, 1.15; 2.1, 2.4, 2.15, 2.17, 2.19, 2.22
Fee: $4 per student

Let’s Sprout (K-2nd)
The imagination of your budding young scientists will be captured as they explore the wonders of seed germination and plant growth. We investigate plant life cycles through models and scientific observations. Outdoor exploration of the plant world reinforces students’ understanding of plant parts, functions, and role in the watershed. Students select appropriate tools for planting seeds and provide care for the seeds’ life needs at home or at school.

Science SOL:  K.1, K.2, K.6, K.7, K.9, K.10; 1.1, 1.4, 1.5, 1.7; 2.1, 2.4, 2.7, 2.8
Math SOL: K.2, K.11, K.13, K.14, K.16; 1.13, 1.14, 1.15; 2.1, 2.4, 2.17, 2.18, 2.19
Fee: $4 per student

What teachers say about our programs:
“Many thanks! Everything was so well organized, content was relevant to curriculum, and you made learning fun for the kids! Top notch all around.”
It’s for the Birds (2nd–4th)
Birds have many adaptations that allow them to survive in a multitude of environments in a watershed. Students study strategies that help birds secure shelter and find food. They also explore how bird beaks are adapted for gathering and eating specific foods. Outdoors, fledgling ornithologists use binoculars to observe birds in their natural habitats. This program is recommended for the winter as well as warmer times of the year.

Science SOL: 2.1, 2.5, 2.7; 3.1, 3.4, 3.5; 4.1, 4.5, 4.9

Fee: $4 per student

Incredible Insects (2nd–3rd)
Explore the diversity of crawling, flying, and hopping insects with this program! Students discover how insects survive by using mimicry, camouflage, and other mechanisms. They learn about insect life cycles and model insect body structure. Young entomologists develop an appreciation for the diversity of insects in our watershed habitats as they collect data and graph observations about insects and non-insects.

Science SOL: 2.1, 2.4, 2.5, 2.7; 3.1, 3.4, 3.8
Math SOL: 2.15, 2.17; 3.17

Fee: $4 per student

Virginia Natives (3rd–4th)
Students learn about Virginia’s native food webs and energy flow in watershed systems as they investigate the relationships among producers, consumers, and decomposers in the forest layers of the Arboretum’s Native Plant Trail habitat. Through collection and analysis of data, observations, sketches, and models, your ecosystem scientists investigate interdependencies and how organisms interact within their ecosystem.

Science SOL: 3.1, 3.4, 3.5, 3.6, 3.8; 4.1, 4.4, 4.5, 4.9
Math SOL: 3.3, 3.9, 3.17; 4.7, 4.14

Fee: $4 per student

This is a GREAT program for the FALL!

What teachers say about our programs:
“This was a wonderful experience for the students - they loved it! It was a great supplement to our watershed curriculum. It was very organized and the staff were enthusiastic and engaging.”
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**Scoop On Soils (3rd)**
With this investigative program, students learn that soil is more than just dirt! Your soil scientists conduct an experiment with different types of soil and explore soil particle size in a kinesthetic game. Data collection, measurement, observation, and the scientific process are reinforced. In the field, we examine and identify different soil layers and look for evidence of organisms living in the soil. The impacts of erosion in watersheds are discussed. This program is recommended for winter as well as other times of the year.

Science SOL: 3.1, 3.7, 3.10  
Math SOL: 3.1, 3.4, 3.11, 3.17  
Fee: $4 per student

**Snake Savvy (3rd-5th)**
As long as you know about snakes, there is no reason to be afraid of them! Students learn characteristics that differentiate Virginia’s venomous and non-venomous snakes. Developing herpetologists measure and compare the lengths and patterns of snakes, identifying some of Chesapeake Bay watershed’s more common snakes. Students study how snake behaviors aid snakes in defense mechanisms such as mimicry, camouflage, and temperature regulation.

Science SOL: 3.1, 3.4, 3.5; 4.1, 4.9; 5.1, 5.5  
Math SOL: 3.1, 3.9, 3.19; 4.7

**Flower Functions (4th)**
Learn about the mysterious world of flowers and the structures and functions of flowers. Plant scientists dissect flowers using hand lenses and dissecting microscopes to identify and observe flower parts. Outside, they discover and collect flower and pollinator data as they examine the fascinating adaptations plants and their animal partners have developed with one another. Students use their knowledge to create flower models and appreciate the diversity of flowers in the Chesapeake Bay Watershed.

Science SOL: 4.1, 4.4, 4.5, 4.9  
Math SOL: 4.15, 4.5  
Fee: $4 per student

**Rocks Talk! (5th)**
What do the rocks at the Arboretum tell us about geologic history of the Chesapeake Bay watershed? Student geologists identify common Virginia rocks and the distinctions among igneous, metamorphic and sedimentary rocks. On the grounds they look for evidence of tectonic plate movement, weathering, erosion, and explore geologic time through modeling mountain building and maps. This program is recommended for winter as well as warmer times of the year.

This is a GREAT program for the FALL!

Science SOL: 5.1, 5.7  
Fee: $4 per student
Professional Development Opportunities at Blandy!

The Blandy Education Team offers a variety of teacher professional development workshops. We offer single-day national environmental education programs (such as Project Learning Tree, Project WET, Project WILD, Project Underground, Flying WILD). We also can provide learning experiences, including meaningful watershed education experiences (MWEE) tailored to your school’s unique needs. For more information about workshop possibilities, visit our webpage! http://blandy.virginia.edu/education/professional-development

Arbor Sleuth (5th-8th)
What are the important features that distinguish one tree family from another? Students hone their observation skills as they explore the Arboretum using hand lenses and dichotomous keys to identifying mystery trees. Emerging tree scientists also explore human impacts on tree populations and how trees provide erosion control in the Chesapeake Bay watershed system. They learn about American Chestnut restoration efforts and measure and compare chestnut hybrids. This program can be scheduled year round.

