DC SPACE GRANT CONSORTIUM

PROGRAM HIGHLIGHTS

2016 Mid-Atlantic Regional
Space Grant Conference
Baltimore, MD
Ulysses J. Sofia, Director

Affiliates and Partners

Affiliates

- American University (Lead Institution)
- Catholic University
- Gallaudet University
- George Washington University
- Howard University
- The INSPIRE Project, Inc. (non-profit)
- The NASTAR Center (aerospace)
- National Center for Earth and Space Science Education (non-profit)
- Trinity Washington University
- University of the District of Columbia

Partners

- DC Public Schools
- Model Secondary School for the Deaf
- NASA Centers (especially NASA Goddard Space Flight Center)
- Smithsonian National Air and Space Museum

Affiliate and Partner Diversity

- Two HBCUs:

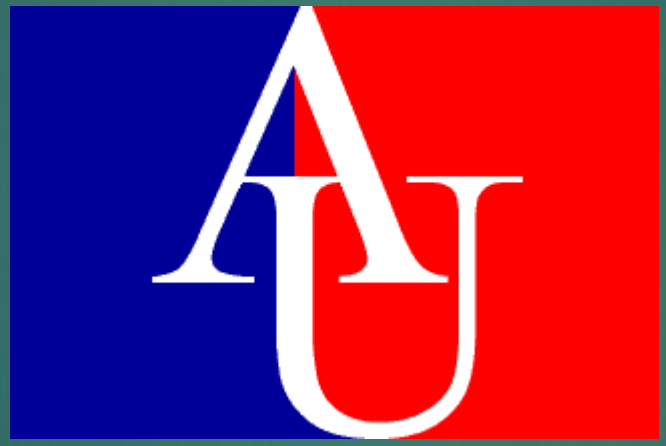
  Howard University

  University of the District of Columbia
- Two OMIs:

  Trinity Washington University– All Women, 94% of students are underrepresented minority

  Gallaudet University – Premier institution for the deaf and hard of hearing
- DC Public School students are 88% underrepresented minority
- Model Secondary School for the Deaf is for deaf and hard of hearing precollege students

American University Highlights



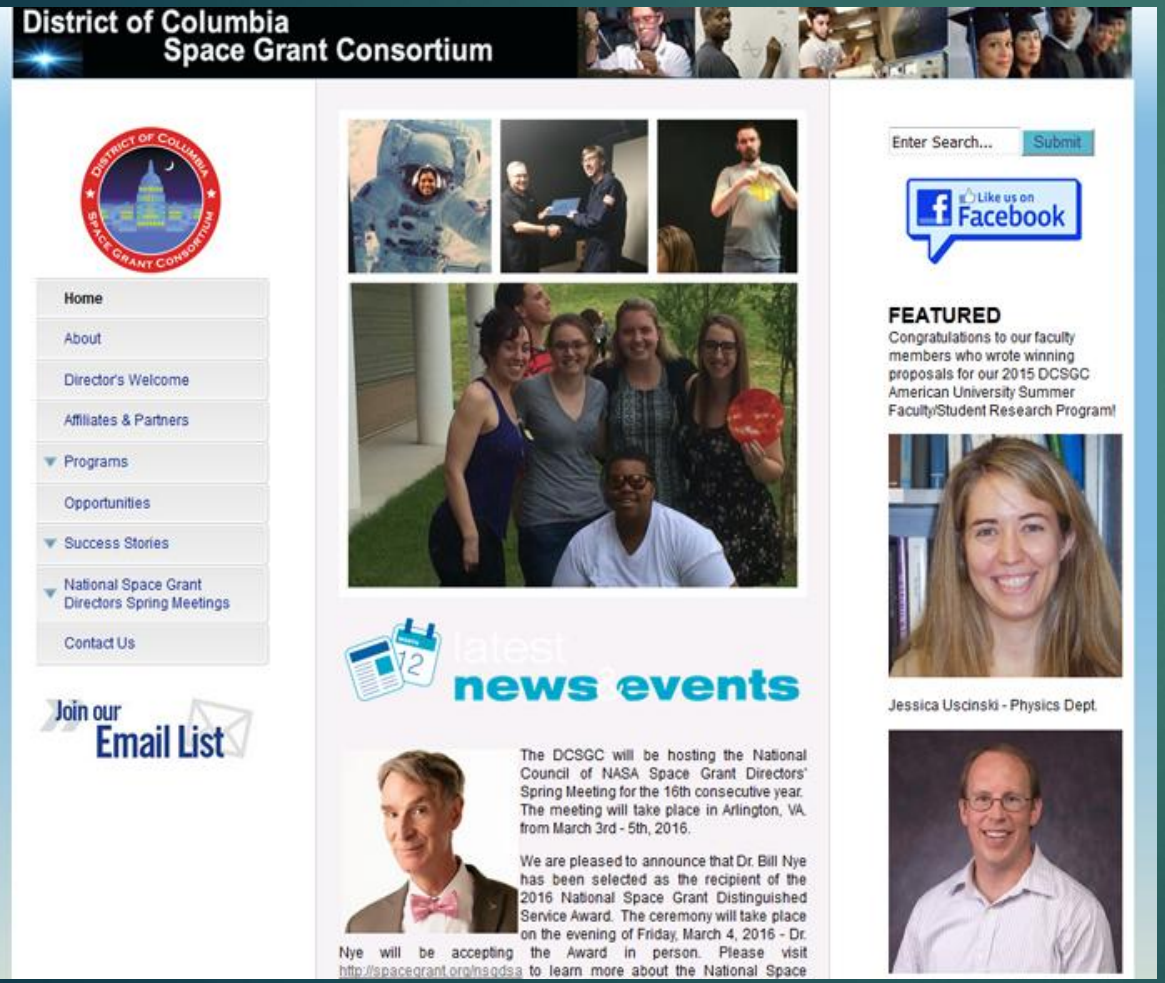
Future Building Under Construction -East Campus

