VIRGINIA TECH

SCIENCE FESTIVAL

November 2, 2024

The Virginia Tech Science Festival is a Saturday celebration of science as a way of knowing. Held since 2014, this expo-style, family-friendly event reaches 2,000-5,000 visitors, including families, school field trips, and Virginia Tech students. Festival guests participate in hands-on activities, see engaging demonstrations, and talk one-on-one with practicing scientists at about 60 different exhibits. Based on the idea that “science is bigger than you think,” the festival features a range of disciplines that use data to draw conclusions.

Science is life, process, safety, robotics, the earth, and well-being. Science is on the road and in the arts. The festival is a collaboration across most of the colleges and research institutes on campus, as well as many community members. Supported by the College Access Collaborative, the festival budget funds buses for school field trips from area schools, as well as charter buses from three College Access regions in the state. The Virginia Tech Science Festival is organized by the Center for Education Networks and Impacts.

INSTITUTE FOR CREATIVITY, ARTS, AND TECHNOLOGY
CENTER FOR EDUCATIONAL NETWORKS AND IMPACTS
VIRGINIA TECH

Special Thanks to our 2024 Sponsors

Platinum

- Institute for Critical Technology and Applied Science at Virginia Tech

Gold

- College Access Collaborative

Silver

- College of Science

Bronze

- Fralin Life Sciences Institute
- College of Liberal Arts and Human Sciences
- University Libraries

Friend

- Virginia Tech Carilion School of Medicine

Staff

Isabella Alvarado

Mary Roberts Baako

Zach Coffren

Ashley Costello

Karen Eley-Sanders

David Franusich

Hannah Glisson

Jacob Grohs

Chelsea Haines

Calvin Jeter

Kim Keith

Rodney Kimbangu

Gary Kirk

Ben Knapp

Carrie Kroehler

Jamie Little

Lisa McNair

Baibhav Nepal

Phyllis Leary Newbill, festival chair

Max Ofsa

Dylan Parker

Allie Phillips

Donna Raines

Patricia Raun

Yariane Soto

Nick Spring

Jeremy Johnson

Tanner Upthegrove

Davia Wiley

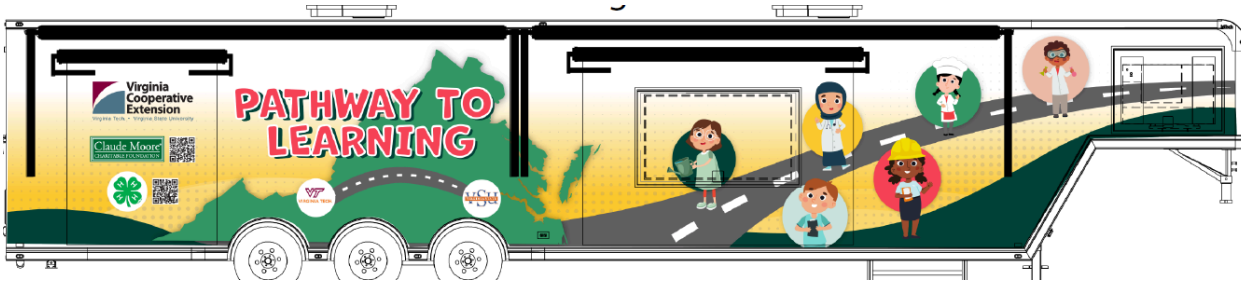
Holly Williams

Melissa Wyers

Table of Contents

4-H Life Science Mobile Learning Lab

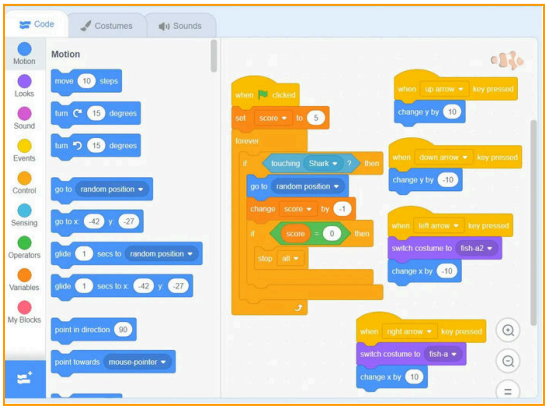
Erika Bonnett, Tonya Price, Karen Eley Sanders, Hannah Sunderman, Alison Jones, Krista Gustafson, Grace Morrow, Brian Hairston, Lisa Laliberty, Jeremy Johnson, Shirley Bazdar, Dr. Bill Hazel, Virginia Cooperative Extension & Virginia 4-H
Find them at ext.vt.edu/4h-youth.html and @virginia4h



Let's Explore Life and Health Science Careers, HANDS-ON through the 4-H Mobile Learning Lab. Through our Pathways to Learning experience, you will get an opportunity to learn at six different stations with hands-on activities that look at how animals eat, how we eat, our brains, our emotions, and even a virtual reality activity, all while linking each activity to careers in health and life science.

A Spin of Scratch

Bella Guereca, Man Patel, Grant Chapman, Samhita Gupta, Riva Jain, Malaysia Schaffer, Nidhi Gangadharan, Ishita Punna, Amélie Cohrssen, Ameen Harandi, Sean Do, Gretel Baur, Archimedes at Virginia Tech
Find them at @archimedes.vt (instagram) and https://www.archimedesvt.org/



Ever wondered how coding works? For many, it can be seen as a giant puzzle. Here, guests will be able to "build" their own code using building blocks of code in order to accomplish a challenge chosen from the wheel they spin. Once they assemble the code, we will transfer it to the computer and show them the code they built.

A Taste of Science - Edible Slime Time

Ann Sandbrook, Melissa Wright, Isabel Gutierrez Forbes, Taylor Peele, Alisa Holst, Monica Osorio-Barahona, Virell To, Food Science & Technology Department
Find them at https://fst.vt.edu/, https://www.facebook.com/vtfoodsci/, and https://www.instagram.com/vtfoodscience/

Explore the wonders of chemical reactions in food. We will show how different ingredients react with each other to make slime candy that you can eat.

AI and Robots for Young Children's Cognitive Development

Jing Chen, Jalyn White, Fatima Rehmatulla, Lauren Falk, Sydney Hinkey, Hailey Annibell, Erin Wade, Meryem Seyda Ozcan, Herminio Giron, Mahmut Sami Gurdal, Nithya Ramani, Sulakna Karunaratna, Shuqi Yu, Maya Thomas, Grace Morrow, Cognitive Developmental Science (CoDeS) Lab, VT Learning & Development Lab
Find them at http://kchoi.org/

We will showcase how AI and robots can be used for young children's cognitive development. Attendees will be invited to engage with our AI agents, which are deployed on smart speakers, computers, and tablets, as well as with robots. These technologies will narrate children's storybooks and ask questions based on a system pre-programmed by our team. Participants will also have the chance to explore our head-mounted eye trackers and wearable devices as we guide them through how these tools are used to investigate child cognition.

