The Director’s Message

Summer 2013 was our busiest summer ever with a wide range of highly impactful student, teacher and faculty programs. This issue of our newsletter features a number of our summer programs and with information to apply for a number of the programs to be offered during the current academic year and summer 2014.

We are very excited about the pre-service teacher professional development grant we have received from NASA. This $496,702 will allow us to collaborate with all of our member universities plus Virginia State University and Norfolk University as well as NASA Langley Research Center and NASA Wallops Flight Facility (also Consortium members) in giving scholarships and providing training and informal education teaching experiences for pre-service educators. We are also pleased to have recently received continuation funding for the NASA Langley Aerospace Research Student Scholars program and the national FAA Design Competition for Universities.

The National Space Grant College and Fellowship Program is celebrating the twenty-fifth anniversary of the 1988 legislation that created our program. I have been asked to make remarks in honor of the anniversary at our October National Council of Space Grant Directors meeting in Charleston this month. As the Consortium’s Director since 1990, it has been heartwarming to consider the growth of our Consortium over the years (ten-fold in staffing and twenty-fold in budget) and the wonderful interactions among the members and with hundreds of external partners. We have awarded $5,682,803 in scholarships and fellowships to 1,358 students, provided nearly 5,000 students with paid internships with NASA and industry, offered professional develop programming for more than 25,000 educators, and provided seed funding and professional development opportunities for college faculty, sponsored dozens of student flight and design programs, and provided student STEM enrichment programs, some with college credit, for thousands of students. Working in concert with members and partners, we have made and continue to make a difference in STEM education, workforce development and research capabilities in the Commonwealth and beyond.

Mary Landy

VSGC Receives NASA STEM Award for Pre-Service Teacher Program

The Virginia Space Grant Consortium (VSGC) was recently awarded $496,702 by NASA for a pre-service teacher program. Integrative STEM for Pre-Service Teachers (inSTEP) will increase the number and proportion of individuals, particularly underrepresented minorities, who complete teacher pre-service programs with the ability to increase students’ understanding of STEM. The funding, which was one of nine awards given by NASA through the Space Grant Innovative Pilot in STEM Education, will support 30 pre-service teachers for a two-year period. Through this program, teachers who have an interest in teaching grades 4-8 will build and develop their knowledge and capacity to effectively teach integrative STEM subjects.

Teachers will participate in more than 200 contact hours to cultivate their understanding of Earth Systems Science and the interconnectedness of science concepts to other STEM disciplines with the Virginia Standards of Learning (SOL) serving as the context. Prior to their junior year, pre-service teachers will attend a two-week summer academy where they will engage in engineering design and integrative STEM activities. Following the academy, teachers will integrate what they learned by instructing in extended-day programs that serve underrepresented and underserved students. The program will merge best practices in methodologies, pedagogy, and content to prepare teachers to bring integrative STEM into diverse classrooms.

K-12 Student Opportunities for 2014

Application Deadlines

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Forty of Virginia’s best and brightest high school sophomores have participated in an exciting week-long Virginia Space Coast Scholars (VSCS) Summer Academy program at the NASA Wallops Flight Facility on Virginia’s Eastern Shore. Designed to inspire students who possess technical or scientific interests, the program has an online component during the school year that introduces students to NASA’s science missions and research platforms with a focus on the work of NASA Wallops and a seven-day Summer Academy experience.

Virginia Space Coast Scholars interacted with NASA scientists, engineers and project managers during the Academy to hear first-hand about past and future missions. Students also learned about career and educational opportunities in science, technology, engineering and math (STEM).

While at NASA Wallops August 10 - 16, students experienced first-hand the excitement of rocketry when they designed and built a scientific payload and launched it on a model rocket. This hands-on learning engages the students and creates interest and enthusiasm which carries over to their academic studies and career planning. “The introduction to rocketry session really brought the ideas behind spaceflight, and achieving it into perspective, showing me how many pieces have to work flawlessly to achieve success for the missions,” said Samuel Ashby from Powhatan High School. Virginia Space Grant Consortium Director Mary Sandy notes, “Scholars are inspired by the exciting work undertaken by NASA and the dedicated personnel who work there. They are exposed to a wide range of NASA programs from rockets to research balloons to unmanned vehicles that study severe weather, along with the science and engineering behind them. They meet and engage with NASA engineers and technicians and learn about a range of scientific and technological careers.”

