Virginia Space Grant Consortium

American Association of Physics Teachers

April 1, 2023

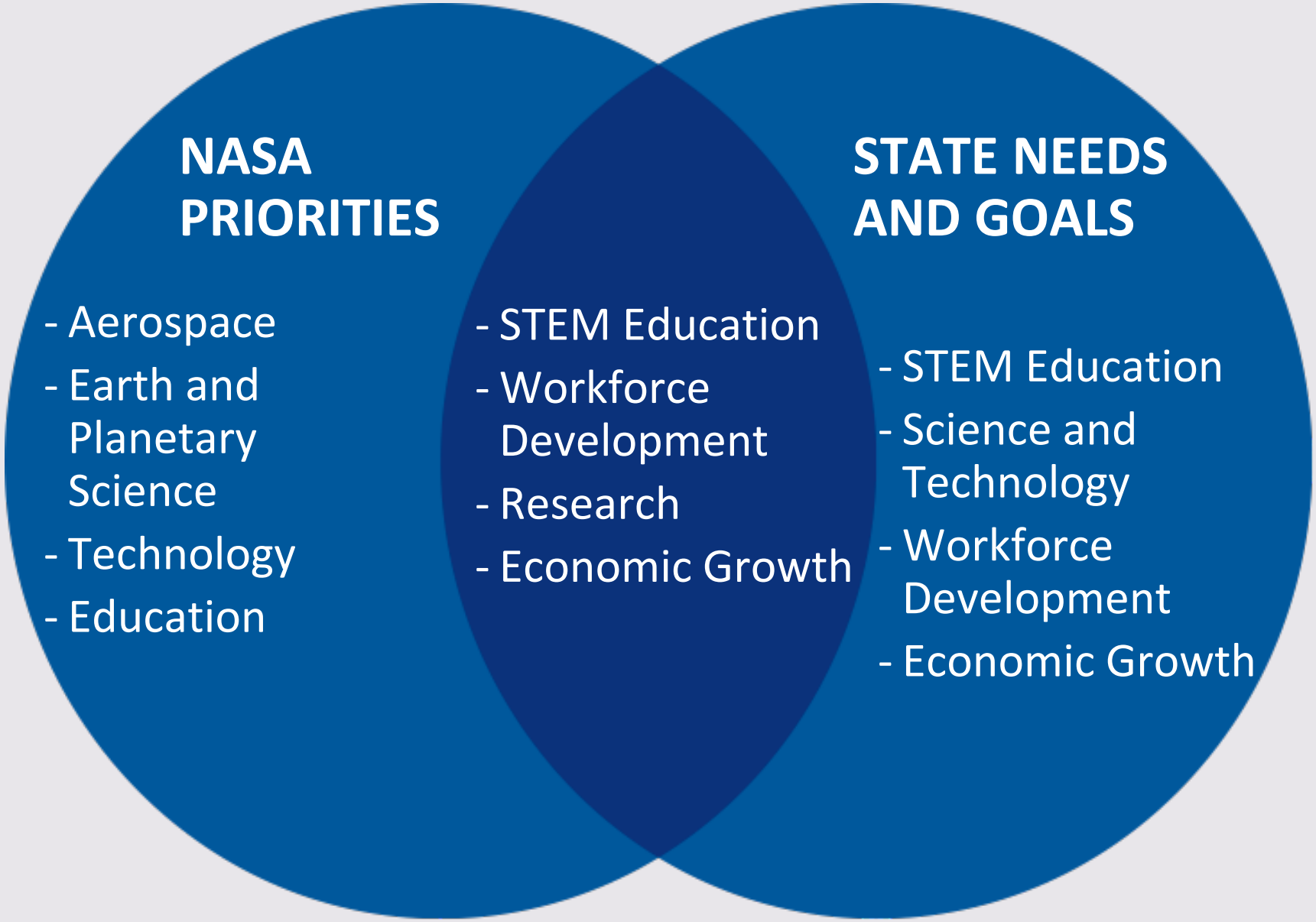
Rudo Kashiri

Education Programs Manager

rkashiri@odu.edu

VIRGINIA SPACE GRANT CONSORTIUM

National NASA Space Grant Program



Virginia Space Grant Consortium

FREE Pre-College Programs

BLAST

Virginia Space Coast Scholars

Virginia Aerospace Science and Technology Scholars

Plant the Moon CHALLENGE

Virginia Earth System Science Scholars — Exploring Earth System Science through the eyes of NASA

