

VIRGINIA TECH



SCIENCE FESTIVAL

Exhibit and Event Catalog

October 27, 2018

Moss Arts Center, Alumni Mall, Torgersen Hall, and
Newman Library
vt.edu/sciencefestival

Welcome to the 5th year of the Virginia Tech Science Festival! Through expo-style exhibits, performances, experiences, and experiments, we celebrate science as a way of thinking to show the many ways science is bigger than you think. Over the past five years, we have hosted nearly 500 exhibits that have been shared with over 21,000 attendees. We are delighted that the festival has become a fall tradition and destination for families and school field trips from across the state.

At the Institute for Creativity, Arts, and Technology (ICAT), we make a habit of exploring how science, engineering, arts, and design come together. We are thrilled to partner with organizations, departments, and colleges across the Virginia Tech campus to host the Virginia Tech Science Festival for the fifth year running. The festival brings together thousands of people to experience the joy of science. Whether you come as a school field trip, scout group, college student, lifelong learner, or family, we hope the festival inspires you to see science as accessible and relevant to you.

It is my sincere hope that you learn from what you see, make connections with other people, and dream bigger than you did before.



Ben Knapp
Founding Director
Institute for Creativity, Arts, and
Technology
Virginia Tech

VIRGINIA TECH



SCIENCE FESTIVAL



Saturday, October 27

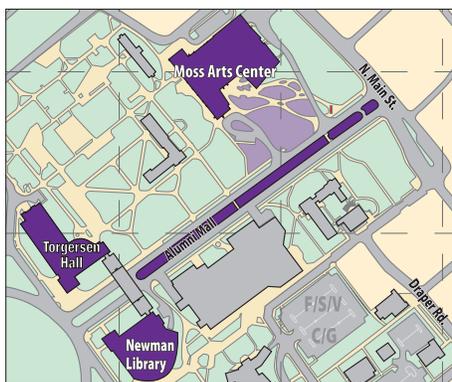
10:00 – 4:00 Festival expo

4:30 – 5:30 Nutshell Games

recommended for ages 11 to 111

Be there for **FREE** hands-on exhibits and demonstrations, one-on-one conversations with scientists, and a celebration of science as a way of knowing.

Science is bigger than you think. Science is a way of knowing about everything – people, trends, living things, rocks, economics, how things move, what people buy, probabilities, stars, animals, history, memory, physics, and so much more. You might even say that science is universal. #VTSciFest



www.vt.edu/sciencefestival



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Science Is in the Arts

Moss Arts Center Galleries

SWARM

Moss Arts Center | <https://artscenter.vt.edu/>

Ages 8 and up

A selection of works from emerging and established artists explore bodies that converge to occupy, invade, or even dominate our airspace. From insects to birds, planes to drones, SWARM presents an array of digital, sculptural, and site-specific art works that portray the wondrous, delightful, ominous, and even unnerving imagery of objects and beings en masse, in flight, all around...

Talia Greene, Don Maynard, Björn Schülke, Leah Sobsey, and Marina Zurkow

October 25-December 15, 2018 in the Miles C. Horton Jr. Gallery, Sherwood P. Quillen '71 Reception Gallery, and Francis T. Eck Exhibition Corridor

Project contact: Meggin Hicklin

Science Is Asking Questions

Moss Arts Center Turner Street Entrance

Science in Real-time

Center for Research in Science, Engineering, Art, and Design Education

All ages

Science Festival attendees will have the opportunity to come and be a part of a research project being conducted during the festival. Opportunities will include wearing a sensor or camera while they attend the festival, building a meme to share, other awesome activities. Come be a part of science- it's bigger than you think!

Project contact: Bryanne Peterson

Science Is Communication

Moss Arts Center Learning Studio, Room 253

Alchemically, an Educational Role-Playing Game

Creative Technologies

Ages 8 and up

Alchemically is a Role-Playing Game based on the computer, designed to teach students the basics of chemistry by putting them in the shoes of an alchemist who uses the elements to create molecules in order to solve puzzles and survive.

Project contact: Lucas Freeman

The Gardenator: How Well Do You Know the Garden?

Tech on the Trail | <https://techonthetrail.net/>

All ages

Learn and interact with different species found in a pollinator garden with the Gardenator. Test your science knowledge about different plants and insects in a museum pollinator garden: their purpose, their life cycles, and their place in the food chain.

Project contact: Linda Kotut

Write to Excite: Exploring Writing in Engineering and the Sciences

Engineers' Forum | ef.org.vt.edu

Ages 5 and up

Think yourself a writer? Many people see writing and STEM as mutually exclusive. We are journalists who write on engineering, often science and engineering students ourselves. This exhibit will explore how writing and science go hand-in-hand, including word association games and fun writing activities.