Don Myers Technology and Innovation Building: Opening 2017

College of Arts and Sciences

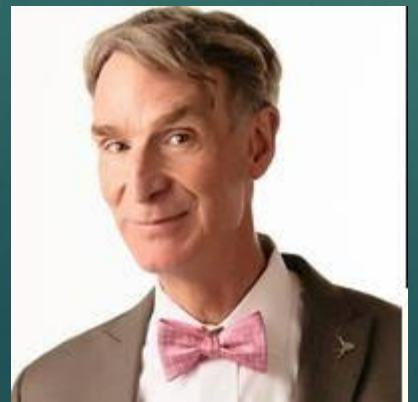
New home of Computer Science, Game Design, Mathematics and Statistics, Physics, and the new Collaborative for Applied Perceptual Research and Innovation (CAPRI)

Newly Redesigned Website and Facebook Page
Had goal of 600 "Likes" by the end of 2016
Currently at 657 "Likes" and growing



Host of National NASA Space Grant Directors' Annual Spring Meeting

- Host of annual spring meeting for the past 16 years
- Held each spring in Washington, DC or Arlington, VA
- Attended by Space Grant Directors/Staff/Students/Faculty/Affiliates from all 50 states, Puerto Rico, and DC, as well as NASA personnel from most NASA Centers, and Industry Representatives (Lockheed, Boeing, Blue Origin, SpaceX, etc.)
- Briefing/Direction/Guidance/Updates from NASA HQ
- Learn about programs and research that other consortia are involved with, discuss best practices, meet colleagues, and form collaborations
- 2016 NSGDSA Recipient: Dr. Bill Nye "The Science Guy"

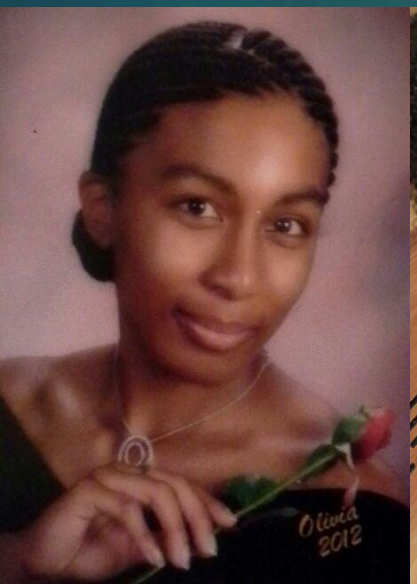


Host of DCSGC Affiliates Annual Meeting

- Host of annual winter meeting for DCSGC affiliates and partners
- Held each January at American University
- Attended by Affiliate Representatives from all DCSGC affiliates and partners
- Each affiliate presents on their program highlights, we conduct DCSGC business, and we update our Strategic Plan
- 2016 Meeting was attended by NASA HQ Education staff
- Beginning in 2017, we will have student speakers and poster session

