



# NASA COMMUNITY COLLEGE AEROSPACE SCHOLARS (NCAS)

## FY 2019 ANNUAL PERFORMANCE REPORT

### FUNDING SOURCE:

OFFICE OF STEM ENGAGEMENT  
MINORITY UNIVERSITY RESEARCH AND  
EDUCATION PROJECT  
(MUREP)

### MANAGING ORGANIZATION:

NASA JOHNSON SPACE CENTER  
OFFICE OF STEM ENGAGEMENT

### ACTIVITY MANAGER:

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## **ACTIVITY DESCRIPTION**

NASA Community College Aerospace Scholars (NCAS) is a nationwide program designed for post-traditional learners enrolled in an accredited 2-year institution in the U.S. who are interested in a Science, Technology, Engineering or Math (STEM) career. NCAS participants complete a 5-week online non-credit course about NASA missions and research culminating in a four-day onsite experience hosted at a NASA field center or a community college partner. The onsite experience consists of a team-based engineering design challenge under the mentorship of NASA engineers and scientists. Teams design, build and test a robotic rover for competition. In addition to the rover competition, scholars tour NASA's unique facilities, learn from NASA subject matter experts, network with NASA's diverse workforce, receive resume feedback, and guidance on improving their resumes for NASA internship and employment opportunities.

NCAS helps students make the connection between a STEM degree and NASA career opportunities and realize that working in STEM is an attainable goal. NCAS prepares and motivates students to participate in other competitive NASA projects, programs, and internships, and encourages community college students to finish their 2-year degree and pursue a 4-year degree or career in a STEM field.

## **ACTIVITY GOALS**

- Provide a unique opportunity for community college students to contribute to NASA's work in exploration and discovery.
- Build a diverse future STEM workforce by engaging community college students in authentic learning experiences with NASA's people, content and facilities.
- Create powerful connections to NASA's mission inspiring scholars to continue to pursue their academic and professional goals.

At the conclusion of their participation in NCAS, students will

- Aspire to pursue a STEM-related career
- Continue to pursue NASA learning opportunities such as internships and competitions
- Complete 2-year degree
- Transfer to a 4-year university for a STEM degree

## **ACTIVITY BENEFIT TO PERFORMANCE GOALS**

### **FY 2019 Performance Goals**

**3.3.3: Provide opportunities for students to engage with NASA's aeronautics, space, and science people, content, and facilities in support of a diverse future NASA and aerospace industry workforce.**

The NCAS recruitment and retention strategies focus on students from Minority Serving Institutions. In FY19, 74.9% of the students who participated in both the online and onsite components of NCAS attended Minority Serving Institutions. The NCAS logic model and design use research based-practices to serve the unique needs and challenges of underrepresented students.

**3.3.4: Enhance the effectiveness of education investments using performance assessment and evaluation-driven processes.**

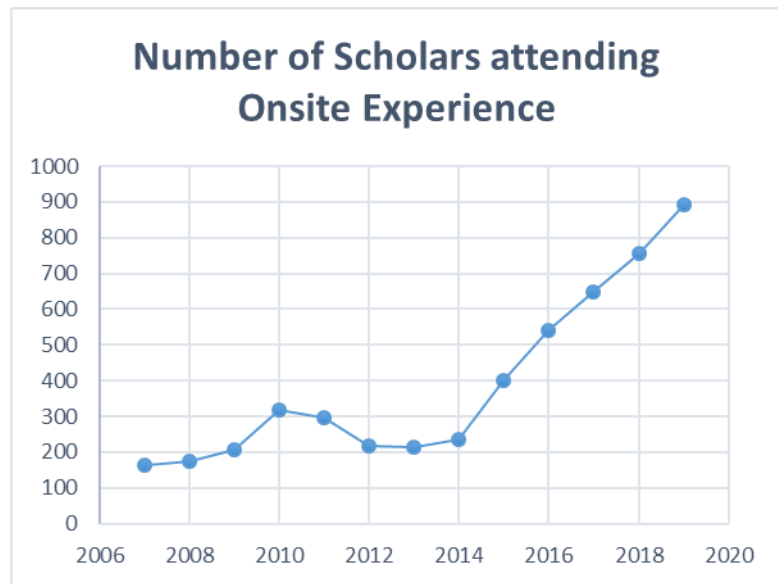
To increase the efficiency and effectiveness of NCAS, new infrastructure was put into place in FY19 as NCAS piloted an expansion model. A team of three instructional coaches joined the team to serve in the training and onboarding of partner campuses. The pilot allowed NCAS to add sixonsite events creating and helped refine a model for full implementation. The campuses produced an 18% increase in the number of students completing the full NCAS experience from the previous year.

**3.3.5: Provide opportunities for students to contribute to NASA’s aeronautics, space, and science missions and work in exploration and discovery.**

NCAS funded 16 NASA internships to alumni of NCAS. Student internships provide meaningful contributions to mission directorate priorities though projects. Interns are integrated in NASA teams and assigned to authentic projects. At least 20 additional alumni were awarded internships via other Agency funding sources.