Project contact: Arianna Krinos



Data Distortion - Sea Surface Temperature Rise

School of Visual Arts

All ages

This experimental installation uses data to create a live audio/visual representation of sea surface temperature from 1880 to 2015. Video color and audio pitch both directly correlate to each year's variation from the mean temperature over the entire time span (135 years)!

Project contact: David Fransich

Coding Kids - Exploring Computer Science in Information Technology

Department of Information Technology | <https://it.vt.edu/>

Let's Code Blacksburg! | <http://letscodeblacksburg.org/>

Ages 8 and up

Want to learn how to code? Come check out the Department of Information Technology / Let's Code Blacksburg! booth and learn how to code in our fun, hands-on introduction to coding exercises!

Project contact: Thomas "Tweeks" Weeks

Science Is Sensory-Friendly

Moss Arts Center, Room 251

Sensory-Friendly Space

Center for Autism Research, Virginia Tech | vtcar.science.vt.edu

All ages



The Virginia Tech Science Festival is partnering with the Center for Autism Research at Virginia Tech to provide a sensory-friendly break room. Look for volunteers and exhibitors with SAFE Mentor buttons. Exhibitors who attended a SAFE Mentor training are identified with the autism puzzle piece.

Project contact: Amy Azano



Science Is in the Cube

Moss Arts Center Cube

10:00 AM-12:00 PM

Bringing Fossils Back to Life: an Immersive Documentary

Paleobiology Research Group | <https://www.paleo.geos.vt.edu/>

Institute for Creativity, Art, and Technology | icat.vt.edu

All ages

Shot in 360 degree, 3D format, Bringing Fossils Back to Life explores the experience of summer field work at the university level for Virginia Tech's Paleobiology Research Group as they venture into the Wind River Reservation to excavate the skull of a Phytosaur.

Project contact: George Hardebeck



12:00 PM-2:00 PM

Under the Net (United Nations Foundation's 360° documentary experience)

United Nations Foundation / Nothing But Nets | <https://nothingbutnets.net/>

School of Visual Arts

Ages 8 and up

Through the perspective of an 11-year-old girl named Amisa, this immersive documentary will give viewers a glimpse into what life is like in the Nyarugusu Refugee Camp in Tanzania, expose the grave dangers of malaria, and show how bed nets can be a life-saving solution to preventing the disease.

Project contact: Justin Perkinson

2:00 PM-4:00 PM

The Visual Language of Chromatin

Entomology, Computer Science, School of Visual Arts, supported by the Institute for Creativity, Arts and Technology

All ages

Come experience a scientific visualization of DNA building block "chromatin" in the Cube at ICAT. Our project lets you visualize and explore how chromatin is designed. This art-inspired representation invites new approaches to learning about this complex and fun field.

Project contact: Daniel Pillis

Science Is Bigger Than You Think

Moss Arts Center Grand Lobby

Information

Virginia Tech Science Festival | vt.edu/sciencefestival

All ages

Stop by for festival maps and information.

Project contact: Phyllis Newbill

Virus Tracker

Biocomplexity Institute | <https://www.bi.vt.edu>

All ages

Play a game creates a map of all your interactions information that helps real-life scientists study how diseases spread. Virus Tracker is an educational game that can transform any event into a full-blown zombie epidemic. Score points by passing on your zombie virus to other players!

Project contact: Kristy Collins



Multiply

Moss Arts Center | artscenter.vt.edu

All ages

In celebration of the Moss Arts Center's 5th anniversary, we invite you to join us in transforming our prime gallery space into a growing work of art that illustrates the power of collaboration. The walls and furniture in the Ruth C. Horton gallery will be covered in a rainbow of thousands of hexagons, one of nature and geometry's most fascinating, efficient, and useful forms. The process of transforming this space continues through December 15. All ages and abilities welcome!

Project contact: Meggin Hicklin

4-H Science: Drone Discovery

Virginia 4-H | <https://ext.vt.edu/4h-youth.html>

Department of Agricultural, Leadership, and Community Education |

<https://www.alce.vt.edu/>

Ages 5 and up

Construct a foam glider and experiment to explore how to control fixed wing aircraft.

Project contact: Hannah Scherer

Inspire Kids to Do Science

Virginia 4-H, Virginia Cooperative Extension | <https://ext.vt.edu/4h-youth.html>

Virginia Cooperative Extension, National 4-H | <https://ext.vt.edu/> and <https://4-h.org/parents/national-youth-science-day/>

Ages 5 and up

Utilizing technology through tools such as Virtual Reality Googles and iPads, Virginia 4-H will not only encourage exploration in the field of science, but help to build confidence and teach life skills relevant to the field of science.