NASA Center Academic Year and Summer Internships

- Students from any DC university are eligible
- Recruited from NASA One Stop Shopping Initiative (OSSI)
- Work closely with NASA Centers (especially Goddard Space Flight Center) to place students
- Students have scientist mentors and real hands-on research projects



AU STEM Faculty-Student Summer Research Program

- Open to all AU STEM faculty members in all STEM departments
- Faculty members submit proposals for summer research projects that incorporate meaningful student involvement and relate to NASA's missions/goals/research priorities
- Proposals are reviewed and ranked by an interdisciplinary review committee and 2-3 are selected each year
- Each faculty member worked with and mentored an undergraduate student on their research project
- Faculty members receive stipends and research expenses; students receive research scholarships
- Summer 2016 Faculty: Cyndee Finkel (Physics), Christina Pondell (Environmental Science), John Bracht (Biology)

2016 AU STEM Faculty-Student Summer Research Program: Faculty

Cyndee Finkle – Physics Department
"Optics Outreach Project"

John Bracht – Biology Department
"Investigating the Limits of Life: Genomics of Complex Life in the Deep Terrestrial Subsurface"

Christina Pondell -- Environmental Science Department
"Analyzing the Impacts of Microplastic on Urban Waterways"

2016 AU STEM Faculty-Student Summer Research Program: Students

Heather Gilbert

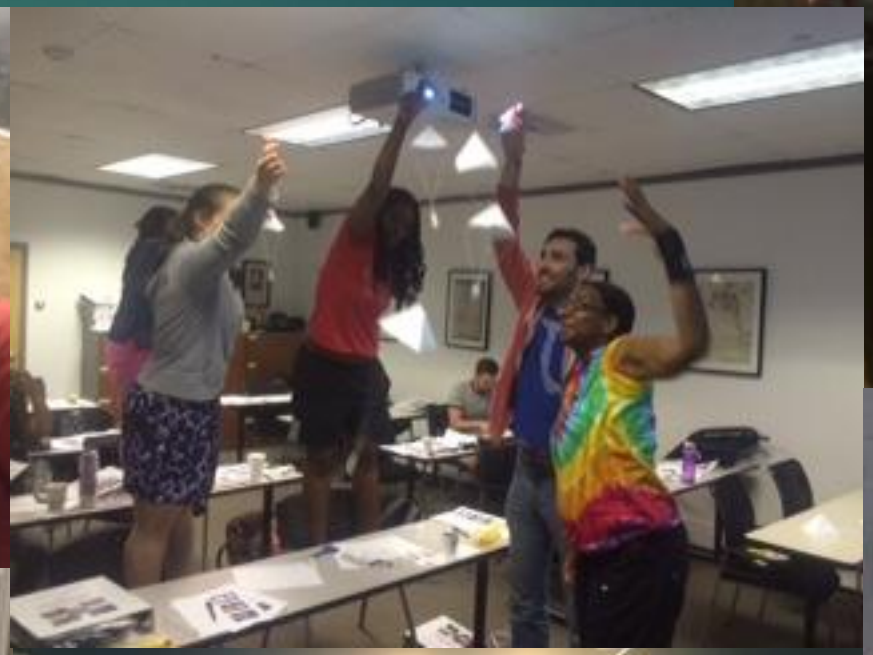
Sarah Allen

Sarah McBride

NASTAR Center In-Service DC Public Schools STEM Teacher Training Program

- Competitively recruit DC Public School STEM teachers
- Week-long program that gives teachers tools to be more effective in the classroom and improves their content knowledge
- Hands on activities they can take back to their classrooms
- Utilizes NASA lesson plans and activities, and relates activities to National Academic Standards
- Receive NASA developed educator resource materials, flight training suit, and training on centrifuge (same one that Astronauts and Richard Branson trained on), altitude chamber (10,000 foot ascent), and flight simulator
- Continuing education credits
- All inclusive: transportation, hotel, meals, stipend

NASTAR Center In-Service DC Public Schools STEM Teacher Training Program – July 2016