**ACTIVITY ACCOMPLISHMENTS**

NCAS continued to expand the number of opportunities available for STEM students across the nation with 1,370 students accepted into the online component of NCAS. 892 students completed the online course and received invitations to attend an onsite experience, with 71.3% of the students from Minority Serving Institutions. The number of women participants is nearly 35%. The ten onsite experience hosting centers include Armstrong Flight Research Center, Ames Research Center, Glenn Research Center, the Jet Propulsion Laboratory, Johnson Space Center, Kennedy Space Center, Langley Research Center, Marshall Space Flight Center, Stennis Space Center, and Goddard-Wallops Flight Facility.



NCAS piloted an expansion with six community college partners from California, Mississippi, New Jersey and Oklahoma representing four MSI types, HBCU, HSI, NASNTI, and PBI. 12 faculty principal investigators engaged in over 300 hours of professional development learning NCAS model, student recruitment online course facilitation and planning and implementing their college’s NASA on Campus NCAS event. 208 students started the online course with 150 students invited to onsites. 41 faculty and staff received LEGO Education Academy Professional Development and Training to build, program and run Lego Mindstorms EV3s. Key findings from evaluation that will carry forward and shape the full implementation plan

- Students reported statistically significant gains in their understanding of:
  - o understanding of what people in STEM careers actually do (2.3-3.6% gain)
  - o different kinds of STEM careers (2.4-3.9% gain)
  - o kinds of people who go into STEM careers (2.7-3.9% gain)

- o academic preparation needed for STEM careers (2.0-3.2% gain)
- o career paths people have followed (3.3-4.2% gain)
- o how community college degrees contribute to a STEM career (3.0-4.0% gain)
- o understanding of what courses to take to pursue a STEM career (1.5-2.5% gain)

NCAS External Evaluator commented the “Impact data from the NASA on Campus experience is comparable to the legacy model data indicating that the franchise model is promising.”

## **ACTIVITY CONTRIBUTION TO ANNUAL PERFORMANCE INDICATORS (APIs)**

### **FY 2019 Annual Performance Indicators**

**API 3.3.3 STEM-19-1:** Provide significant, direct student awards in higher education to (1) students across all institutional categories and levels (as defined by the U.S. Department of Education), (2) racially or ethnically underrepresented students (Hispanics and Latinos, African Americans, American Indians, Alaska Native, Native Hawaiians and Pacific Islanders), (3) women, and (4) persons with disabilities, at percentages that meet or exceeded at the national percentages for the science and engineering graduates, as determined by the most recent, publicly available data from the U.S. Department of Education’s National Center for Education Statistics for a minimum of two of the four categories.

While NCAS does not meet the threshold for qualifying as a significant award, the project prepares students to pipeline into additional NASA activities. NCAS uses its resources to maximize the number of students across the Nation it can reach focusing on women and student participants from Minority Serving Institutions.

The 2018 United States ethnicity data showed 72.4% white, 0.9% Native American, 16.3% Hispanic 0.2% Asian and 12.6% African American, according to US Census data for 2018. The NCAS 2019 scholar ethnicity percentages exceeded the national average in nearly every category with 8.17% self-reporting as Native American, 34.5% Hispanic, 1.7% Hawaiian, 14.8% Asian and 10.2% African American.

## **ACTIVITY IMPROVEMENTS MADE IN THE PAST YEAR**

**PIPLINE-NCAS** provided one fully funded internship at each of the ten NASA centers for any NCAS alumni currently attending a Minority Serving Institution and six to our pilot campuses. At least 20 additional students were awarded internships throughout the agency in FY 2019. Informal tracking since 2014 shows that nearly 200 internships have been awarded to NCAS alumni.

**EXPANSION-NCAS** collaborated with the National Space Grant Program to offer an augmentation grant in the National Space Grant College and Fellowship Program - Opportunities in NASA STEM FY 2020 – 2024 Solicitation: NNH19ZHA001C. Proposers had the option of implementing NCAS at one or more qualifying campuses (see eligibility) for a minimum of two consecutive years not to exceed a four-year period of performance beginning in 2020. Funding will be provided by MUREP in the following amounts: Year 1 funding is \$25,000 per campus; Years 2-4 funding is \$12,500 per campus, per year. Awardees will be announced in FY2020 and begin the training cycle to prepare for an onsite campus event in 2021.

INFRASTRUCTURE-Three instructional coaches were hired to help provide over 300 hours of training and onboarding to the pilot campus participants and build a pathway for new schools to be awarded in 2020. NCAS also hired an instructional designer and graphic artist to build a training platform, improve the online course, and develop clear branding that aligns with Agency priorities to maintain fidelity to the NCAS model for NCAS expansion participants.

**ACTIVITY PARTNERS AND ROLE OF PARTNERS IN ACTIVITY EXECUTION**

NCAS partnered with the MAIANSE team to host one of two non-TCU sponsored competitions at the American Indian Higher Education Consortium (AIHEC) Spring Conference in Billings, Montana in March 2019 reaching over 30 tribal college students, faculty, and tribal elders.

The NASA Community College Aerospace Scholars (NCAS) recruitment strategy to Minority Serving Institutions resulted in a seven percent (7%) increase in the number of students coming from Minority Serving Institutions (MSIs), for a total of 636 students from 125 institutions invited to an NCAS onsite experience.

NCAS partnered with four state Space Grant Consortia in New Jersey, California, Mississippi, and Oklahoma to identify six minority serving institutions for NCAS to work with faculty to train and implement NCAS on their campuses.

**NASA ON CAMPUS**