Joyce Winterton, NASA Wallops Senior Adviser for Education, said, “The VSCS Academy participants are learning about the knowledge and skills needed for STEM majors and careers. They are an impressive group of students.”

Virginia Space Coast Scholars is a partnership between the Virginia Space Grant Consortium, NASA Wallops Flight Facility and the Mid-Atlantic Regional Spaceport (MARS), with funding provided by the Commonwealth of Virginia.

Current sophomores may apply for the 2014 program by the December 6 application deadline.

http://vscs.spacegrant.org/

Scholars gather for a celebratory launch with the rockets they assembled during the week.
Virginia high school freshmen and sophomores – 158 of them had a BLAST at the University of Virginia (UVA) this summer through the Building Leaders for Advancing Science and Technology program. BLAST is designed to reinforce and encourage interest in STEM studies and careers while providing an on-campus residential experience.

Through dynamic, hands-on activities like the Mars rover, students were able to design and build a rover from Legos to explore surface terrain from a far away location. An experiment called “Poisoned Kool-Aid Challenge” allowed students to discover the chemical properties hidden in a mysterious liquid. Other fun and engaging activities included an opportunity to design and build a solar car, as well as to build a shelter to protect ice penguins from melting. UVA faculty, graduate and undergraduate students led the program content and teacher chaperones provided oversight and guidance during the program.

Students also experienced what it is like to reside on a college campus and share a dorm room, attend class each day and eat meals in the cafeteria. While at UVA, students also toured the campus, visited the McCormick Observatory and toured engineering facilities. BLAST, funded through the Commonwealth of Virginia, is a partnership between VSGC, Virginia Tech and the University of Virginia.

In July of 2014, two sessions of BLAST will be held at Virginia Tech and one at the University of Virginia. The application deadline is February 1, 2014 and full program information is located on the website.

www.blast.spacegrant.org
For three exciting weeks this summer, 180 enthusiastic high school juniors from across the Commonwealth descended on NASA Langley Research Center for the Virginia Aerospace Science and Technology Scholars (VASTS) Summer Academies. From the moment they arrived until the moment they departed, the Scholars’ hours were filled with hands-on STEM activities. Under the guidance of NASA mentors and Master Teachers, the Scholars worked in project teams to design a human mission to Mars.

Student comments include,

“This was the most awesome experience I have ever had. I now understand how important STEM is and I am seriously considering a double major in aerospace engineering and biomedical engineering.”

“The writing skills and engineering experience I have gained will help me succeed in college and the workforce.”

While at NASA Langley, the scholars are exposed to a wide array of career options within the aerospace field and have opportunities to discuss with their mentors paths of study in STEM areas. Other activities included robotic rover design and field testing, facility tours, seminars, and an opportunity to discuss their mission design with an astronaut. Prior to the Summer Academy experience, Scholars participated in a 20-week online course in Introduction to Aerospace Engineering Technology under the facilitation of Master Teachers. The program is a partnership between VSGC, NASA Langley Research Center, Virginia Department of Education, the Commonwealth of Virginia and industry sponsors. The application deadline for the 2013-2014 cycle is November 1. For information and application visit, www.vasts.spacegrant.org
Undergraduate Interns Participate in CSIIP

The Commonwealth STEM Industry Internship Program (CSIIP) filled dozens of internship positions this summer — 53, to be exact. The general consensus among CSIIP interns was that the opportunity to apply their academic studies to actual, hands-on projects was fulfilling and valuable. Michael Snider, who served as a junior programmer intern at Open Roads Consulting in Chesapeake, VA, said, “At this point, my programming courses are still introductory, so having the internship helps me to learn programming through action rather than study.”