AU Undergraduate Summer Research Scholarship Program

- In collaboration with the AU College of Arts & Sciences Office of the Dean
- Open to undergraduates in all STEM majors
- Students submit proposals for student-initiated research activities under the direction of faculty mentors
- Students receive stipends and reimbursement for research-related expenses
- Students work full-time for 8 weeks during summer
- Students present their research at the CAS Robin Rafferty Mathias Student Research Conference, attend a special luncheon, and speak to prospective students about their research projects and scholarship during AU Preview Days

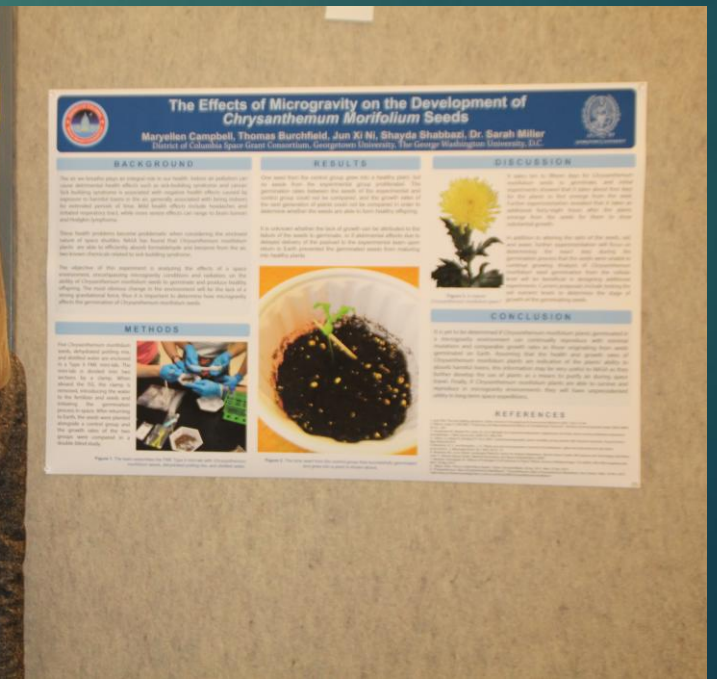
2016 AU Undergraduate Summer Research Scholarship Program – Supported 15 Students From All Six STEM Departments

Science and Math Research Open House

- Held every January at AU in the Battelle-Tompkins Building
- Open to all students but targets freshman and sophomores
- Goal is to recruit undergraduates into science research programs at AU, NASA, NIH, and others
- Faculty, staff, and students from all STEM departments participate
- Display posters of research done by other undergraduates
- Provide handouts and Inform students of STEM research opportunities

Student Travel Awards for Conferences and Presentations

- Regional NASA Space Grant Directors Meetings
- Conference for Undergraduate Women in Physics
- American Society for Gravitational and Space Research Conference



Catholic University Highlights

Catholic University Engineering Research Program

- New Affiliate Representative, Dr. Joseph Vignola (Mechanical Engineering)
- Program supports faculty-student research activities in the Department of Mechanical Engineering
- Research involved investigating environmentally friendly working fluids for advanced thermodynamic energy systems
- The students funded were able to complete Masters theses and Doctoral dissertations

Gallaudet University Highlights

Gallaudet University Highlights

- GU Robotics Program
  - Provided robotics activities for thirty undergraduate deaf students in three revised STEM courses.
  - Students build underwater ROVs (simulating a vehicle for a future mission to Europa) and they built a smart computer controlled rover to demonstrate artificial intelligence.
- Botball and Deaf Space Camp
  - Supported one classroom from the Model Secondary School for the Deaf
- GU Faculty Research at NASA Goddard Space Flight Center
  - Supported a faculty member in a collaboration at NASA GSFC's Laboratory for Terrestrial Physics