Science SOL: 5.1, 5.5; 6.1; LS.1, LS.4, LS.5, LS.11, LS.12
Math SOL: 5.2, 5.9, 6.2, 6.9
Fee: $6 per student

Watershed Investigations (6th)
Students investigate watershed science during this meaningful watershed education experience. They learn about Blandy’s local watershed as they collect, measure, record, and analyze water quality indicators such as temperature, dissolved oxygen, pH, and nitrates. Your watershed scientists learn how to identify macroinvertebrates of Blandy’s wetlands and what these organisms can tell us about the health of an aquatic ecosystem. We also discuss human effects on these systems.

Science SOL: 6.1, 6.5, 6.7, 6.9
Math SOL: 6.2, 6.7
Fee: $6 per student

Young Ecologists (7th)
Students are often taught about the interdependence of life in an ecosystem, but in this program they really get to investigate what interdependence means. On the road to becoming ecologists, students investigate our replica skull collection to explore how specific traits influence individuals and populations. In the field, they assess the biotic and abiotic factors of a wetland environment, vital to a watershed system, to determine the organism’s role and if that ecosystem can support particular organisms. By the end of the program, your young ecologists will have a meaningful understanding of habitat, diversity, and biological interdependence.

Science SOL: LS.1, LS.6, LS.7, LS.8, LS.9, LS.10, LS.11, LS.13
Math SOL: 7.1, 7.4
Fee: $6 per student

This is a GREAT program for the FALL!
Science Explorations (9th-12th)

A day-long investigation! From developing a hypothesis to presenting their results, student researchers conduct a scientific investigation based on an inquiry they choose about the environment at the Arboretum. Previous explorations include: animal and plant adaptations; the effect of abiotic factors on lichen; the biodiversity value of wetlands in a watershed, and worm diversity in different habitats. Call (540) 837-1758 Ext. 242 to discuss possibilities. This program is scheduled from 9 a.m. to 2 p.m. Class size limit is 15.

Science SOL: CH.1, Bio.1 and others depending on the inquiry chosen
Math SOL: A.6, A.8; PS.1, PS.2, PS.3, PS.8, PS. 9, PS.10

Fee: $9 per student

Water Quality Technology (9th-12th)

This Meaningful Watershed Education Experience focuses on measuring water quality indicators using technology. Environmental scientists use hand-held colorimeters to explore the effects that temperature, pH, dissolved oxygen, nitrate, and other indicators have on water quality. This program is for motivated students. It is designed to take two hours and best accommodates groups of no more than 15.

Science SOL: ES.1, ES.8; Bio.1, Bio.2, CH.1

Fee: $6 per student

Careers at the Arboretum (9th-12th)

Are your students curious about career opportunities at an arboretum? This program provides an inside look at the various career options that an arboretum provides. Students explore aspects of the science background knowledge and diverse skills necessary to succeed in specific careers and partner with our arboretum staff to gain first-hand experience learning what each job entails. Please select one arboretum career you would like to experience for each program. Learn what it means to be a horticulturalist, an invasive species specialist, an arborist, or an ecological research scientist. Program requests will be arranged based on staff specialist availability. Please contact Candace Lutzow-Felling, Director of Education, to schedule this program: (540) 837-1758 ext. 230

Fee: $9 per student

What teachers say about our programs:

“The material presented was geared right to the level of our children. We felt that our children (and the adults) learned a lot and we'll be eager to return again. Thanks for creating such an informative and engaging program!”

“You can tell the instructors love their job, working with children, and they give the students an added excitement toward that subject area!”
When students are not in a scheduled program, what can you do? Reserve a backpack full of engaging, self-directed activities! We have developed four backpack sets, each with a different theme. There are four backpacks to each set; each with supplies for 6 students. Instructions, equipment and all necessary materials are included in each pack. Use the on-line program registration system to reserve a set of backpacks for your class.

For more information, contact schprog@virginia.edu. Fee for each Backpack Set: $15

EARTH TALKS
Grades 6-8
Explore geology at Blandy using this backpack set. Activities include examining the rocks and soil of Blandy, learning the geology of Virginia and fossil and rock scavenger hunts!

[Skills Used: Observation, Map reading, Inferring, Investigation, Analyzing and Classification]

USE SOME SENSE!
Pre-School & Kindergarten
Did you hear that? What is that smell? Look at that color! Come visit Blandy and find out how we use our senses to observe the world around us. This backpack set contains several hands-on activities for your students.

[Skills Used: Observation, Investigations using the senses, Communication]

WILD THINGS!
All Grades
What birds make Blandy their home? Who lives in Lake Georgette? Are there creatures hiding in the rock walls? Observe the wildlife that makes the Arboretum their home using Peterson Flash Guides, binoculars and grade level specific hands-on activities.

[Skills Used: Observation, Communication and Identification]

GREEN AND GROWING
Elementary
Where is the plant that smells like pizza? Did you know that leaves have veins? Have you ever seen a “tree cookie?” Explore the plants, trees, and herbs at Blandy using Peterson Flash Guides, hand lenses, and grade level specific hands-on activities.

[Skills Used: Investigations using the senses, Observation and Identification]
Peetwood Pavilion for Environmental Education & Parkfield Learning Center

Education Programs
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