Brain Bee at Virginia Tech

Samanvitha Dammalapati, Abigail Cheng, Theo Blair, Ben Hotaling
Find them at @brainbee_vt

We plan to demonstrate brain anatomy via dissected sheep brains, as well as explaining optical illusions/visual sensory systems by engaging the participants in a "drunk" goggle experiment (throwing balls into a basket wearing fuzzy goggles). We will also have the "Stroop Test" game for children to compete in.

Breathing Life into Meketre Tomb Models: A Virtual-Reality Ancient Egyptian Garden Experience

Eiman Elgewely, Sarah Zulfiqar, Deepak Gupta, Visualization and Virtual Reality Lab, School of Design
Find them at https://vvrlab.tech/

This exhibition offers a unique fusion of physical and virtual interaction, inviting visitors to explore a 3D-printed model of Meketre's ancient Egyptian garden while immersing themselves in a virtual recreation of the environment. The original Meketre garden model, displayed in both the Cairo Museum in Egypt and the Metropolitan Museum in New York, showcases the grandeur of Egyptian architecture, landscape design, and the rich flora and fauna of the Middle Kingdom. This blend of physical and digital elements offers a unique and engaging way to experience history like never before.

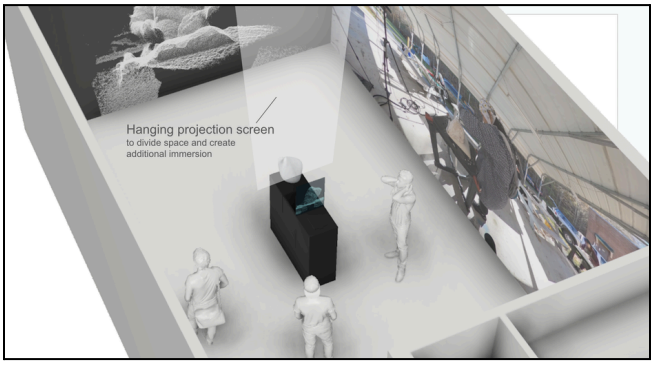
Building Steel Bridges

Rebecca Schell, Maddi Griffith, Morgan Douglass, Jacob Notari, Evan Marshall
Find them @steelbridgevt (Instagram)

The Steel Bridge Design Team will be showcasing our competition bridge from last year, which spans roughly 20 feet. Attendees will be able to observe our bridge, connection pieces, tools, as well as build their own Lego bridge.

Carving Out Creativity

Lisa McNair; Atlas Vernier; Hiromi Okumura; Julia Basso; Tanner Upthegrove; Londa Correll; Institute for Creativity, Arts, and Technology; Electrical and Computer Engineering; Engineering Education; Human Nutrition, Foods, and Exercise; School of Visual Arts
Find them at https://icat.vt.edu/projects/2023-2024/major/carving-out-creativity.html

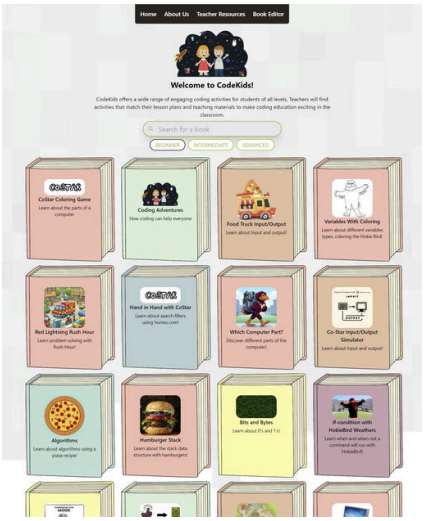


Step into the world of Carving out Creativity, an exciting collaboration that explores how stone-carving in group settings can boost mental health, strengthen social bonds, and even affect brain activity. This unique experience will be showcased in an immersive art installation across four locations, inviting you to dive into the wonders of the creative brain. As you explore, you'll be surrounded by projections of brain activity and local stone carvers at work. A central kiosk will let you touch the carved sculptures and even connect with holograms of sculptures at the other sites. To enhance the experience, the space will be filled with immersive sounds, bringing the energy of brain activity to life through music and recorded sounds.

CodeKids: Explore Interactive Coding Fun Through Digital Storytelling and Games

Sally Hamouda, Sahana Bhaskar, Daniella Efrach, Thomas Deverin, Laith Al-Masri, Ayda Haydarpour, Samane Bayatkandi, Computer Science Department at Virginia Tech
Find them at https://cs.vt.edu/ or https://codekids.cs.vt.edu/

At CodeKids, young learners will dive into the world of coding through fun, interactive digital storybooks and games. Designed for elementary students, this hands-on exhibit helps kids explore basic programming concepts, solve puzzles, and create their own stories using code. With activities tailored to spark creativity and curiosity, kids will have a blast while developing problem-solving skills in a playful, engaging environment. Perfect for budding tech explorers!



Digging Deep: Unearthing Fossil and Paleontological Insights

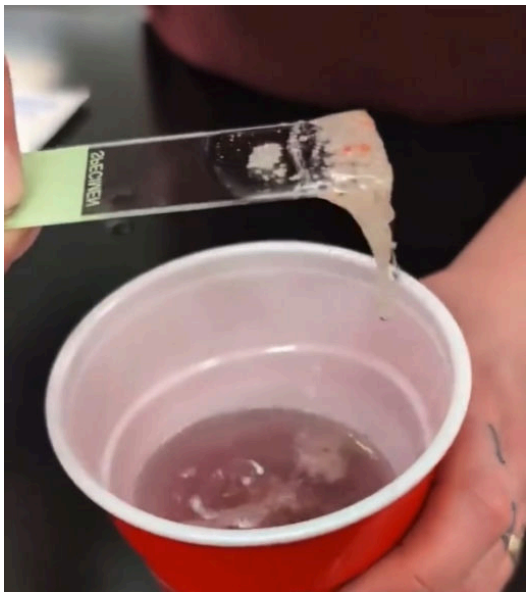
Danielle Fitzgerald, Orin Lole Durbin, Prescott Vayda, Henry Ayers, Saye Woodard, Vicki Yarborough, Paleobiology and Geobiology Research Group at Virginia Tech
Find them at https://www.paleo.geos.vt.edu

At this booth, attendees will have the exciting opportunity to “dig” for fossils in a sand tray using tweezers and paintbrushes. This hands-on activity mimics real-life paleontological excavation techniques. Attendees can closely examine their findings under the microscope, allowing for a deeper appreciation of the intricate details of each fossil. In addition to the digging activity, we will showcase larger fossils and detailed reconstructions (e.g., models) to illustrate the diversity of prehistoric life. A fossil identification station will be available, where attendees can learn to identify common fossils with the guidance of graduate students.

