MathScience Innovation Center
Imagine. Create. Lead.

LET'S INNOVATE!

Student Conference Grades 6-8
December 1, 2012

Innovation: a new way of doing something; may be incremental, radical, or revolutionary.

Discover the newest innovations in architecture, biomedical engineering, environmental science, mathematics, medicine, nanotechnology, robotics and more.

Meet and talk with the scientists and professionals who are turning the possibilities of today into the realities of tomorrow.

Keynote Speaker
David Clark
School of Architecture
Virginia Tech

Innovating Architecture
Several years ago, a group of innovative Virginia Tech students began researching how to create a home that could be completely powered by the sun. In 2010, the home became a reality. The Virginia Tech LumenHAUS is completely self-operated and in fact automatically responds to weather changes in order to maximize energy efficiency. It was recently named as a recipient of the 2012 AIA Institute Honor Awards for Architecture. David Clark guides current VT architecture and engineering students who continue to refine the LumenHAUS. Come see your home of the future!

Building Logic with Nanomagnets
Imagine iPhones, iPads and laptops without batteries; no more running around looking for a place to plug in your charger! Logic gates, which are the building blocks of modern computers, can be built with nanomagnets. The use of these nanomagnets could reduce the energy needed for computing by 1000 times. Build your own logic gates and see how magnets can power your own mini-computer!

Jayasimha Atulasimha PhD, Virginia Commonwealth University

Color in Nature at the Nanoscale
Many people understand how color is produced when materials with pigments absorb and reflect light. However, some natural organisms and materials produce color without pigmentation. The brilliant hues of the peacock, for example, are created through diffraction and interference of light waves as they interact with nanostructures in the wings. Come see how color, so essential to the survival of many species, is often the result of light behavior at the nanoscale!

David Rhyne, Educator, MathScience Innovation Center

Decisions, Decisions! Helping Robots Make up Their Minds
Learn how to program a robot of your own design as you work with Lego-based robot kits called PicoCrickets. Participants will construct robotic machines, and teach them to perform tasks using simple programs. Advanced programming techniques will allow robots to do even more spectacular feats involving sensors and actuators!

Jim Lehman, Educator, MathScience Innovation Center

Henrietta's Immortality
Imagine one woman's contribution to science single handedly becoming one of the most important tools of modern medicine. Henrietta Lacks was a tobacco farmer in Clover, Virginia, not a scientist in a laboratory. Yet, through her contribution, the field of tissue culturing was revolutionized. Explore the history and impact of Henrietta's cells on the development of the polio vaccine, cancer treatments, and more. Try your hand at the laboratory techniques that made it all happen.

Vonita Giddings, Educator, Henrico High School

Maximize the Volume
Exploring the mystery of space and volume can be simplified when you are armed with the right tools. Come discover the magic of algebra, the power of technology, and how to put your inquiring mind to the test as you investigate the variability in creating voluminous volume.

Brooke Sanders, Instructor, Virginia Commonwealth University

Medical Practices in the Civil War
From health and hygiene to field surgery, medical practices in the Civil War were far different than those of today. Test yourself as a soldier striving to pass a physical, perform triage, and act as an assistant surgeon during a mock amputation. Explore the medical equipment of the day, the use of anesthetics, the purpose of amputation, and the weaponry and diseases that ravaged both the Union and Confederate armies.

Kelly Hancock, Museum of the Confederacy, Richmond, Virginia

Siege the Day
The trebuchet (similar to a catapult) was a very valuable tool in medieval times. The machine was used to capture cities by destroying walls from a considerable distance. Come see how math and science are applied by using a miniature trebuchet to accomplish a specific task.

Brian Domroes, Educator, MathScience Innovation Center

Spring-o Bingo
Do you love to solve puzzles? Virginia's famous karst landscapes contain many fascinating natural mysteries such as caves and puzzling pollution problems. Find out why these environments are so fragile and how scientists investigate the contamination, as you play the game of Spring-o Bingo, where you'll track down the culprit who polluted an important water supply.

Dr. Patricia Miller, Educator, MathScience Innovation Center

What Lies Beneath…
You will never look at this popular hors d'oeuvre the same way again. Join us as we dissect the wings of chickens to look at the bones, joints, muscles and sinews. See how all of these parts work together in an amazing machine that allows for flight or at least a quick retreat to the hen house. Can you see the similarities in the human arm? Don't chicken out; it will be "humerus"! Hot wing sauce optional.