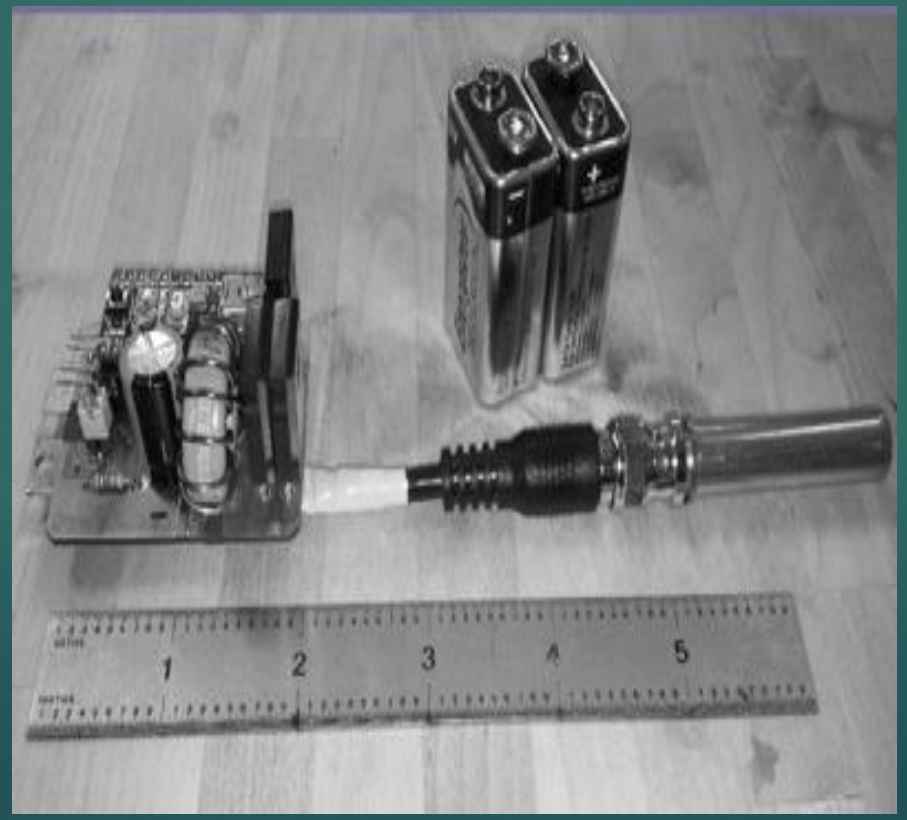
Gallaudet Robotics Program

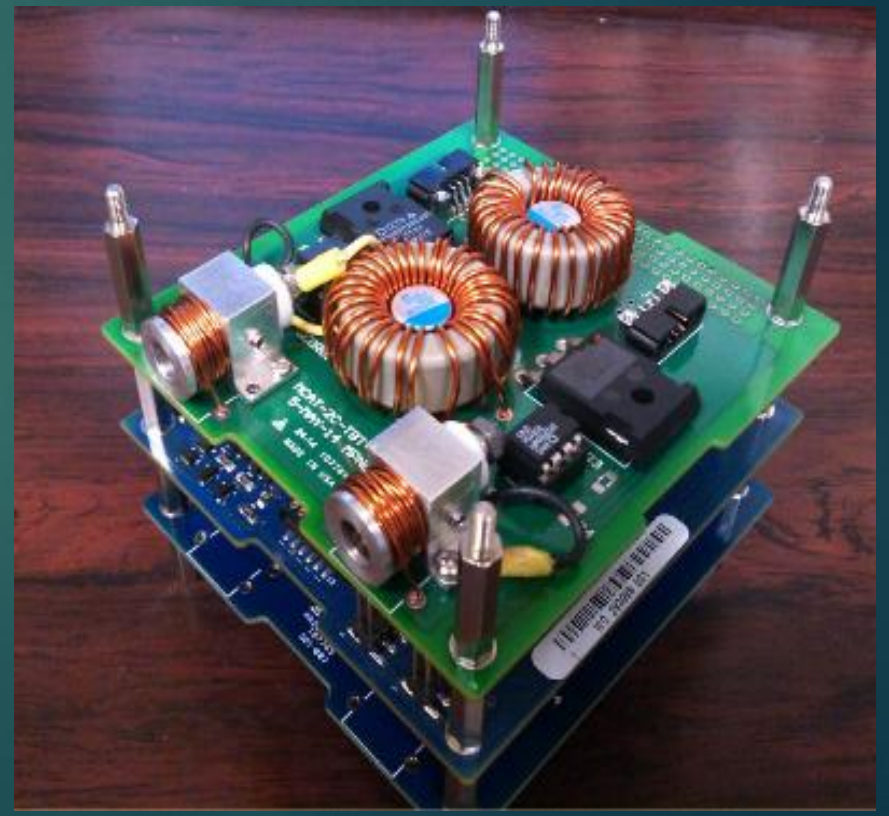
George Washington University Highlights

George Washington University Research Program

- This program supports 2-3 students in a research project involving the development of micro thruster technology for small satellites.
- The intent of the program is to provide university research opportunities to increase and enhance STEM knowledge among faculty and students in research areas that support the mission and goals of NASA.
- Researchers focus mainly in three plasma-related applications: (1) propulsion, (2) nanotechnology, and (3) biomedicine.