DNA Extraction from Strawberries: Visualizing the Invisible

James May, Amanda Moore, Kirsten Masters, Katara Griffith,
Biomedical and Veterinary Sciences GSA Executive Board
Find them at https://gobblerconnect.vt.edu/organization/bmvsgsa

Join us while we mash up some strawberries, talk about science, and get a look at the mysterious molecules that make us unique.



Epiphany Machine

Julia Basso; Noor Tasnim; Stephen Diesel; Institute for Creativity, Arts, & Technology; Embodied Brain Lab
Find them at www.embodiedbrainlab.com, https://anatomyzero.com/epiphany-machine, and @Embodiedbrainlab

Discover the brain in motion through dance. What unfolds when the brain activity of two individuals is recorded during a live dance performance? At Epiphany Machine, you'll witness brain activity come to life in real time, as movement and neural rhythms merge in an immersive artistic installation. Experience the profound connection between the body and brain as it happens.

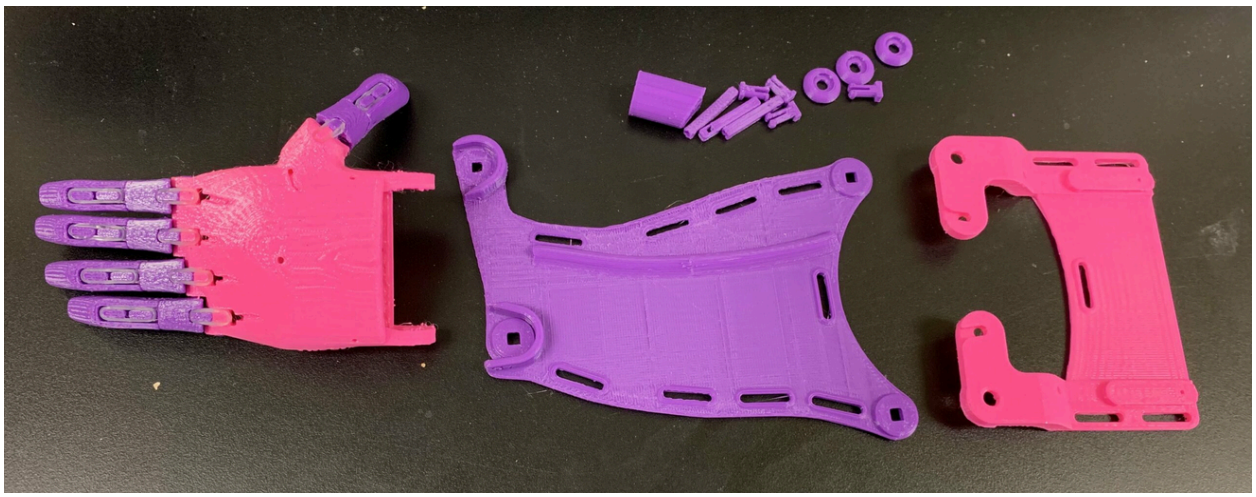
Exploring Aerodynamics Through Straw Rockets

Bella Guereca, Faith Pursley, Riley O'Connor, Mi So Brownbridge, Devon Haapakoski, Shruthika Saravanakumar, Evan Miller, Aditeya Banerjee, Archimedes at Virginia Tech
Find them at @archimedes.vt (Instagram) or https://www.archimedesvt.org/

As aerospace engineering is a large part of our future, it is important and exciting to understand how spacecraft design works. Here, guests will be able to design their own straw rocket and learn how different shapes, sizes, and materials can influence a rocket's performance. Guests will be using paper, straws, tape, markers, and other decorative materials to decorate and construct their rockets. For younger guests we will have some 'pre made' templates to allow for easier construction. For older guests they will be able to fully customize their straw rocket. The goal is for them to be able to understand on a conceptual level how different materials and shapes can influence the weight of their rocket, the drag, and overall the aerodynamics of their rocket.

Exploring Prosthetics: How Form Affects Function

Bella Guereca, Jung-Min Hong, Lily Quach, Delara Bahrambeigui, Mira Yeoh, Archimedes at Virginia Tech
Find them at @archimedes.vt (Instagram) or https://www.archimedesvt.org/



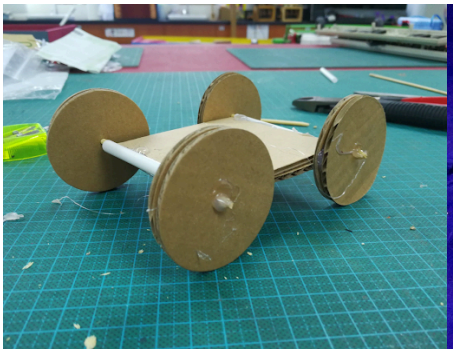
Here guests will be able to use 3D printed parts to assemble their own prosthetic. There will be different colored pieces that participants will be able to put together in order to see how different pieces and shapes can influence the functionality of a prosthetic.

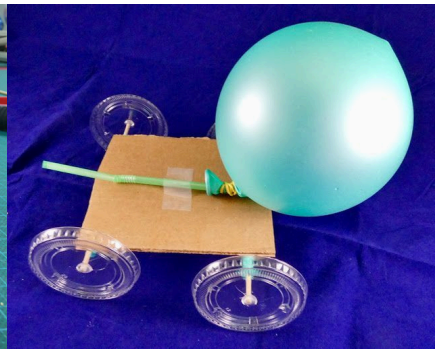
Exploring Wheel Types Through Racing Toy Cars

Bella Guereca, Jia Xi Lin, Destiny Cartagena, Dhruba Bhattacharjee, Rahul Jadhav, Hannah Longfellow, Byron Millet, Gideon Lovern, Destiny Xia, Akanksha Potluri, Archimedes at Virginia Tech

Find them at @archimedes.vt (Instagram) or https://www.archimedesvt.org/

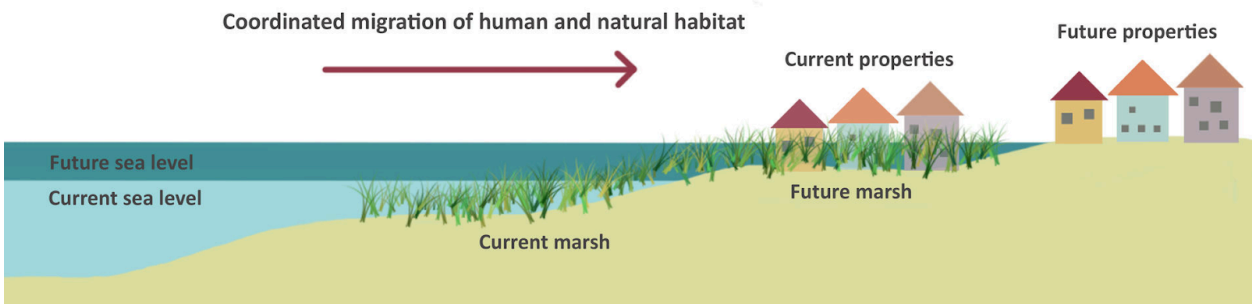
Guests will be able to design, build, and test their own cars. Through this exhibit, guests will be able to test how different sized wheels affect a car's speed and efficiency. This will be tested by durability, as well as how long a car takes to finish the race course whether it be down the ramp, with a balloon attached to it, or other means of travelling.