Wayne Gilchrest, Educator, MathScience Innovation Center

iLLUMINating Architecture
With VT architecture and engineering students as your guide, tour the inner workings of the LumenHAUS live through our advanced teleconferencing system. Then turn your hand to designing and creating models of your own. How will you orient a house for maximum solar energy production? What materials can you renew and reuse to build an eco-friendly living structure? Put your science, math, and design skills to the test!

David Clark and architecture/engineering students, Virginia Tech

General Information

1. Students in grades 6-8 currently enrolled in the public school systems from area consortium school divisions are eligible to participate (Chesterfield, Colonial Heights, Hanover, Henrico, King William, Petersburg, Powhatan and Richmond).
2. Complete the registration form below and mail it along with a $20.00 fee to the MathScience Innovation Center. Also, you may register online at **www.msinnovation.info** and then mail in the fee or follow the instructions in the registration email to pay through PayPal, our on-line pay system. **Please note that the $20.00 fee must be received at the Center before you can be accepted into the conference.**
3. Applications received by **November 15** will receive priority. Registrations will be continuously accepted until the conference is filled. Spaces are limited, so check your calendar carefully. Your registration will be confirmed prior to the conference date by email and will be accompanied by specific instructions for the program. If you do not have e-mail, the U.S. Mail will be used.
4. Bus transportation will be provided by your school division. A schedule of pick-up times will be posted on the website in November 2012.
5. Lunch is provided for all participants.
6. Students will make selections of individual workshop sessions at the conference. Most students will get their first or second choices for workshops however, no workshop sessions are guaranteed.
7. Check the Center's web site for other programs including Winter offerings for high school students, Spring offerings for middle school students, Saturday classes for parents and their children- grades K-3, Saturday Spring classes for students in 4th and 5th grades, and Summer Programs for rising 4th through 9th graders.
8. For additional information contact:

   Debbie Mitchell: Phone 804.343.6525, Ext. 243 E-mail: dmitchell@msinnovation.info

   Daphne Schmidt: Phone 804.343.6525, Ext. 244 E-mail: dschmidt@msinnovation.info

Conference Schedule:

8:30 - 9:00 a.m.	Registration	11:15 - 12:30 p.m.	Session II - Your Choice
9:00 - 9:30 a.m.	Keynote Speaker	12:30 - 1:00 p.m.	Lunch
	Location: A Building	1:00 - 2:15 p.m.	Session III -Your Choice
9:30 - 9:45 a.m.	Move to Sessions	2:15 - 2:30 p.m.	Closing Session with Door Prizes
9:45 - 11:00 a.m.	Session I - Your Choice		Location: A Building
11:00 - 11:15 a.m.	Break		

School Bus Pick-Up Points

Chesterfield
Thomas Dale High- 9th Grade Campus
Clover Hill High (Old Campus)
Hopkins Elementary
Manchester Middle
Matoaca High
Midlothian Middle
Providence Middle
Reams Road Elementary
Robious Middle
Swift Creek Middle

Colonial Heights
Colonial Heights High

Hanover
Chickahominy Middle
Elmont Elementary
Henry Clay Elementary
Lee-Davis High
Mechanicsville Elementary
Patrick Henry High
Pearson's Corner Elementary
Rural Point Elementary
Washington Henry Elementary

Henrico
Brookland Middle
Byrd Middle
Colonial Trail Elementary
Fairfield Middle
Hungary Creek Middle
Moody Middle
Pocahontas Middle
Rolfe Middle
Tuckahoe Middle
Wilder Middle

King William
King William High

Petersburg
A.P.Hill Elementary
Blandford Elementary
J.E.B.Stuart Elementary

Powhatan
Pocahontas Middle

Richmond
Albert Hill Middle
Binford Middle
Boushall Middle
Chandler Middle
Elkhardt Middle
Franklin Military @ Minnis Middle
Henderson Middle
Lucille Brown Middle
Martin Luther King Middle
Thompson Middle

Registration Form

Let's Innovate Student Conference
Grades 6-8
December 1, 2012

Visit msinnovation.info

First Name _____ Initial _____ Last Name _____

School Division _____

Grade (circle) 6 7 8 School _____

Parent/Guardian Phone _____ Fax _____ Emer. Phone _____

Home Address _____ City _____ State _____ Zip _____

Allow E-Mail notifications? (circle) YES NO

E-Mail Address _____

School Bus Pick-Up _____

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