Pathways Flight Academies

For students currently in grades 8-12

https://vsgc.odu.edu/k-12-education/

NASA

Building Leaders for Advancing Science and Technology

- **8th and 9th grade students**
- **Amplify student interest in STEM classes and careers!**
- **Residential campus experience**: ODU, UVA, WM, VT or RU
- **3 *jam-packed* summer days of faculty-lead activities and speakers**
- **Application opens in November**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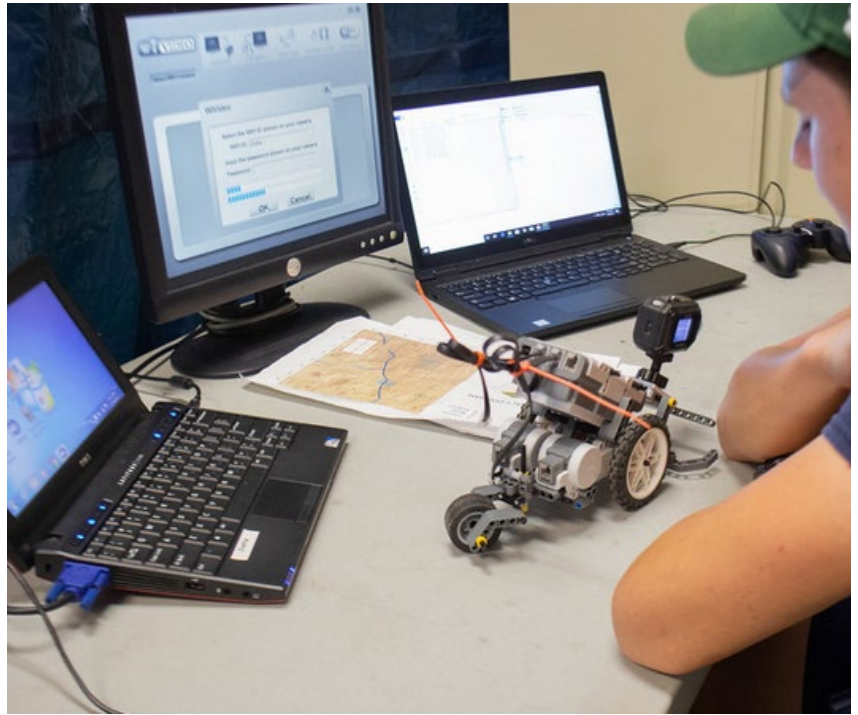


Virginia Space Coast Scholars (VSCS)
10th grade

Course focuses on:

NASA, Careers and current missions managed by NASA Wallops Flight Facility (WFF) on Virginia's Eastern Shore

Summer Academy

- NASA Wallops Flight Facility
- University of Maryland on Eastern Shore
- Students design missions supported by WFF.

- **Application due in late October**

NASA Wallops Flight Facility Platforms

Virginia Space Coast Scholars (VSCS) 10th grade

- Airborne Science
- Sounding Rockets
- Unmanned Aircraft System (UAS)
- Super Pressure Balloons
- Expendable Launch Vehicles


International
Space Station
ON-RAMP
Moon
Ahead


RANGE CONTROL CE TER


Wallops Flight Facility
Goddard

Virginia Earth System Science Scholars (VESSS)
11th and 12th grade

Course focuses on:

Understanding the Earth's responses to both natural and man-made changes to the climate and the impacts of these changes on global society

- how the global Earth System is changing,
- how the Earth system will change in the future
- the causes of these changes.