Feeling Trapped: Wetlands Between Rising Seas and Human Settlements

Anamaria Bukvic, Charlie Fladhammer, Caroline Sorenson, Virginia Tech, Old Dominion University, University of Southern Mississippi



This exhibit revolves around the “coastal squeeze,” a phenomenon where wetlands are trapped between rising seas and human settlements in coastal areas. The coastal settings are changing due to more frequent and severe flooding. Their future will depend on the ability of both the human and natural systems to co-migrate inland as sea level rise (SLR) increases. However, the suitable space available for wetland migration is decreasing due to urban development along the coasts.

Highschool Robotics - Interactive Demo

Karen Stoll, Arnit Garg, Alexander Fenn, Oliver Mackenzie, Reece Masri, Baden Martin, Isabelle Nunn, William Roberts, Lucinda Cherbaka, Brennen Dovie, Serena Savla, Nathan Smith, Kolbe Hitzelberger, Emily Paul, Ian Yu, Brody Reed, Arthur Bond, FIRST Robotics Competition Team 401 Copperhead Robotics

Find them at team401.github.io / Twitter: @team401 / Instagram: @frcteam401 / Facebook: FRC Team 401

When attending this exhibit participants can expect to learn about all levels of robotics from elementary to highschool and have fun playing catch with a real student built robot.

Insect Camouflage

Kristy Collins, Camdyn Acker, Zoe Baker, Shea Lane, Ridhi Donepudi, Eli Kreppel, Jacqueline Frank, Nevyn Roy, Alora Cortina-Brown, Joely Bayless, Miekia Page, Carolina Lazzarotto da Silva, Matthew Pankratz, Christina Greggs, Marshall Lupejkis, Aishwarya Salur, Bridget Midula, Orion Living Learning Community, Fralin Life Sciences Institute

Find them at https://fralinlifesci.vt.edu and https://llp.vt.edu/llc/orion.html

Kids will learn how insects adapt to their surroundings and blend in to avoid predators. The kids will build-a-bug that will hide in the "wild."

Invasive Species in Your Backyard

Grace O'Malley, Hallie Harriman, Jocelyn Perry, Ella Huang, Claire Heh, Falconer Carter, Invasive Species Collaborative, The Wildlife Society Student Chapter at Virginia Tech

Find them at https://invasivespeciesvt.org/ and https://vttws-g.wixsite.com/vt-tws

Learn about common invasive plant and animal species found in Virginia. Observe plant & animal specimens and learn how to manage invasive species.

Launch Rockets with a High-Power Rockets Design Team

Vanessa Bushell, Kate Childers, Nidhi Gangadharan, Morgan Duty, Rocketry at Virginia Tech

Find them at https://www.rocketryatvirginiatech.org/, @rocketryatvirginiatech (Instagram), and Rocketry at Virginia Tech (Facebook)

Rocketeers, get ready to shoot for the stars with Rocketry at Virginia Tech! Come check out our real 11-foot 2024 competition rocket that we launched to over 10,000 feet in the desert. You'll even get the chance to launch our stomp rocket which can shoot up to 100 feet in the air.

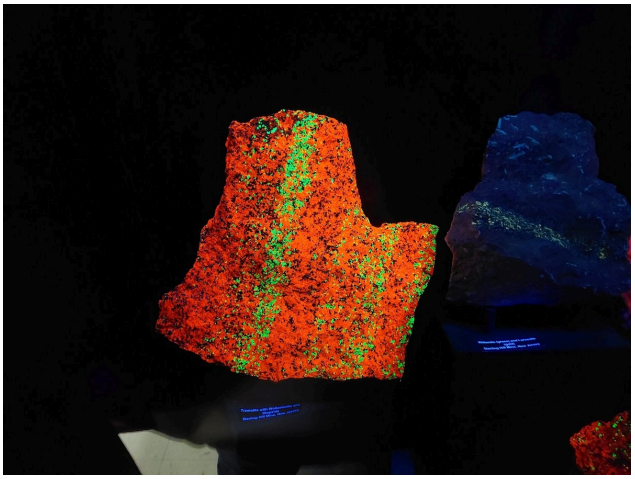
Learn About Nutrition, Sugary Beverages, and a VT Weight Control Study

Brenda Davy, Elaina Marinik, Jenna Warnock, Theresa Libera, Elena Laskaridou, Cameron Heidary, Wenjing Yu, Weight Control Trial Research Staff
Find them at https://www.hnfe.vt.edu, @VTHNFE (Twitter), and @DavyBrenda (Twitter)

Interested in learning more about what makes up a healthy diet? Stop by our table to evaluate a few of your own dietary habits, and guess how much sugar is in popular beverages. For those aged 50+, learn about our ongoing Human Nutrition, Foods, and Exercise weight control trial focused on a healthy diet and regular walking. Study testing includes assessments of body composition, brain function, meal appetite and blood testing, and urine collections. Study fliers will be available.

Magic Minerals

Mariah Green, Faizan Sabir, Tasha Dray, Brooklyn Harris, Chloe Smith, Florence Onyike, Emmanuel Irumhe, Kiele Armstrong, Angelina Stephens, Museum of Geosciences
Find them at https://www.instagram.com/museumofgeosciences



This hands-on activity allows visitors of all ages to experience various fun, unique, exciting, and unexpected mineral properties such as double refraction, fluorescence, and more.

Make Your Own Lava Lamp

Minh Nguyen, Tess Larsen, Kayla Bortner, Elizabeth Zhang,
Blacksburg High School Science National Honor Society

Learn about the interactions of liquids and gases by building your own miniature lava lamps with Blacksburg High School's Science NHS. Students will be combining water, oil, food coloring, and fizzy tablets to create a bottle of bubbly liquids.