Project contact: Joi Saville

The Magical World of Microbes

Novozymes Biologicals Inc | Novozymes.com

Ages 8 and up

In this exhibit, we will explore the power of microbes and the role that nature's army play in every part of our lives. We will discuss not only, what they do, but how we can engineer them to be used by people all around the world.

Project contact: Dezarai Thompson

Exploring the Solar System

Roanoke Valley Astronomical Society | www.rvasclub.org

Ages 5 and up

Join local amateur astronomers as they explore our Solar System through telescopes and hands-on activities for all ages.

Project contact: Raymond Bradley

Science Museum of Western Virginia

Science Museum of Western Virginia | www.smwv.org

Ages 5 and up

Explore some handheld biotechnology. We will examine cells in a cardboard microscope, split dyes using electricity and water, and demonstrate a table top PCR machine.

Project contact: Hannah Weiss



Science at VT!

College of Science | science.vt.edu

All ages

Explore science options available on Virginia Tech's campus while doing fun, hands-on science experiments!

Project contact: Charlotte Parks

Responsive Interior Surface // BarkLight

School of Architecture + Design, Department of Computer Science

Ages 11 and up

Responding to data, proximity, and movement, BarkLight serves as a biophilic link between outside, people, and interior environment. This interactive poplar bark surface is embedded with 1152 LEDs and displays movement and data visualization.

Project contact: Matt Wagner

501st Legion Garrison Tyranus Serenno Squad

501st Legion Garrison Tyranus | Garrisontyranus.com

All ages

We are the 501st Legion of Virginia also known as Garrison Tyranus. Locally we are Serenno Squad operating in the southwest region of Virginia.

Project contact: John Simpson



Science Is Robotics

Moss Arts Center Grand Staircase

Musical Interactions with Robots and Computers

The Mind Music Machine Lab | <http://trim.mtu.edu/>

All ages



The audience will experience a variety of research projects that the Mind Music Machine Lab is working on. Projects include musical robots for kids with autism, making music with gestures, musical exercise with a coin-size sensor and the smartphone app, and making music from art pieces.

Project contact: Myounghoon Jeon

Code-Program-Control

Institute for Creativity, Arts, and Technology | <http://icat.vt.edu>

All ages

Interact (touch, talk to, listen to, and observe) with a system of sound production.

Project contact: Kyriakos Tsoukalas

3D Printing with the DREAMS Lab

DREAMS Lab | <https://dreams.mii.vt.edu/>

All ages

Come and learn about 3D printing with the Virginia Tech DREAMS Lab! Visitors can interact with 3D printed objects, learn about different kinds of 3D printers, and see firsthand our desktop-scale machines!

Project contact: Joseph Kubalak

e-Nable: A Global Network of Volunteers Delivering Free 3D-Printed Prosthetics

e-Nable: A Global Network of Volunteers Delivering Free 3D-Printed Prosthetics | <http://enablingthefuture.org/>

e-Nable: A Global Volunteer Network Giving the World a Helping Hand | <http://enable.org/>

Ages 5 and up



e-Nable volunteers all over the world are sharing and 3D printing designs for easy-to-make assistive technology. Come see prosthetics in various states of assembly while others are being 3D printed. Make a mechanical finger to take home.

Project contact: Peter Binkley

Science Is Well-Being

Moss Arts Center Orchestra Lobby

Carilion Children's Teddy Bear Clinic

Carilion Children's of Carilion Clinic | CarilionClinic.org

All ages

Teddy doesn't feel well. Real medical providers will show you how to take care of him from checking x-rays to listening to vital signs. Listen to heart and lungs and look through your own skin with the AcuVein medical device.

Project contact: Deb Sydnor

Humpty Dumpty Seat Belt Safety - Buckle Up

Carilion Clinic - Carilion New River Valley Medical Center Trauma Services

All ages

Learn about the physics behind Humpty and Dumpty! Humpty and Dumpty will travel in a small vehicle down a ramp to demonstrate the force of impact on a fragile object. Humpty (the good egg) will have a seat belt on and Dumpty (the rotten egg) will not. Which will survive?

DermaScan - See the Light of Skin Damage

Carilion Clinic / Carilion New River Valley Medical Center | CarilionClinic.org

Ages 5 and up

With DermaScan, Carilion Clinic makes visible what is invisible to the naked eye. This screening, with the use of ultraviolet (UV) light, shows how the sun can damage your skin.

Project contact: Deb Sydnor

Better Breathers Respiratory Therapy

Jefferson College / Carilion | JCHS.edu

All ages

Come experience Respiratory Therapy. Lung volumes, oxygen levels, therapy vest and the effects of smoking will be on display.