George Washington University Micro-Cathode Arc Thruster for Small Satellite Propulsion



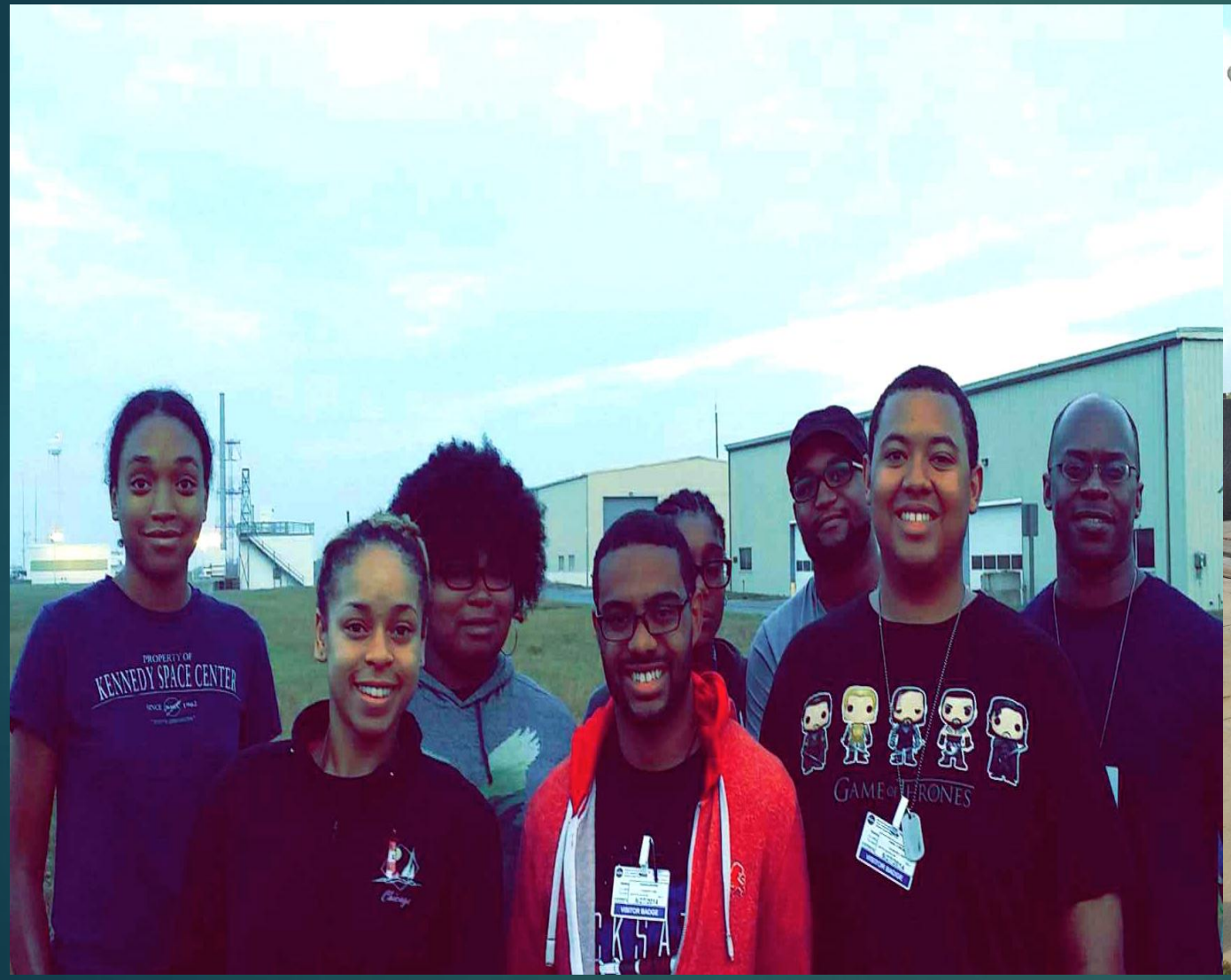


Howard University Highlights

Howard University RockSat-C Program

- This program supported faculty-student research activities in the Department of Physics and Astronomy at Howard University.
- The team made history when their in-flight research project was launched into space on June 26, 2014 from NASA's Wallops Flight Facility in Virginia. This was the first payload ever launched into space that was entirely designed and built at Howard University – and only the second from an HBCU.
- In 2015 they worked on the BalloonSat to CubeSat Astrophysics Thermal Imaging Project to provide capability for a commercial thermal imaging system to be used in low earth orbit for eventual astrophysics observations and exoplanet searches.
- Research involved collaboration from the Howard University Biology Department, creating interdisciplinary synergy.

Howard University RockSat-C



The INSPIRE Project, Inc. Highlights

The INSPIRE Project, Inc.
Space Academy for Educators Program