Microbe Master: The Unseen World Around Us

Ann Stevens, Jack Kreager, Bethany Teti, Grant Gibson, Marissa Lee, Guinevere Vu, Amber Kummer, Sofia Shevchenko, Bidan Feng, Virginia Tech Microbiology Club
Find them at https://www.instagram.com/vtmicrobiologyclub/

Microbes impact almost every aspect of your life in mostly beneficial, but also potentially harmful ways. Learn about the microbial world around, on, and within you, and learn how it impacts you on a daily basis. Participants will use microscopes, observe live microbes on Petri dishes, and learn the importance of proper hand washing.

Mind Matters

Samantha Margherio, Michelle Le, Gabby Finan, Madisyn Paris, Sophia Kelly, Child Study Center

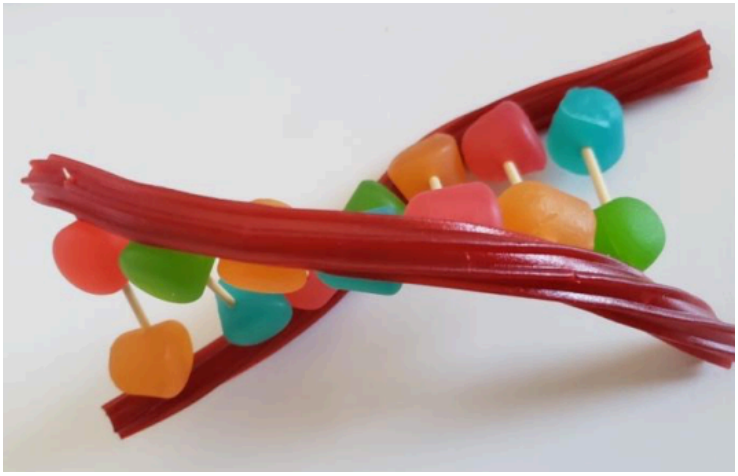
Find them at https://childstudycenter.wixsite.com/childstudycenter and @vtteenresources

Kids and their families will learn about the brain. There will be several interactive opportunities to see the brain, test your knowledge about myths vs. facts about the brain, create a neuron, race to be the fastest neurotransmitter, and more.

Modeling DNA with Candy

Kristy Collins, Rachel Sherman, Allie Canino, Ty Christian, Kaitlin Rath, Jaylene Figueroa, Chris Mcmullen, Ryan Quimby, Lauren Hendricks, Madison Burget, Isabella Ragucci, Eliza Brothers, Adam Shobaki, Mackenzie Stanley, Sophia Ragucci, Ava Wood, Priya Solanki, Kaitlin Rath, Ava Wood, Fralin Life Sciences Institute, Orion Living Learning

Find them at https://fralinlifesci.vt.edu and https://llp.vt.edu/llc/orion.html



Kids will create a model of a DNA double helix using candy, licorice and toothpicks.

Music + Waves with Pd-L2Ork

Justin Kerobo, Ico Bukvic, VT Waves (ICAT and Hume Center)

Attendees will explore music and wave physics through fun and interactive modules. Make music using L2Ork Tweeter and dive into L2Ork-motes and other L2Ork devices for a technologically charged experience in audio, STEM, and education.

NanoEarth: What is Nano and What Does it Have to Do with the Earth and the Environment?

Sylvianne Velasquez, Marc Misztal, Charis Horn, Bipin Lade, Emmanuel Irumhe, Cecelia Wood, Maiev McClain, NanoEarth (National Center for Earth and Environmental Nanotechnology Infrastructure)

Find them at https://nanoearth.ictas.vt.edu/ and @NanoEarthVT

Nanotechnology is everywhere: in your smartphone, in your food, and in nature. But what can nanotechnology do for the Earth? And what can it mean for the environment? We will explore what gives nanotechnology their "superpowers" and how they behave in the environment as well as how we can leverage them to tackle challenges in the environment.

Neurons Under Construction

Megan Luby, Katherine Adams, Adriel Castro, Ashley Binney, Chris Jayasinghe, Maya Chika, Chris J, Mayamiko Chika, Erin Russell, Virginia Tech Psychology Senior Seminar

Attendees will have the opportunity to learn about the different parts of a neuron by building their own that they can then take with them.

Observe, Collect, and Report. What's in Your Water?

Lisa Stansell - Galitz, John Copeland, New River Conservancy
Find them at https://newriverconservancy.org/research/ and @newriverconservancy

New River Conservancy will teach kids of all ages about stream analysis, water quality, how to protect our watershed, and how to teach others to do the same. Our goal is to inspire our youth to take a more personal interest in the health of the creeks, streams, and rivers that surround them in the New River Watershed and inspire them to become Citizen Scientists, people who collect info that helps scientists do research.

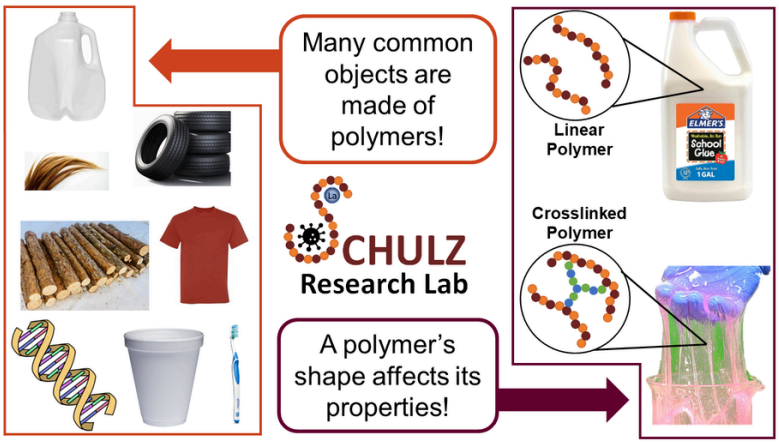
Pestbusters

Hannah Swarm, Will Long, Kuhar Vegetable Insect Pest Research Lab
Find them at https://www.instagram.com/vt.vipr.lab/

Enjoy a fun game to learn about how we remove farm pests that feed on our food. Run by the VIPR lab of the Virginia Tech Entomology Department. For the exhibit, place cards will be set out on a table where kids can either try on their own or race a friend or parent in knocking down bugs that try to eat food.

Polymers: The Science All Around You

Connor Gallagher, Suzie Muller, Tyler Bridges, Zhen Shi, Chris Armstrong, The Schulz Research Group



Polymers are really large molecules that make up many common objects like plastics, fabrics, wood, and hair. Join the Schulz Research Lab in learning about polymers through some common examples. Participants will get to build their own model polymer using paperclips or pipe cleaners. The shape and structure of a polymer can have a big impact on its properties and uses. Participants will explore this concept by performing a crosslinking reaction on a common polymer to turn it into slime and by racing some polymers.