Project contact: Chase Poulsen

da Vinci Xi Surgical Robotic System

Carilion Clinic / Carilion New River Valley Medical Center | CarilionClinic.org

Intuitive | <https://www.intuitive.com/en/products-and-services/da-vinci>

Ages 5 and up

With the da Vinci Surgical System, surgeons and you can see beyond the capability of the naked eye and help people to get better faster. No real blood and guts here... just see how robotic surgery can be like a video game.

Project contact: Mike Czar

Science Is Life

Moss Arts Center Mezzanine Lobby

Adventure meets Research: Citizen Science and Technology on the Trail

Department of Computer Science, College of Engineering

Ages 5 and up

Visitors experience what it means to be citizen scientists by using mobile technology to collect digital mementos of plants and wildlife typically encountered during outdoor adventures. They then attempt to beat the ToTT AI system at accurately identifying the species of the mementos captured.

Project contact: Derek Haqq

Creepy Carnivorous Plants

Hahn Horticulture Garden | www.hort.vt.edu/hhg

All ages

Carnivorous plants can be quite creepy! Check out live specimens of venus flytraps, sundews, and pitcher plants and learn the different ways they attract, capture, and devour prey!

Project contact: Stephanie Huckestein

Inside Reptiles (and You)

McGlothlin Lab, Department of Biological Sciences |

<http://www.mcgllothlin.biol.vt.edu/>

All ages

See how we use X-rays to look at lizard bones, and discover what bones can tell us about how other animals are related to us!

Project contact: Joel McGlothlin

Illusions as a Tool for Science

The Socha Lab | <https://www.thesochalab.org/>

All ages

Experience several optical illusions which play with how your brain interprets what you see. Then, learn and see how scientists can use these same illusions to discover how flying snakes see and interpret the world around them.

Project contact: Jack Whitehead

Paleontological Research Opportunities and Fossils, Too

Paleobiology | <https://vtpaleobiology.wixsite.com/vtpaleobiology>

All ages

The VT Paleobiology Research Group explores and studies the breadth of the fossil record in comparison with living animals in order to understand evolution. We will show how we study fossils from Arizona in the field and the lab, and how our undergraduate Jones Scholars are leading the way!

Project contact: Michelle Stocker

Our Green World

Massey Herbarium | <https://www.masseyherbarium.org/>

All ages

Explore the microscopic side of plants on our digital microscope! And then win a prize on the botanical wheel of destiny and make your own mini herbarium specimen to take home!

Project contact: Jordan Metzgar

Understanding Ticks and Lyme Disease in the New River Valley

Fralin Life Science Institute | <https://fralin.vt.edu/>

College of Agriculture and Life Sciences | <https://www.cals.vt.edu/>

All ages

Understand the ticks and the bacterium they transmit that causes Lyme disease. See this fascinating bacterium under a specialized microscope and learn why Lyme disease is on the rise in Virginia.

Project contact: Kristin Rose

Microbiology in Your Daily Life

Microbiology Club |

https://gobblerconnect.vt.edu/organization/Microbiology_Club

All ages

Learn about the microbial world around, on and within you and how it impacts your daily life. Participants will use microscopes, observe live microbes on Petri dishes, and learn the importance of proper hand washing.

Project contact: Ann Stevens

The Student Chapter of the Wildlife Society at Virginia Tech

The Student Chapter of the Wildlife Society

Fish and Wildlife Natural History Collection

All ages

Learn all about what goes into conserving and studying the natural world. We'll have fun artifacts like skulls, pelts, research equipment, and live reptiles.

Project contact: Allison Leipold

Strawberry DNA Extraction

Biomedical Engineering Society

Onco-Engineering Lab

Ages 5 and up

Ever wonder what DNA looks like? Stop by and we will guide you through the process of DNA extraction of a strawberry. You can even take home a sample of the DNA you extract!

Project contact: Sabah Rezvani



Science Is the Earth

Moss Arts Center Balcony Lobby

Learning About Weather Processes Can Be Fun

Meteorology Club | <https://www.facebook.com/groups/BlueRidgeAMSNWA/>

Ages 8 and up

Kids will do crafts and experiments to learn more about our Earth's atmosphere and its processes. Activities include learning about wind with an anemometer; learning that the atmosphere is a fluid with a candle; and learning about ice crystal development through a takeaway craft.

Project contact: Amanda Wagner

Hands-On Volcano Deformation Demonstration and Data Stream

Geodesy and Tectonophysics Laboratory | www.tectonophysics.geos.vt.edu

Geosciences Modeling and Educational Demonstrations Laboratory |

<http://medl.geos.vt.edu/>

Ages 5 and up

Visualize and trace volcanic processes and ways scientists use GNSS/GPS (global navigation satellite system/global positioning system) in their research. Geodesy and Tectonophysics Lab of the Department of Geosciences created a hands-on model that addresses volcanic & tectonic processes.

