GLOBAL SCIENCE & TECHNOLOGY, INC.

Partnering for Success

NASA NSTEM

Project Highlights

Task Areas

- Support the NASA Minority University Research and Education Project (MUREP) Aerospace Academy (MAA) program by providing experiential learning opportunities for high school students from groups traditionally underserved and/or underrepresented in STEM through NASA high school Capstone Activities.
- Support NASA MUREP/ Science Mission Directorate (SMD) Research Partnership Activities in the areas of Ocean Biology and Biogeochemistry (OCEAN) and Data Science Equity, Access, and Priority for Research and Education (DEAP).

Capabilities

- Capabilities in environmental science, mechanical and electrical engineering, physics, technology, robotics, scientific curriculum development, science education and outreach, research design, data analysis, educator professional development, project management, education content and product development, computer-aided design, technical training, multilingual support of interdisciplinary teams, workshop organization and coordination, performance assessment and evaluation services.

NASA Science, Technology, Engineering, and Mathematics (NSTEM) Support

GST, as a part of the Guardians of Honor team, provides education, science, engineering, programmatic, grants management, and communications services for the NASA NSTEM contract. This 5-year contract consolidates the STEM engagement work for all 10 NASA centers and focuses on supporting NASA's efforts to build a strong and diverse STEM workforce through internship and fellowship programs, awards and grant programs, STEM content and products, participant recruitment, NASA workforce and career learning experiences, K-12 STEM engagement, K-12 educator professional development, collegiate competitions and challenges, NASA institutional support for research and development, and performance assessment and evaluation services.

To support NASA's vision and mission to immerse students (especially those underrepresented and underserved in NASA's work and research), enhance STEM literacy, and inspire the next generation of aeronautics and space explorers, GST leverages its extensive experience in STEM engagement, education, scientific research, program management, and technical communications across NASA.

In support of the NASA MUREP MAA Simulated Lunar Operations (SLOPE) and Acoustic Damping Capstone Activities, GST staff created, designed, developed, and presented training materials and experiential learning activities in the areas of lunar exploration and aeronautics with a focus on engineering design and technology development. We teach staff at Minority Serving Institutions (MSIs) to use Tinkercad to design wheels and other parts for rovers that will simulate lunar operations, print their wheels and part designs using 3D printers, use Arduino to program microprocessors to control the motion of the rovers, assemble the rovers, test rover performance, design and print acoustic samples using Tinkercad, build acoustic impedance tubes and amplifier circuits, connect and operate oscilloscopes to measure sound waves, and conduct data analysis to compare results. GST staff develop scaffolding activities and make these resources including instructional guides, videos, and parts lists available to users. We also conduct training on various safety procedures and best practices for student implementation and provide ongoing technical assistance and support to MSI staff and other STEM facilitators.

GST staff supports the NASA MUREP / SMD Research Partnership OCEAN and DEAP Activities by providing technical expertise in science education curriculum development, research design, educational professional development, strategic planning, and program development. We support the development of related NASA Notice of Funding Opportunity announcements; monitor the establishment of Principal Investigator (PI) mentor committees; plan and participate in site visits and workshops; create self-assessment rubrics; collect, document, and disseminate awardee technical achievements to demonstrate the efficacy of methodologies designed to broaden participation; and provide ongoing technical and programmatic support for awardees.

The OCEAN Activity was established to strengthen and develop the research capacity and infrastructure of MSIs to improve understanding of the structure and function of global aquatic ecosystems, their interactions with the atmosphere, terrestrial and cryospheric systems, and the ocean's role in the cycling of the major biogeochemical elements. The DEAP Activity for Predominantly Black Institutions (PBIs) and Historically Black Colleges and Universities (HBCU) seeks unique solutions using innovative computational capabilities including data science, artificial intelligence, machine learning, and cloud computing to support groundbreaking science at NASA for the benefit of humanity.

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