Prototyping Studio: Where Ideas Meet Reality

Max Ofsa, Virginia Tech University Libraries

Come see the University Libraries' maker space and all the cool tools, projects, and people that make it happen. While you're here, feel free to make something to take with you!

Randolph College SciFest

Trish Cerulli

Find them at www.randolphcollege.org/scifest

scifest
RANDOLPH COLLEGE 2025

Hands-on straw rockets and popsicle catapult activities, and learn about Randolph College SciFest in March 2025.

Reach Your Education Saving Goals - Save Today for a Bright Tomorrow

Ashlee Gallegos, Invest 529, ABLEnow
Find them at https://invest529.com

There's more than one pathway to success, but all require training and education. Visit Invest529 and learn a variety of ways to reach your higher education savings goals.

Families will have the opportunity to Enter-To-Win $529 towards an Invest529 account.

Come spin the Tuition Monster wheel and win a free prize to take home!

Recipe for 5S: Making Processes Work Better

Katie Whittemore, Donal Devine, Brennan Rim, Apurv Verelly, Cate Walter, Dylan Lachowicz, Austin Canuel, Madison Harmon, Josh Long, Silas Fox, Iman Naderi, Jude Sanborn, Alpha Pi Mu

Virginia Tech Alpha Pi Mu

Come learn about industrial engineering, where math, science, and engineering principles all come together to make processes better. Visitors will be able to learn about 5S, a key component of Lean SixSigma, through a race to find the ingredients in the pantry needed to make cookies. Afterwards, visitors will be able to offer suggestions on how to better organize the pantry to make finding the ingredients easier.

Robotics with VT CRO

Marco Gonzalez Hauger, Marc Nguyen, Keira Shaw, Tyler Kraics, Ian Yu,
Competitive Robotics Organization at Virginia Tech
Find them at https://www.vtcro.org/

Explore robotics with VT's largest robotics team, VT CRO, and drive one of our VEX Robots that made it to the 2024 VEX Worlds Competition in Dallas.

SAFE Break Zone

Meghan Walsh, Victoria Izaac, Daniele Martino,
SAFE (Supporting Autism Friendly Environments)
Find them at https://www.vtcar.science.vt.edu/outreach/Outreach.html,
https://www.facebook.com/VirginiaTechAutism, and
https://www.instagram.com/vtautismcenter/

COLLEGE OF SCIENCE
CENTER FOR AUTISM RESEARCH
VIRGINIA TECH

Attendees at the SAFE Break Zone have the opportunity to relax and unwind in a quiet, sensory-friendly space.

Searching for Bacteriophages

Jackson Wood, Birgit Scharf, Sofia Forbes, Idella Collett,
Bacteriophage Club at Virginia Tech

Learn about the exciting world of bacteriophages (viruses which infect bacteria). Here you will learn about bacteriophages, draw them, make buttons, and find bacteriophage Waldo in an environment of bacteria and bacteriophages.

Shake it up: Engineering Vs. Quakes

Saad Allah Solh, Sepehr Akhtarshenas, Hector Montilla, Sanish Bhochhibhoya,
Earthquake Engineering Research Institute
Find them at https://www.eeri.org/

Get ready for an exciting, hands-on earthquake experience at our shake table demonstration! Watch a building model sway and shake as we reveal its natural frequency, simulating real earthquake effects. Then, see the ground come alive as loose, saturated sand acts as liquid right before your eyes, showing how liquefaction happens during quakes. This interactive exhibit brings seismic science to life—fun, engaging, and perfect for all ages.

She Learns, She Leads, She Creates Her Lab

Karen Eley Sanders, Kristen Wells-Lewis, Trinity Perkins, Virginia Tech College Access Collaborative, Black to the Lab
Find them at https://www.blacktothelab.com/

This activity will expose girls to science, technology, engineering, math, and STEM's unique impact on the cosmetic industry. Join us for a hands-on learning experience that uses cosmetic chemistry concepts allowing youth the ability to create some of their favorite cosmetic items such as lip gloss, body scrubs, lotion, and more.

Sky High Math

Jennifer Smucker, Paola Deniz Galvez, Julia Shapiro, Giuseppe Cotardo, Nina Yang, Association for Women in Mathematics

Have you ever wanted to design your own city full of skyscrapers? In this activity, students will combine creativity with problem-solving as they build their own skyscrapers using mathematical logic. This hands-on activity helps kids develop critical thinking skills and a strong foundation in math. Kids will need to think carefully about where to place each skyscraper to satisfy the rules, combining trial-and-error with logical deduction. This activity is suitable for all age groups.

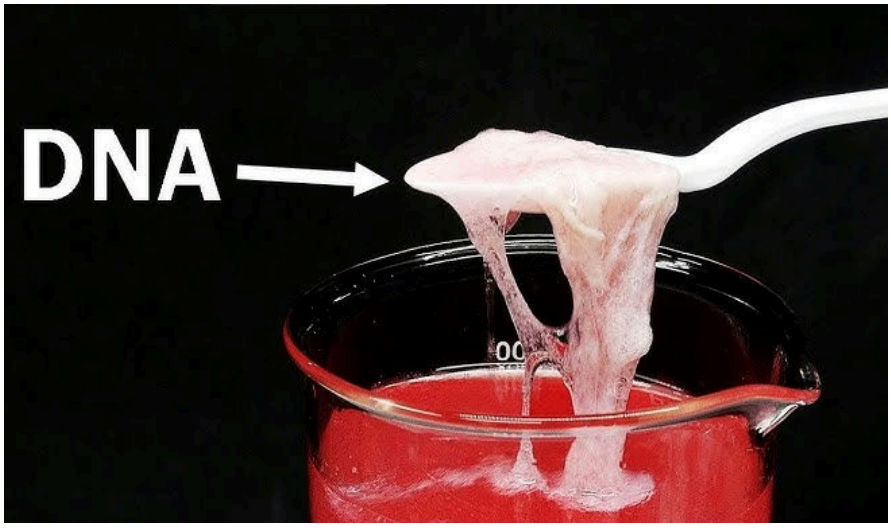
Soybean Detectives: Uncovering GMOs

Bo Zhang, Alexander Li, Jenny Li, Samson Ou, Billy Ingram, Ye Ding, Richard Chen,
Blacksburg Chinese School
Find them at https://blacksburgchineseschool.org/

In this exciting experiment, you'll become a soybean detective and uncover the secrets of GMO and non-GMO soybean leaf tissues. First, you'll grind up a leaf sample in water—get ready to mix things up! Then, insert a test strip into the tube and watch the magic happen. Just a few minutes later, lines will appear on the test strip. It's just like a pregnancy test: one line means it's non-GMO (negative), while two lines reveal a GMO (positive). Join us for this hands-on adventure and discover the fascinating science behind your food!