Project contact: Lidia Guerra

Minerals: Treasures of the Earth

Geology Club

Ages 8 and up

Come explore creations that took millions of years to be cultivated into the captivating spectacles they are today. Stunning minerals like pyrite, amethyst, and quartz will be on display for the public to admire, while a mineral identification activity will be available for all to participate in.

Project contact: Camille Do

Looking Down is Looking Up: How we Learn from Aerial Photography

College of Natural Resources and Environment |

<https://www.virginiaview.cnre.vt.edu/>

Departments of Geography, and Forest Resources & Environmental Conservation |

<https://geography.vt.edu/> -- <https://frec.vt.edu/>

Ages 5 and up

Hands-on activities allow participants to examine aerial photos from two different time periods, and to explore, estimate, and measure changes in land use using basic remote sensing interpretation skills. Examples of varied imagery engage participants of all ages and interests.

Project contact: Jim Campbell

Watershed Engineering & Education with LEWAS

Learning Enhanced Watershed Assessment System | lewas.ictas.vt.edu

Ages 11 and up

Virtual reality (VR) water experience and other hands-on, minds-on activities will be showcased.

Project contact: Morgan Camper

Stream Team Build-A-Stream

Biology Department - Stream Team |

https://www.research.biol.vt.edu/ERG_webpage/VT_ST_ERG.html

All ages

The landscape around a stream affects how streams flow and change over time. Design your landscape and discover how the stream responds with our hands-on stream table. Come build a stream with us to see how it works!

Project contact: Savannah Justus

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

NanoEarth | <http://nanoearth.ictas.vt.edu/>

Center for Sustainable Nanotechnology | <http://sun.ictas.vt.edu/>

Ages 5 and up

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

Project contact: Matt Chan

Assessing Water Quality of Local Water Bodies

American Water Resources Association Student Chapter

Ages 8 and up

Be an environmental specialists. Analyze water and macroinvertebrate samples taken from local water bodies. Create your own assessment of these environmental characteristics and rank the samples to determine which environment is the most pristine.

Project contact: Alexa Maione

Science Is Messy

Moss Arts Center Portico and Lawn

The Human Powered Submarine

Human Powered Submarine | <https://www.hps.aoe.vt.edu>

Ages 8 and up



The Human Powered Submarine (HPS) Team is one of many student-run engineering design teams at VT. Interact with Phantom 8, the team's 8th submarine, and hear about what it takes to build an entire submarine from scratch.

Project contact: Nicholas Aparicio

Magnetic Shenanigans

Center for Enhancement of Engineering Diversity | <https://eng.vt.edu/ceed.html>

All ages

Participants will be able to experience the concept of magnetism through fun and silly experiments.

Project contact: Mark Shephard

Science of Slime: Non-Newtonian Fluids in Action

Da Vinci Living Learning Community

Curie Living Learning Community

All ages

Science is everywhere. We present grand scientific principles using common household products. Who knew cornstarch and water could create a non-newtonian fluid? Stop by to see for yourself!

Project contact: Andrew Miller

Are You Gellin'?

Moore Research Group | <https://www.morg.chem.vt.edu/>

Ages 5 and up



Gels exist everywhere, from the foods we eat to the shampoos we use to wash our hair. This exhibit will teach the basic concepts of gelation using hands-on demonstrations that are fun for all ages. Experiments will explore everything from gel formation to gel properties and real-life applications.

Project contact: Kristen Felice Noble

The Power of Polymers

Schulz Research Group | <https://www.schulzgroup.chem.vt.edu>

Ages 5 and up



Learn about the properties of polymer materials such as plastics, foams, fibers, and rubber with the Schulz Research Group. At this exhibit, participants will create a cross-linked polymer (slime), and explore the mechanical properties of a kind of rubber (bouncy ball).

Project contact: Ryan Archer

Playing with Polymers

Children's Museum of Blacksburg | wonderuniverse.org

All ages

Celebrate the power of play and polymers during National Chemistry Week!

Stop by to discover how polymers make play more fun!

Project contact: Sarah Hanks

FIRST Team 401 Copperhead Robotics Demonstration

Montgomery County Public Schools | team401.org

Ages 8 and up

Team 401 will bring two of our competition robots, which were built by MCPS high school students. Both of these robots competed in the FIRST Robotics World Championships competition. One robot specializes in shooting soccer sized balls (interactive with visitors), while the other stacks milk crates.

Project contact: Nancy Boerth

Everyday DNA

Department of Biochemistry | <https://www.biochem.vt.edu/>

Ages 5 and up

Using a few household materials we can purify a little glob of DNA from a single strawberry and hold it up to the light for all to see! DNA extraction and purification is a crucial first step in scientific research that happens in labs around the globe every day.