Based on the positive feedback from all the interns and the participating companies, CSIIP has expanded its program to include fall and spring semesters as well. The CSIIP website is being updated to accommodate the expansion, and is also enabling students and companies to filter searches through STEM major, skills, or distance from a specific location. CSIIP is open to Virginia full-time undergraduate college students, and also to Virginia residents who are majoring in a STEM-related field at out-of-state colleges/universities. Candidates must have completed at least 30 hours of classwork. Applicants must be at least a rising sophomore by summer, and have a GPA of at least 2.7 on a 4.0 scale. The program is also open to seniors graduating in spring semester. Companies may register and students may apply at CSIIP.org. Students are encouraged to complete applications as early as mid-November as some companies begin making selections in December. CSIIP is managed by the VSGC and funded by the Commonwealth of Virginia.

GEOTREK Workshop for Virginia Teachers

Fifteen Virginia educators attended a three-day professional development workshop, GEOTREK-12 (Geospatial Training for Educators K-12), which was held August 13-15 to introduce educators to the most commonly used geospatial technologies (GST). These include global positioning systems (GPS), remote sensing, and geographic information systems (GIS).

The three-day GEOTREK workshop, hosted by J. Sargeant Reynolds Community College, was supported by the Expanding Geospatial Technician Education Through Virginia’s Community Colleges (GeoTED) project. GeoTED is funded by the National Science Foundation’s Advanced Technological Education (ATE) program, and was awarded to VSGC in October 2012. GEOTREK workshops offered through GeoTED provide teachers with a free GPS unit, $250 stipend, and classroom-ready resources and geospatial data. Participant comments included: “It is important to continue this work forward and I hope to be more proactive this year in terms of implementing this as part of my lesson plans and also making Hanover County aware of the importance of GST;” and, “I appreciated the opportunity that the instructors provided to explore features on our own, based on our own diverse curricula.”

Program partners include: Virginia Western Community College (VWCC); Thomas Nelson Community College (TNCC); Southwest Virginia Community College (SWCC); J. Sargent Reynolds Community College (JSRCC); Virginia Geospatial Extension Program (VGEPI) at Virginia Tech; Virginia Community College System (VCCS); and the Virginia Association of Mapping and Land Information Systems (VAMLIS). Two workshops will be offered for 2014.

http://csiip.org
This summer, the largest ever group of interns - 260 of them - converged on NASA Langley Research Center through the Langley Aerospace Research Student Scholars (LARSS) program. LARSS offers a year-round spring, summer or fall session that provides undergraduate and graduate students exciting hands-on research experience while working side-by-side with NASA’s finest scientists and engineers who serve as mentors.

This Center-unique program is intended to feed both NASA’s and the Nation’s workforce pipeline, encourage high-caliber college students to both pursue and earn graduate degrees, and to enhance their interest in aerospace research by exposing them to the professional research resources and state-of-the-art facilities of LaRC. LARSS is managed by VSGC in partnership with NASA Langley Research Center and under a subaward from the National Institute of Aerospace (NIA). www.nianet.org/larss

K-12 Math and Science Teachers Participate in STEM Team Academy

Through collaboration between VA STEM CoNNECT (a Mathematics and Science Partnership Grant from the Virginia Department of Education) and Virginia Space Grant Consortium (VSGC), 17 math and science high school teachers from six divisions in the Hampton Roads Peninsula area attended the Project STAT: STEM Team Academy for Teachers workshop July 29-August 1 at the New Horizons Regional Education Center in Hampton. The program is designed to challenge and support teachers to more effectively integrate science, technology, engineering and math (STEM) in secondary classrooms.

Throughout the workshop, teachers explored concepts related to the design practices of engineers, interdisciplinary nature of common standards-based concepts, and construction and testing of remotely operated vehicles. Project STAT will continue throughout the academic year, as VSGC continues to support teachers as they implement the integrative STEM lessons designed by the teacher teams. An instructional team from a local Gloucester school will present their experience at the STEM CoNNECT Summit II, October 8, 2013 at The College at William and Mary.

www.vsgc.odu.edu/VASTEMCONNECT/
The Federal Aviation Administration (FAA) recently selected winners for its seventh annual Design Competition for Universities. Top honors went to student teams from the University of Virginia, Georgia Institute of Technology, Embry Riddle Aeronautical University, Binghamton University – State University of New York and George Mason University. The competition, which is managed for FAA by the VSGC, seeks to engage students at U.S. colleges and universities in addressing issues facing airports while providing quality educational experiences and exposure to aviation and airport-related careers.