Strawberry DNA Extraction

Micah Hoernig, Kirsten Masters, Rakshitha Hosahalli,
Biochemistry Graduate Student Association



In this experience members from the Biochemistry Graduate Student Association teach about DNA, and do a simple experiment where participants extract DNA from a strawberry.

Stream Rocks: Beds Full of Sand are Uncomfortable for Stream Critters Too

Jonathan Czuba, Reilly Oare, Sarah Leach, Justus Hargett, Emma Cooper, Alyssa Garibaldi, Samantha Weatherly, Chloe Chiang, Ellie Buehrer,
Biological Systems Engineering
Find them at https://sites.google.com/site/jonczuba/home

The size and mix of rocks on the bottom of streams creates places where different stream critters (such as stream bugs, crayfish, and fish) will choose to live or not. These critters prefer places where there are open spaces between larger rocks. If these open spaces are filled in with sand or mud, then these critters will look for a different home. This hands-on exhibit allows people of all ages to pretend their hands are stream critters and explore the differences in stream bottoms liked and disliked by stream critters in our interactive gravel and sand boxes.

The Future of 3D Printing

Christopher Williams, Daniel Heinze, Isaac Rogers, Manas Vyas, Adam Seigler, Nathaniel Root, Piash Bhowmik, Saltuk Yildiz, Future Manufacturing Group, DREAMS Lab
Find them at www.me.vt.edu/dreams

Think you know 3D Printing? Stop by to see a 3D printer in action and learn how it works. Learn about how 3D printing is used and what its future holds. Get hands-on experience with large 3D printed parts made from a variety of materials for different use cases.

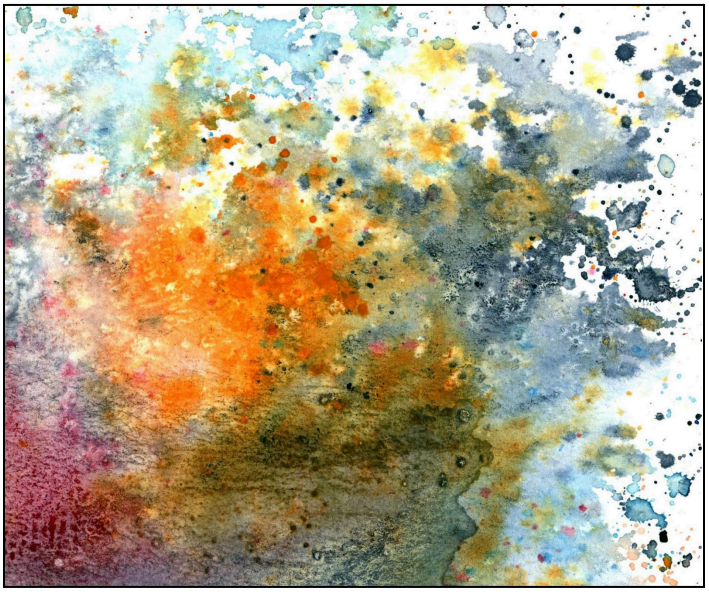
The Magic of Materials Science and Engineering

Bethany Gansemer, Elliot Bevers, Michelle Czamanske, Kobe Tam,
Materials Science and Engineering
Find them at https://mse.vt.edu/

What can you make without a material? Nothing! Materials Science and Engineering students will provide various demonstrations showcasing the importance of materials. Demonstrations will include polymer (plastics), bio medical (knee replacement), ceramic materials (auto parts), electronic materials, and metallurgy. Visitors will get their hands on a non-Newtonian fluid (both liquid and solid). They will also get to watch metal melt, then watch the melted metal form a coin.

The Personalities of Watercolors

Aline de Souza
Find them at https://alinesouzadesouza.wordpress.com/



Did you know that watercolors have different personalities and behaviors according to their physical and chemical properties? Let's try painting together to discover how each color is different with their unique pigments, compositions and behaviors on watercolor paper.

The Wonder of Waterways: How to Clean Water after Storms

Laura Berrier, Megan Hennesey, Amanda Bowes, Sherrie Bocock, Shannon Wright,
Science Museum of Western Virginia
Find them at https://www.facebook.com/share/9eaFnqvVzHrhradC/?mibextid=LQQJ4d

Ever wonder what happens to rivers, streams, and waterways after rain storms? How do we keep the waterways clean and protect our animal friends? Here you'll find ways to clean the water you're living around and keep the environment clean for our soil and waterway friends to protect the earth and keep it clean.

This or That: Challenge Your Senses

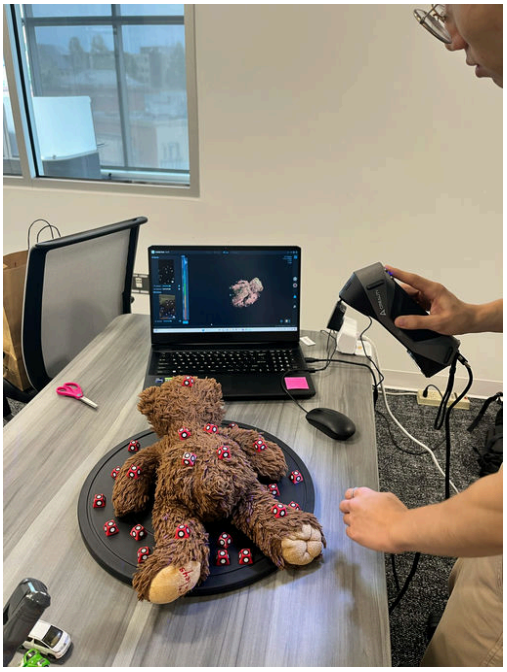
Gabriel Holguin, Katherine Adams, Wania Rehman, Jaimee Hausner, Alexandra Cajayon,
Emily Gundel, Phillip Cates, Wania Rehman,
Virginia Tech Psychology
Senior Seminar

By interacting with different perceptual illusions, attendees will have the opportunity to learn about why sensory stimuli can sometimes be perceived differently by different people.

ToySphere: Reuse, Replicate, Reimagine

Yoon Jung Choi, Hayoun Moon, Myounghoon Jeon, Jaehoon Pyon, Efe Akusu, Grant Terry, Sarika Maganahalli

Discover how old toys can gain new life. At our interactive exhibit, children and parents can explore how to transform unused toys into 3D virtual replicas using virtual reality technology. Attendees will engage with digital toys, learn about sustainable play practices, and understand the environmental impact of toy waste. Join us to experience playful ways to reduce waste, share toys, and build a more sustainable future for playtime.



