National NASA Space Grant Program

**NASA PRIORITIES**
- Aerospace
- Earth and Planetary Science
- Technology
- Education

**STATE NEEDS AND GOALS**
- STEM Education
- Workforce Development
- Research
- Economic Growth

- STEM Education
- Science and Technology
- Workforce Development
- Economic Growth
Virginia Space Grant Consortium
Aerospace and STEM Education, Workforce Development and Research

Members:
- College of William and Mary
- Hampton University
- Old Dominion University
- University of Virginia
- Virginia Polytechnic Institute and State University
- NASA Langley Research Center
- NASA Goddard Space Flight Center’s Wallops Flight Facility
- State Council of Higher Education for Virginia
- Virginia Community College System
- Virginia Department of Education
- MathScience Innovation Center
- Science Museum of Virginia
- Virginia Air and Space Center
- Center for Innovative Technology

- Established in 1989.
- More than 600 program partners to date.
- Each NASA Space Grant dollar typically leveraged by about $6 in other support.
- State, National and Regional programs
- Work with all Virginia universities, community colleges, and local school divisions.
Active engagement with other Space Grant Programs:
- Programs
- Recruitment
- Sharing/Networking

Leadership of national Initiatives:

VSGC Director on North Carolina And Puerto Rico Advisory Boards

Director Past Chair of Council of Space Grant Directors and Alliance Board; Member of Alliance Board since inception
Building the Aerospace/STEM Workforce Pipeline

- A progression of middle school through secondary school and higher education programs to engage and sustain students in STEM.
- Most programs recruit students statewide.
- All free of cost to participants.
- About 12,000 students over past decade.
Impact: 3,287 students and parents 2,215

Greater Peninsula Governor’s STEM Academy (GPGSA) Won Programs That Work Award from Virginia Math Science Coalition in 2015

• Three Free Themed Saturday Events for Students in Grades 7-8 and Parents
  – Designing the Future (hosted by Thomas Nelson Community College)
  – Connecting the Future (hosted by Canon Virginia)
  – Automating the Future (hosted by NASA Langley Research Center)

• 35 events - 2,296 students and 1,948 parents have participated

GEAR UP Project with Hampton City Schools

• 5-year program for cohort of students in grades 6-10
• Hosted by: NASA Langley, Virginia Air and Space Center, Virginia Living Museum, Mariner’s Museum
• 21 events - 892 students, 226 parents

HR Cyber Saturdays

• High school students in the college service regions
• Hosted by Thomas Nelson and Tidewater Community Colleges
• 2 events - 99 students, 41 parents
Statewide three-day, STEM intensive, hands-on, residential college experience for rising 9th and 10th grade students.

320 students were selected for Summer 2018.

Four sessions summer 2018:
• ODU – June session
• VT – July session
• UVA – July session and early August session

Provided free of charge to students

STEM activities focused on solving engineering challenges and scientific inquiry.
• High School Sophomores
• Online Learning Experience December through March
• Three Residential Summer Academies at NASA Wallops Flight Facility for 120 scholars
Virginia Aerospace Science and Technology Scholars

*Explore where Science, Technology, Engineering, and Math can take you!*

- **Virginia 11\textsuperscript{th} and 12\textsuperscript{th} grade students apply in the Fall**
- **Online Course from December through April**
- **Students study Space Mission design and plan a human mission to Mars**
- **Three Summer Academies per year at NASA Langley, with 60 students per academy**
- **Longitudinal tracking: 95% retained in STEM studies; 93% STEM employment**
Virginia Earth System Science Scholars (VESSS)

- Teaches a broad range of STEM concepts using NASA’s real world investigations of the Earth and its highly dynamic systems.
- Online Course and NASA Langley Research Center Summer Academy
- Five dual enrollment college credits (FREE) offered through Thomas Nelson Community College as Geology 105.
- Summer Academy Students design space missions based on National Academies Decadal Surveys and NASA Science Mission Directorate goals.
- Summer Academy students present their mission designs to a panel of NASA and industry experts.
Scholarships and Fellowships

Scholarships/Fellowships at VSGC universities and community colleges from NASA and Commonwealth of Virginia funding.

- **Community College Scholarships** -- $2,000 award
- **Undergraduate STEM Bridge Scholarship** -- $1,000 renewable award, apply in freshman year of college
- **Undergraduate Research Scholarships** -- up to an $8,500 award with funding for materials and travel, apply in sophomore year of college
- **Graduate Research Fellowships** -- $6,000 renewable award – University match of $6,000 to $12,000

- Research awards require alignment with NASA’s interests and a faculty mentor.
Internships are a key VSGC program focus.