Project contact: Kristopher Hite

Soil Liquefaction

Earthquake Engineering Research Institute |

<https://gobblerconnect.vt.edu/organization/EERI>

All ages

Soil liquefaction is like quicksand, and occurs when saturated soil loses strength and stiffness in response to an applied stress, ex an earthquake.

This demonstration shows the basic principles of liquefaction.

Project contact: Wendy Reyes

Exploring the Solar System with Telescopes

Roanoke Valley Astronomical Society | www.rvasclub.org

Ages 5 and up

Join local amateur astronomers as they explore our Solar System through telescopes and hands-on activities for all ages.

Project contact: Raymond Bradley

Rocketry

Rocketry | <https://www.facebook.com/RocketryatVT/>

Ages 8 and up

Come check out Rocketry at Virginia Tech's competition rockets!

Project contact: Johnny Jaffee

Rad Rockets

School of Education, Integrative STEM Education Program |

liberalarts.vt.edu/integrative-stem-education

Ages 5 and up

Build and launch your very own rocket while learning how engineering is used to create rocket designs that fly safe and fast through the air.

Project contact: Bradley Bowen



Science Is on the Road

Alumni Mall

Carilion Ground Transportation Ambulance

Carilion Clinic Patient Transportation

All ages

Climb in and explore one of our advanced life-support ambulances that is ready to respond to any emergency 24 hours-a-day.

Project contact: Tim Mills

Carilion Children's Ambulance

Carilion Clinic Patient Transportation

All ages

Get a view of this sophisticated vehicle that is equipped with the most advanced life-saving medical equipment available. While the ambulance is large, the equipment is child-sized, allowing our team to safely transport babies or older kids needing critical care to the hospital.

Project contact: Tim Mills

Hybrid Electric Vehicle Team at Virginia Tech

Hybrid Electric Vehicle Team | <http://www.me.vt.edu/Teams/hybrid-electric-vehicle-team/>

All ages

Get an up-close look at the modified EcoCar 3 Camaro, the culmination of four years of student design and fabrication. The goal was to reengineer a Chevrolet Camaro to be more fuel efficient while maintaining the safety, performance and consumer acceptability of the vehicle.

Project contact: Davide Ceritano

Motorsports Formula SAE

Motorsports Formula SAE | <https://vtmotorsports.weebly.com/>

Ages 8 and up

See the cars and learn about what Virginia Tech engineers achieve outside of the classroom. Come meet the students in SAE (Society of Automotive Engineers) responsible for their creation. Their job is to conceive, design, fabricate, and compete annually with two formula-style race cars.

Project contact: Joshua Kintz

Baja

Baja SAE | <http://www.me.vt.edu/Teams/baja-team/>

Ages 5 and up

We are an engineering design team that designs, builds, and races an off-roading vehicle each year to compete all over the nation against teams from all over the world.

Project contact: Jeff Stout

BOLT at Virginia Tech

BOLT | http://www.bolt.org.vt.edu/about_us.php

All ages

BOLT at Virginia Tech is an undergraduate engineering design team that designs, builds, and races fully electric supersport motorcycles. It is our goal to prove that electric motorcycles are capable of the highest levels of performance.

Project contact: Thaddaeus Petty

Inspiration Lab

Institute for Advanced Learning and Research | www.ialr.org

Ages 5 and up

The Inspiration Lab advances K-12 Science, Technology, Engineering and Math (STEM) education by providing quality, hands-on activities for students. The lab hosts students in Virginia and travels around visiting schools, neighborhoods, organizations, community events and more.

Project contact: Bruce Waller



Science Is Safety

Torgersen Hall, Room 1100

Information

Virginia Tech Science Festival | vt.edu/sciencefestival

All ages



Stop by for festival maps and information.

Project contact: Julee Farley

Helmet Ratings: Is Your Sports Helmet Safe?

Helmet Research Lab | <https://www.beam.vt.edu/helmet/>

All ages



Learn, touch, and feel various sport helmets (football, hockey, bicycle) and their related design technology. Experience a live helmet test, just like in the lab. Build your own and see the results. Also see current bicycle helmet ratings and information on biking safety.

Project contact: Barry Miller

Technology in Motion - How Computers Move Us

SAFE-D National University Transportation Center |

<https://www.vtti.vt.edu/utc/safe-d/>

Virginia Tech Transportation Institute | <https://www.vtti.vt.edu/>

Ages 5 and up

There is a lot of brainpower in the vehicles that move us around. Come see and experience some of those machines, hear how they work, and tinker with them!

Project contact: Miguel Perez

Brain Drain: The Role of Fluid Flow in Brain Cancer

Onco-engineering Lab | <https://www.munsonlab.com>

Biomedical Engineering Society

All ages



Discover onco-engineering, where we engineer cancer to cure it! Explore how fluid flows through the brain and how it affects and is affected by cancer. Create neurons, operate microfluidic devices, and build tumor models.