Students were invited to propose in six technical challenge areas: airport operations and maintenance; runway safety; airport environmental interactions; airport management and planning; innovative application of FAA data; and electric/hybrid-electric aircraft technology. The Competition requires that students work with a faculty advisor and that they reach out to airport operators and to industry experts to obtain advice and to assess the efficacy of their proposed designs/solutions.

Program guidelines and information on the 2013-2014 Competition are located on the website: http://faadesigncompetition.odu.edu/
Twenty-five high school juniors and seniors from Hampton and Phoebus High Schools recently participated in a Saturday Rocket Launching Workshop coordinated by the VSGC. The event was part of VSGC’s role in Hampton City Public School’s GearUP program, which is funded through the U.S. Department of Education. VSGC coordinates the GearUP STEM Exploratory Saturdays as part of an ongoing effort to provide opportunities and inspiration to students to continue their educational path, graduate high school, and pursue higher education.

In partnership with the Southeastern Virginia Rocketry Association (SEVRA), the program was held at the Tidewater Community College Chesapeake campus, and gave students a hands-on opportunity to build rockets from kits. Once the rockets were complete, students boarded a bus for Fentress Naval Air Landing Field where they successfully launched the rockets.
WGBH Design Squad Nation Workshop for Teachers

Thirty-five Virginia teachers participated in a professional development workshop in August that helped them to promote students’ understanding of space exploration as a vital step in understanding Earth, the solar system and the universe. The Virginia Space Grant Consortium (VSGC) hosted the workshop in partnership with WGBH’s Design Squad Nation, the Virginia Department of Education (VDOE) and NASA Langley Research Center.

Through hands-on challenges, engineering videos and online professional development from PBS’s Design Squad Nation, the teachers experienced the excitement of space exploration and engineering design that they can convey to their students. A follow-up webinar through the VDOE will allow teachers to share best practices, incorporate workshop materials into their classroom and provide access to other resources.

RockOn! Workshop For Students and Faculty

This summer, 50 students and faculty members from universities across the country gathered at NASA Wallops Flight Facility for the annual RockOn! workshop. This hands-on program teaches participants to build experiments that fly on a suborbital sounding rocket in order to collect valuable scientific data. As a culmination of the workshop, a sounding rocket was successfully launched June 20.

After launch and payload recovery, participants conducted data analysis and discussion of the results. The program is a partnership between the Colorado and Virginia Space Grant Consortia and the NASA Wallops Flight Facility. It is anticipated the program will continue in 2014. For more information;

http://spacegrant.colorado.edu/national-programs/rockon-2013-home

RockOn! pre-dawn launch June 20.
Sixty-nine rising juniors and seniors from Hampton and Phoebus High Schools participated in the GearUP STEM Saturday workshop June 17-19 at Norfolk State University (NSU). These students have been engaged in GearUP since middle school and will be tracked throughout high school until they graduate to determine the impact of these STEM activities on their future academic pursuits. The opening keynote address was given by Arel Moodie, a young entrepreneur and motivational speaker who encourages students to graduate from high school and attend college. Dr. Julian Earls, former director of the NASA Glenn Research Center and NSU alumnus, gave the closing address.

While at NSU, students learned about academic admissions, financial aid, housing and other aspects of campus life. GearUP, which is funded through the U.S. Department of Education, is a partnership between VSGC and Hampton City Schools.

A regional Institute, Introduction to Geospatial Technologies, was hosted by Virginia Tech for community college faculty and teachers this summer through the Expanding Geospatial Technician Education Through Virginia’s Community Colleges (GeoTED) project, awarded to VSGC through a grant from the National Science Foundation. Community college faculty, 14 of which were from Virginia and five from West Virginia, Tennessee, North Carolina, Maryland and Kentucky, along with three Virginia high school teachers attended the institute.

Participants received instruction in geospatial topics, geospatial products and services and received valuable resources for classroom instruction. “This Institute is the key component of GeoTED that trains faculty and teachers on how to use geospatial technologies. We not only give them intensive hands-on instruction, but provide them with classroom ready materials and data that make integration of these workplace tools easier to accomplish,” said Chris Carter, VSGC Deputy Director. An institute is also planned for 2014.