- DC Middle and High School STEM Teachers are eligible.
- Week-long, all-inclusive (travel, meals, accommodations) program.
- Hosted by U.S. Space and Rocket Center in Huntsville, AL.
- Curriculum includes NASA content and is correlated to the Next Generation Science Standards (NGSS).
- Educators get access to a shared website with lesson plans, networking opportunities, and tips to adapt many of the workshop activities to individual class environments.

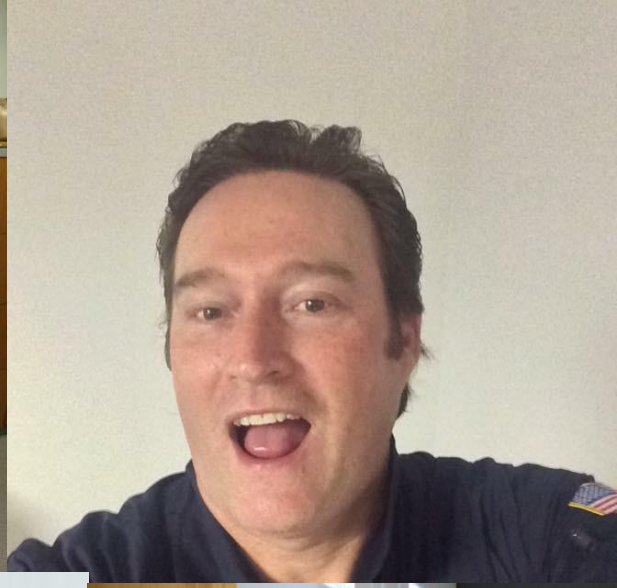
The INSPIRE Project, Inc. 2016 Space Academy for Educators Program

NASTAR Center Highlights

NASTAR Center

- 2014 – brought 28 pre-service STEM teachers to participate in a week-long training workshop.
- 2016 – brought 10 DC Public School in-service teachers to week-long training workshop.
- 2017 – will bring 10 DC undergraduate engineering students for a week-long training workshop.
- State-of-the-Art facility that has a centrifuge, high pressure altitude chamber, flight simulator, injection seat trainer, etc. NASA-developed content is used for classroom activities and lesson plans.