Project contact: Caleb Stine

Seeing Your Mind Through Your Eyes!

iLanguage, Executive Function, Attention, Parenting Laboratory (iLEAP) |

<https://ileaplab.wixsite.com/psychvt>

All ages

A portable eye tracker is attached to a large screen, and we will offer children of all ages a chance to engage in some fun tasks that are designed to follow their eye movements as they try to solve some cognitive puzzles.

Project contact: Robin Panneton

Deception of the Senses

Neuroscience Club | <https://neuroscience.vt.edu/undergraduate/neuro-club.html>

Ages 5 and up

We will use Gymnea tea to block sweet receptors on the tongue. We will also use distortion goggles to demonstrate how your senses can be deceived.

Project contact: Arienne Roth



Science Is Motion

Torgersen Hall, Atrium

VT Physics Outreach

Physics Department | <http://www.phys.vt.edu/>

All ages

See the demonstrations cover four overlapping areas of physics: Waves and light, Mechanics, Pressure and Heat, and Electricity and Magnetism. Both young and old will be able to enjoy learning everything from what happens to marshmallows in space to how electric generators work. (This exhibit will have sudden loud sounds, lasers, and potential for static shocks.)

Project contact: Henry Hilgendorf

Wind Power

Wind Turbine Team

All ages

Learn about the power of the wind with the Wind Turbine Team at Virginia Tech! Featuring WTT's model wind turbine and a fun activity to show how even someone's breath can produce electricity. See how renewable energy is changing our planet for the better!

Project contact: Adham Nabhan

Seeing Engineering Everywhere: Hands-On with the VT PEERS Project

Department of Engineering Education

Ages 5 and up

VT PEERS (Virginia Tech Partnering with Educators and Engineers in Rural Schools) will share some of their classroom activities in this interactive exhibit. Festival goers will engage in engineering processes using common materials to explore creative problem solving and test ideas.

Project contact: Andrew Gillen

Exploring Circuits

Institute of Electrical and Electronics Engineers | <https://www.ieee.vt.edu/>

Ages 5 and up

Hands-on fun for kids to learn about circuits. Use copper tape and LED lights to create cool art through designing your very own circuit.

Project contact: Alison Walters

The Color Project TM Chromilluminator

The Color Project TM | thecolorprojecttm.com

Equity Through The Arts | equitythroughthearts.org

All ages

Projected light allows participants to experience a surprising and compelling environment and what they find may be unexpected and delightful. The Color Project TM Chromilluminator administers and studies color and light therapy.

Project contact: Darcy Meeker

Engineering and Scientific Applications of Autonomous Drones

Autonomous Drone Team

Ages 8 and up

Display of autonomous flight using DJI Flame wheel drone platforms and Raspberry Pi and Optitrack 3D Motion tracking. This work presents practical applications for rotary wing based drone platforms as a valuable tool for research and education.

Project contact: Marco Peterson



Science Is Hands-On

Torgersen Hall, Room 1120

Building with Dirt

Geotechnical Student Organization

Ages 5 and up

Students will be constructing an earth wall and testing its strength, under the supervision of graduate geotechnical engineering students. The goal of the activity is to show students how to use soils for construction purposes by hands-on activities.

Project contact: Angela Saade

Science Is Helpful

Torgersen Hall, Room 1140

Making Technology Accessible

Technology-enhanced Learning and Online Strategies | <https://tlos.vt.edu/>

Ages 5 and up

How do you perceive objects and graphics without vision? Use chemistry to create images you can touch! Then, repurpose everyday objects, like oranges and aluminum foil, into controllers for your computer. After that use your computer, tablet, or phone to read out loud to you. Come visit the Accessible Technologies booth to learn more!

Project contact: Daniel Yaffe



Science Is Process

Newman Library Multipurpose Room, adjoining lobby, and Studios

Information

Virginia Tech Science Festival | vt.edu/sciencefestival

All ages



Stop by for festival maps and information. Exhibitors who attended a SAFE Mentor training are identified with the autism puzzle piece.

Project contact: Ginny Pannabecker

Newman Library Technology Showcase

University Libraries | <http://lib.vt.edu>

Ages 5 and up



Newman Library has tons of innovative and fun technology to support teaching and learning. Join us for a hands-on introduction to 3D-printing, virtual reality, software coding, educational toys, creative design, and more.

Project contact: Edward Lener

FabLab Club

Virginia Western Community College | [Twitch.com/fablab_vwcc](https://www.twitch.tv/fablab_vwcc)

Ages 5 and up

Virginia Western's FabLab Club will be showing off some of their latest projects from the Fabrication Lab at VWCC.