Summer Academy:

- Students design satellite missions to study impacts on Earth's dynamic systems.
- **Missions are based on the Decadal Surveys**

Five Mission Project Teams

Atmosphere: Clouds/Precipitation

Biosphere: Habitat shifting

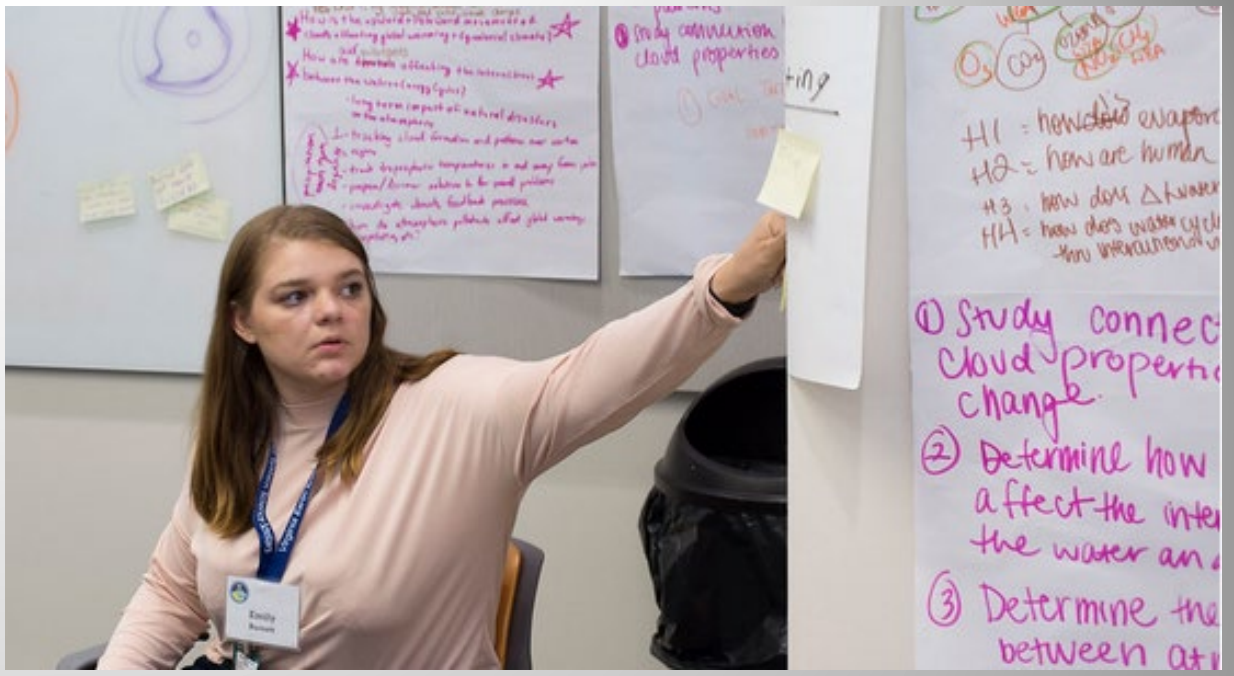
Cryosphere: Glacial Melt/Sea Ice

Hydrosphere: Sea Level Change

Lithosphere: Ground Subsidence


International Space Station


Lunar Atmosphere and
Dust Environment Explorer
(LADEE)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NO SMOKING
FOD CRITICAL ZONE
TAKE THE EXTRA STEP. Pick it up.
FOD CRITICAL
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1196A
DEQ

Virginia Aerospace Science and Technology Scholars (VASTS)
11th and 12th grade

Online Course focuses on human space flight.