NASTAR Center

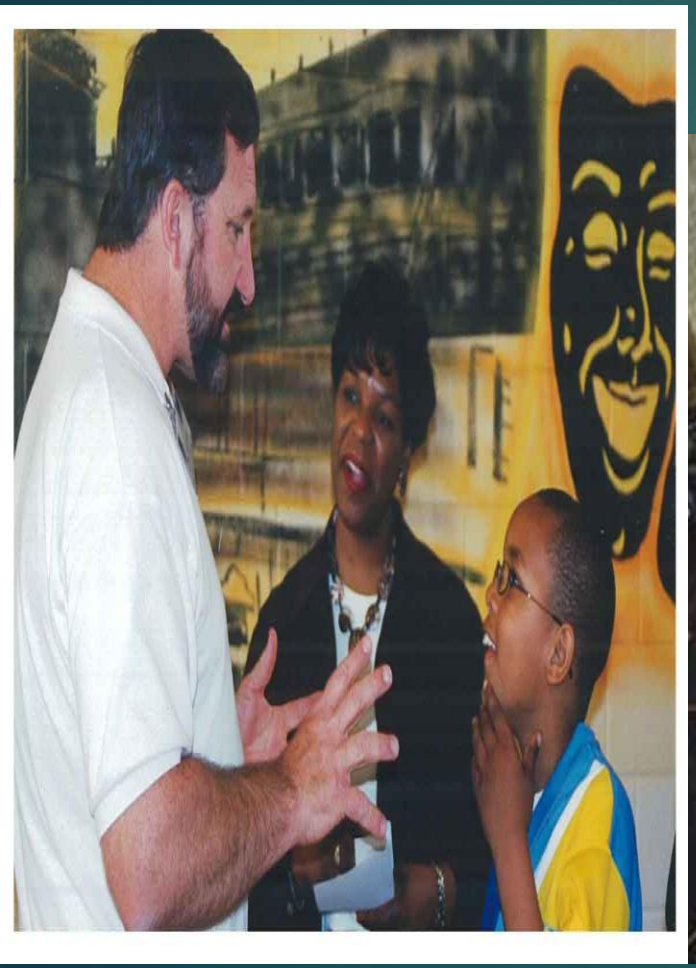


National Center for Earth and Space Science Education Highlights

NCESSE
Public Outreach – Family Science Night

- Dr. Jeff Goldstein hosts Family Science Night at the Smithsonian National Air and Space Museum.
- Since it began in 1993, 154 programs have been held at the Museum, reaching 52,700 parents, students, and educators from 189 schools representing 13 area school districts.
- *H*eld after hours so that hundreds of students, parents, and teachers from Washington, DC and the metro area schools may have the museum to themselves. Attendees explore galleries, experience the universe through IMAX films, and hear a presentation by a dynamic space scientist. The presentation is the program's centerpiece, providing a very personal view of exploration on the frontier and the spellbinding, wondrously human stories behind the machines that changed the world.

NCESSE – Family Science Night



Trinity Washington University Highlights

Trinity Washington University Highlights

- Scholarships and Internships for student research in chemistry and biology (interdisciplinary collaboration)
  - Supported underrepresented female students in competitive STEM research scholarships
  - Supported underrepresented female students in paid STEM internships
- Workshop for DC Public School STEM Teachers and TWU STEM Faculty
  - "Teaching Undergraduate Science: A Guide To Overcoming Obstacles to Student Learning"
  - Aimed at building collaborations that support both college readiness and college retention for underrepresented STEM students

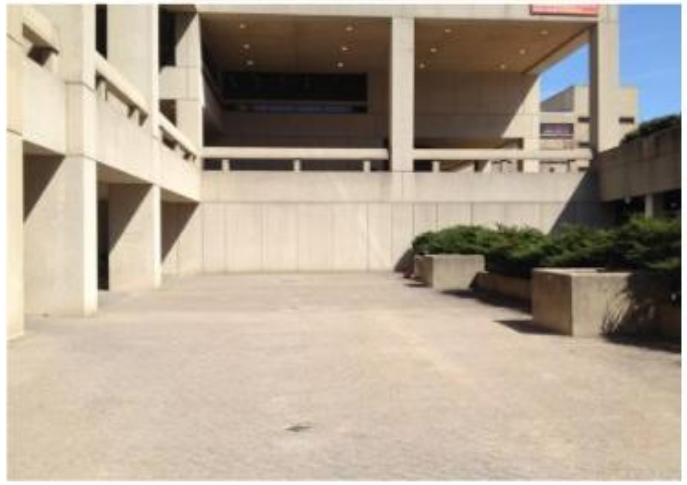
Trinity Washington University

University of the District of Columbia Highlights

University of the District of Columbia Highlights

- Undergraduate Research Experiences
  - Seven undergraduate students worked on computer science and engineering research projects (interdisciplinary collaboration) during the academic year
  - Students conducted experience, collected and analyzed data, contributed to a research paper or poster, and attended a research seminar
- Summer Research and Programming Workshops
  - In collaboration with the Louis Stokes Alliances for Minority Participation Program, six undergraduate students conducted hands-on summer research projects in interdisciplinary STEM areas
  - Students attended five weekly research seminars and a workshop
- In both programs, students received stipends and had faculty mentors

University of the District of Columbia



Questions?