Understanding You Nervous System with the CRM Sensory Flow Bike

Jon Dance, The Center for Rural Education, Cook Counseling
Find them at https://rural.vt.edu/ and https://ucc.vt.edu/outreach_consultation/crm.html

Students will experience the CRM Sensory Flow Bike and pedal to see how their body's alarm system works with their nervous system. As they ride through different zones—High, Low, and Flow—they'll learn about how their body reacts to stress or danger with responses like Fight, Flight, Freeze, and Tend-and-Befriend. They'll learn how to identify and manage their emotions and discover easy ways to calm their mind and body, helping them become mentally strong.

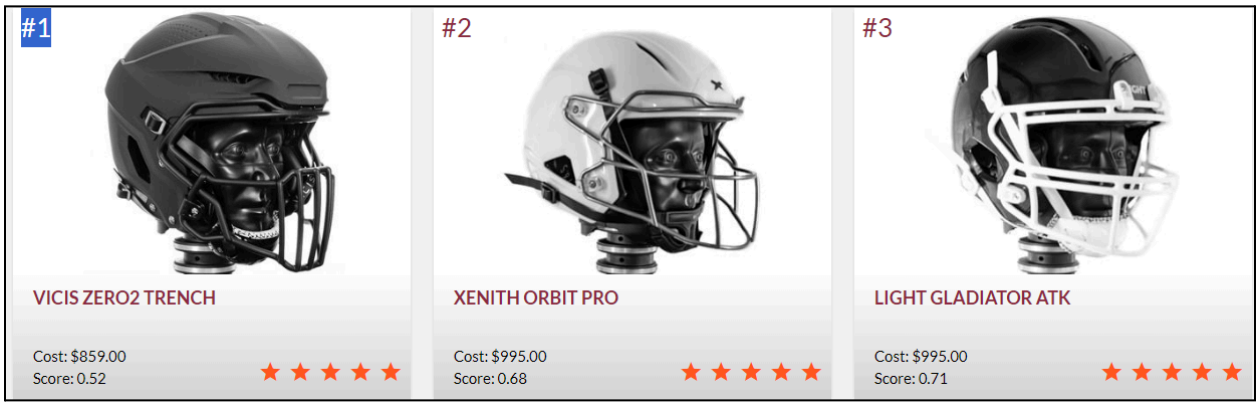
Use Your Brain Waves to Play a Game

Sujith Vijayan, Chin-Hui Chen, Richa Prakash, Zhuo Fu, Jarod Le, Jeremy Decker, Gavin Vess, Virginia Tech School of Neuroscience
Find them at https://neuroscience.vt.edu/ and https://www.vijayan.neuroscience.vt.edu/

You will explore brain waves and observe how they change between wakefulness and sleep. You will learn about how brain waves can be used to control devices such as wheelchairs, robotic arms, and computer cursors. You will also have the opportunity to use your brain waves to play a video game or type words on a computer.

Virginia Tech Helmet Lab

Barry Miller
Find them at ww.vt.edu/helmet



Display and share helmets, helmet technology, Helmet Ratings, and concussion research. See and try on a variety of sport helmets. See the headforms used to test helmets and helmet technology scientifically.

Virginia Wildlife Watch

Christopher Blume, Madison Thurber, Emma Rice, Olivia Golliday, Hayley Busch,
Fish and Wildlife Grad Student Association Virginia Tech (FIWGSA)
Find them at https://vtfiwgsa.wixsite.com/fiwgsa

Attendees will be able to learn about Virginia' biodiversity and the researchers that study it through the use of demonstrations and realistic models. Attendees also will have the opportunity to talk to wildlife students and experts and ask questions about their work.

Virtual Solar System

Todd Ogle, Clara McDaniel, Eva Ellis, Applied Research in Immersive Experiences and Simulations, Computer Science Department at Virginia Tech, ARIES Program
Find them at https://echolab.cs.vt.edu/2021/08/19/movis/

Explore our solar system using virtual reality to learn about the phases of the moon, how tides work in different locations around the world, and build your own planet.

VT Society of Physics Students

Sarah Morrow, Haley Piercy, Jenesis E. Bannarbie, Ria Rohilla, John Filko, Henry Hilgendorf, Fir Takacs, Anthony Mays, Virginia Tech Department of Physics

Find them at https://www.phys.vt.edu/outreach.html

The SPS Outreach team has many exciting and electrifying hands-on demonstrations of physics concepts. Crowd participation is encouraged! Both young and old will be able to enjoy learning everything from what happens to marshmallows in space, to how electric generators work.

We're Gonna Need a Bigger Boat: Which DIY Boat is the Best?

Caroline Shoop, Jake O'Brien, Joylyn Wang, Lauren Spehlmann, Vy Nguyen, Joshua Gao, Science Olympiad at Virginia Tech

Find them at https://www.sciolyvt.org/ and @scienceolympiadatvt

Judge a mock Science Olympiad competition as we compete to see which DIY boat is the best. Can you predict which boat will hold the most weight? Examine the materials and methods used to build it to find out. YOU are the scientist and the judge, you will examine, test, and judge the boats, just like in the Olympiad!

Who's in Your Stream?

Caleigh Meehan, Kelley Sinning, Maria Popescu, Gretel Baur, Elizabeth Sicking, Meredith Snyder, Katie Hoffman, Dexter Howard, Luisana Rodriguez Sequeira, Carla López Lloreda, Virginia Tech Stream Team

Find them at https://vtstreamteam.weebly.com/

There's more to streams than meets the eye! Come meet the stream team and see some bugs crawling around from local Blacksburg-area watersheds. Put together a food web and see who eats who in streams. Test water quality and connect with your inner insect.

WIND = LIGHT

Makeda Solomon, Nathan Farmer, Vivian Hazelrigg, Sean Do, Chloe DeKorsey, Sean Do, Kate Douglas, Alec Crispino, Juan Martinez, Reve Meili, Anthony Concessi, Walter Lin, Timothy Estrada, Cristene Sellers, Shiloh Carmack, Mannix Wilhoit, Lucas Renfrew, Sai Ashraya Chegu, Wind Turbine Team

Find them at https://www.instagram.com/vtwindturbineteam/

The Wind Turbine Team will bring in a small-scale wind turbine to visually show the students what we compete with and how our model works. We want students to know how the wind can power humanity; therefore, we will be allowing students to connect an LED and a resistor onto a breadboard, and then watch how the LED will light up. We will explain how the wind can help harness this type of energy to give us electricity.

INSTITUTE FOR CREATIVITY, ARTS, AND TECHNOLOGY
CENTER FOR EDUCATIONAL NETWORKS AND IMPACTS
VIRGINIA TECH