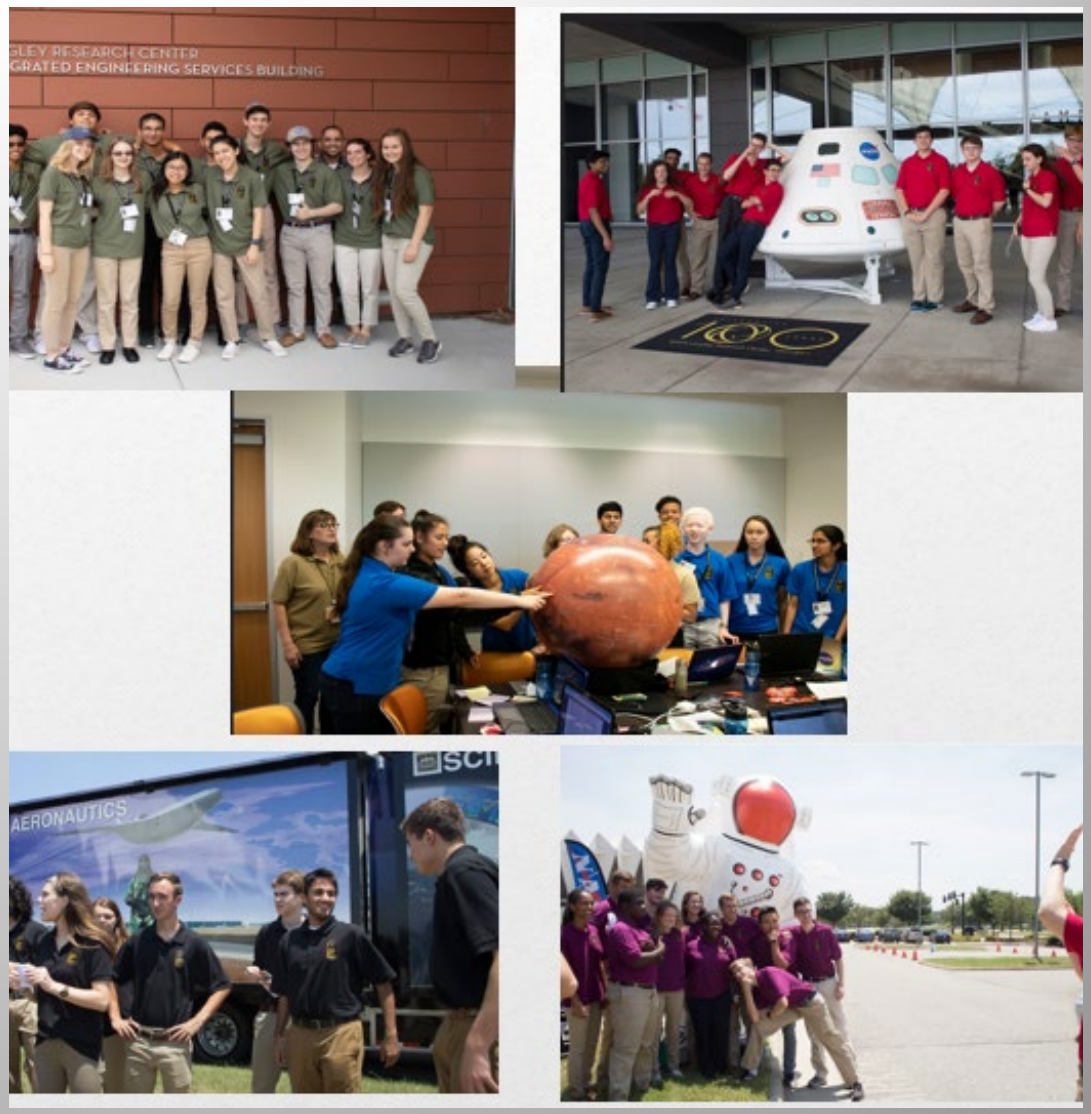
Summer Academy

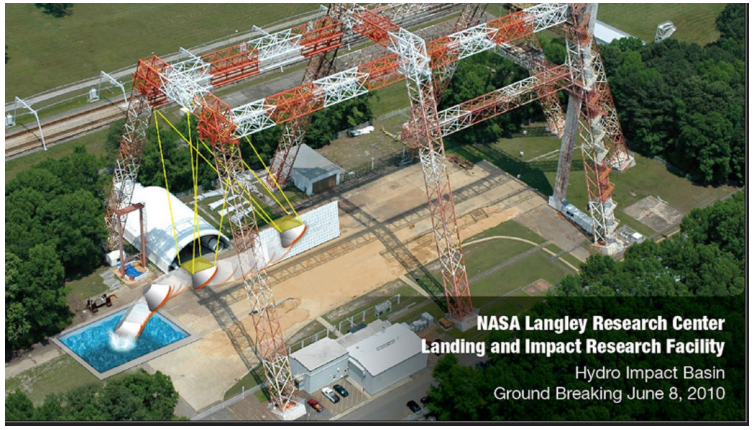
- A team project in which students design a human mission to Mars
- Tours of NASA Langley facilities
- Mentoring by NASA engineers, scientists, and technologists
- Briefings and seminars by astronauts, engineers, scientists and other NASA experts