- More than 6,500 students placed in paid internships with NASA, other federal labs and industry.
- VSGC has managed national internship programs on behalf of NASA Headquarters and NASA Langley. State programs include CSIIP and CIT.
- Sponsor NASA NIFS Interns as well.
Commonwealth STEM Industry Internship Program (CSIIP)

- VSGC program funded by the Commonwealth. Supported by the Governor’s Office. Free to companies, colleges and students.

- A statewide, one-stop centralized, highly searchable online database system averaging 1000 applicants including recent graduates.

- Connects Virginia companies (214 registered) to Virginia STEM undergraduates for paid internships.

- Companies select and hire college interns.

- Students with any amount of college credits should apply.
STEM TAKES FLIGHT
at Virginia’s Community Colleges

NASA Research Experiences
for Virginia Community College students

• 10-week paid work experiences at NASA Langley and NASA Wallops.

• Fifty-four students placed in summer 2015 and 2016 through NASA Space Grant competitive award.

• Virginia Community College System and VSGC have partnered to continue the program beyond NASA funding.

• Twenty-three research experiences at NASA LaRC and NASA Wallops for 2017 and 2018 at $5K each.
A NASA Professional Development Workshop for Virginia Community College STEM Faculty

May 21-23, 2018

• Three day, residential workshop at Wallops Flight Facility
• Sustained this element of Space Grant competitive award.
• Provides strategies for developing teamwork, technical and problem-solving skills
• Explores missions supported by Wallops Flight Facility
• Lodging, meals and an $800 stipend provided
• Deadline to apply is April 3, 2018.
Geospatial Technician Education -- Unmanned Aircraft Systems (GeoTEd-UAS)

• Three-year NSF Advanced Technology Education Project (2016-2019)
• **Goal:** Develop trained UAS Operations Technicians (UASOT)
• **Partners:** Thomas Nelson Community College; Mountain Empire Community College; Virginia Tech; Virginia Community College System (VCCS); VSGC
Thomas Nelson Community College:
- Career Studies Certificate in Small UAS Flight Technician (9 cr hrs).
- Both Certificates are ‘stackable’ and all credits can count toward AAS degree in either Mechanical Engineering Technology or Information Technology.

Mountain Empire Community College: four course Career Studies Certificate in Small UAS (proposed).

Fall 2017 - UMS-107 and UMS-111 offered at Thomas Nelson, Mountain Empire, Eastern Shore and New River community colleges.

UMS-177 offered at Thomas Nelson and Mountain Empire.
GIS 295...
Topics in Service Learning GIS Course
Fieldwork at NASA Wallops Island

GIS 295 - Topics in Service Learning in GIS
This online course contains four days of outdoor fieldwork at NASA Wallops on Virginia’s Eastern Shore. Field work will likely be completed over a weekend (Thursday-Sunday) in April 2016.

Faculty-led student teams will engage with NASA scientists to tackle the issue of sea level rise, invasive species, and their impact on coastal communities and ecosystems including NASA Wallops, using GIS, global positioning system (GPS), unmanned aircraft systems, and other technologies. Students will model various sea level rise scenarios and gauge their impacts to NASA infrastructure and habitats. Students will compose data with existing datasets and develop a report to be presented to NASA staff.

Application: [https://www.surveymonkey.com/r/9HXDL88](https://www.surveymonkey.com/r/9HXDL88)
Application Due Date: December 1, 2015
Notification of acceptance by December 5

http://www.vcva.edu/STEMTakesFlight/sealevelsrishtext.html

SERVICE LEARNING COURSE OPPORTUNITY AT NASA WALLOPS ISLAND

HELP NASA INVESTIGATE SEA LEVEL RISE AND INVASSIVE SPECIES

Thomas Nelson Community College is offering a three-credit Sea Level Rise Service Learning course. All expenses paid for course tuition and four days of fieldwork including travel, lodging, and food. Open to Virginia community college. Competitive application process; students from all disciplines are encouraged to apply. Sponsored by Virginia Space Grant Consortium (VSGC) and offered through the STEM Takes Flight Program in partnership with NASA Wallops Flight Facility and Thomas Nelson Community College.

During the course you will:
- Learn about service learning
- How to use and operate an Unmanned Aircraft Systems (UAS) to collect data
- Develop or acquire geographic information system GIS skills in analyzing data collected with a UAS
- Gain real-world experience collecting and analyzing data
- Tour the facilities and observe the research being completed at the site.
Student Flight and Design Flight Programs

- CubeSats
- Sounding rocket missions
- Microgravity experiments
- Space Station experiments
- Research balloon payloads
- Airborne experiments
- Design projects

VSGC partners with CSGC and NASA Wallops for RockOn!