Project contact: Marla Mook

Crystal Critters

All ages

Explore the world of art and science with crystal critters! Marla Rain creates unique works of art by taking insect carcasses and bones and using chemistry to grow different crystal structures.

Project contact: Marla Mook

The Curiosity Shop: Physics Demonstrations to Stir Your Curiosity

The Curiosity Shop

Ages 5 and up

See physics demonstrations, many of which are hands on. Ask questions and discuss. Explain the effects you see. Your curiosity directs the discussion.

Project contact: David Allen

Teaching Engineering and Kinematics

TEK Robotics | tekrobotics.com

All ages

Focus on integrating art and engineering with TEK Robotics. Our goal is to spark an interest in robotics by allowing the students to remotely control various robots, including a specialized coloring robot. Participants will also contribute to a collaborative art initiative!

Project contact: Madison Burke



The Balance of Nature

Interfaces of Global Change | <https://www.globalchange.vt.edu/igc/>

Global Change Center | <https://www.globalchange.vt.edu/>

Ages 5 and up

Through games, activities, specimens, and lab tools, anyone can glimpse how we study pollution, habitat loss, disease, invasive species, and climate change. Come see how it's all connected!

Project contact: Vasiliy Lakoba

Flow of Molecules

Department of Mechanical Engineering

Ages 8 and up

Come to see how flow of molecules at nanoscale helps us get drinking water, prevent pollution, and more!

Project contact: Rui Qiao

Green Screen Magic

University Libraries | booking.lib.vt.edu

All ages

Come see an example of the technology behind how green screen video works! Want to see yourself as a weatherperson? Or see what you might look like floating through space? We'll show you!

Project contact: Neal Henshaw

Retooling Bamboo Tectonics: From Vernacular Aesthetics to Digitally Grown and Fabricated Assemblies

School of Architecture + Design

All ages

Retooling Bamboo Tectonics is an in-process project to develop an affordable, intelligent, digitally-enhanced fabrication system for the growing, evaluation, milling, and joining of structural bamboo, increasing implementation potential for this rapidly-renewable, low-carbon building material.

Project contact: Katie MacDonald

Science Is Process

Newman Library Studios

Multi-Cultural and Multi-Modal Sci-Fi

Athenaeum: A Space for the Digital Humanities I

<https://lib.vt.edu/spaces/athenaeum.html>

All ages

Newman Library



Newman 0124. We know the sci-fi of our favorite authors/filmmakers. How do people of other cultures, devout in other faiths, and expressive in other forms add to sci-fi? Athenaeum, a space for Digi-Humanities, explores global sci-fi, beyond text/film. Visitors contribute to a continuously captured sci-fi story.

Project contact: Christopher Miller

From Idea to Object: Learn about 3D Printing and Design with 3D Design Studio

University Libraries I <https://spaces.lib.vt.edu/designstudio/>

Ages 8 and up

Newman Library 2010. Come learn about the process of taking ideas and making them a reality! We will have 3D printers to get "hands-on" experience and knowledgeable staff to answer your questions. Ask how you can get your objects printed for free at the University Libraries 3D Design Studio!

Project contact: Max Ofsa

Finding Bigfoot: A Data Documentary

University Libraries Data Viz Studio I <https://datavizstudio.lib.vt.edu>

University Libraries Informatics Lab I <http://informaticslib.vt.edu>

Ages 5 and up



Newman Library 2030. Become a paranormal investigator and use data to learn about Bigfoot, aliens, ghosts and more! Use maps and charts to discover what people believe in and where they might be hiding! Plus make your own survey about the weird and spooky, then see how your answers match up to others!

Project contact: Nathaniel Porter

Virtual Environments Studio

University Libraries I lib.vt.edu

Ages 5 and up

Newman Library 4020. Come see the Virtual Environments Studio, a space in Newman Library offering Virtual Reality (VR) and Augmented Reality (AR) experiences. We'll be showing off some popular VR experiences and explaining a little bit about how VR and AR technology works.

Project contact: Jonathan Bradley

Science Is on Stage

Moss Arts Center, Street and Davis Performance Hall, Anne and Ellen Fife Theatre

4:30 PM

Nutshell Games

Center for Communicating Science | communicatingscience.isce.vt.edu

Ages 11 and up

Cutting edge research, in a nutshell. Selected graduate students from Virginia Tech will have 90 seconds each to engage with the audience about their research. They will compete for cash prizes. Their judges are not scientists. One judge is a middle schooler. Prepare to be inspired and entertained.

This event is recommended for grades 6 and up. Check out previous Nutshell Games at youtube.com/channel/UC01cz4Mal3-AOZeODCauLHw.

Nutshell Games is presented by the Center for Communicating Science at Virginia Tech.



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