VASTS

Five Mission Project Teams

- Mission Integration
- Mission Transit
- Science and Surface Operations
- Human Factors
- Strategic Communications





VASTS Experience

Master Teachers

- Facilitate online coursework
- Direct interaction with students
- Provide guidance evaluation, feedback, assessment of student work
- Paid as consultants
- High school Science, Math and CTE
- Summer Academy Master teachers

Virginia Aerospace Science and Technology Scholars

Virginia Earth System Science Scholars

Virginia Space Coast Scholars

Pathways Flight Academies

- **Program for High School students**
- **Explore aviation career fields while learning to fly!**
  - Ground School
  - Flight Training
  - FREE intensive residential academy for selected students
  - May culminate in first solo flight!

Pathways

Application opens in January

District of Columbia
Space Grant Consortium

Contact: Eric Day, DCSGC Program Manager at:
EDAY@AMERICAN.EDU

Summer 2023 DC STEM Teacher Professional Development Workshops

The DCSGC is pleased to offer the following three Summer 2023 PD workshops. Each offer a $500 participation stipend and 30 Education Units. Two are virtual and one is in-person in Philadelphia, PA.

PD #1. The Nature of Light: Concepts and Applications. July 10-14

PD #2. Doing Science: Cognitively Demanding Tasks in the NGSS Science Classroom. July 24-28

PD#3. Flight Academy: In-person workshop held in Philadelphia, PA. Fly an airplane (with an FAA certified flight instructor!) and build and launch rockets! Includes hotel and meals. July 16-21

Contact: Eric Day, DCSGC Program Manager at: EDAY@AMERICAN.EDU
Scan our QR code for more details and to apply!

Web: DCSPACEGRANT.ORG

SCAN ME

Data Science Secondary Education Outreach

The DC Space Grant Consortium and the College of Arts and Science at American University sponsor the tuition and technology fees for selected teachers and high school students to take undergraduate and graduate level Data Science courses at American University.

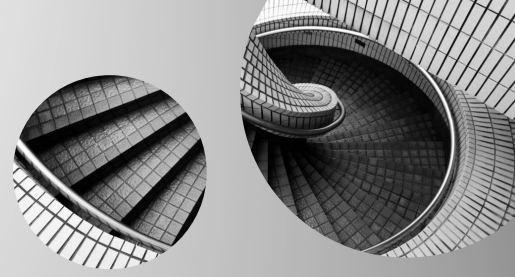
Our Primary Goal: To share the potential, benefits, and opportunities of Data Science with underserved and underrepresented populations of the District of Columbia by training DC Public School teachers and students in Data Science.

30

Since Spring 2021, 30 teachers and 4 high school students have taken Data Science courses, including the 4 teachers and 4 high school students currently in the program.

4

Learning Objectives



Our goal in offering Data Science courses to teachers and students is to expose students to Data Science and create a pipeline of highly skilled and diverse teachers who are trained to incorporate Data Science into their lesson plans. Prior training in computer programming is beneficial, but not a requirement.

Topics covered in the courses include:

- *Fundamentals of Data Science*
- *Reproducible research using R*
- *Using R as a powerful calculator*
- *Importing data from external sources*
- *Performing analyses including hypothesis testing and regression*
- *Writing basic R programs using control and data structures*
- *Installing and using packages for specific applications*
- *Using graphical tools to visualize and understand data*

Fall 2023 – Spring 2024 Data Science Enrollment

K -12 teachers (DC schools only): if you or your students are interested in taking Data Science courses sponsored by the NASA DC Space Grant Consortium in the upcoming school year, please contact Chelsey Brown.

Chelsey L. Brown

CLBrown@American.edu

Office: (202) 885 - 2325

STEM Grants and Partnerships Coordinator

Department of Physics: NASA DC Space Grant Consortium, Center for Data Science

American University