

## **MUREP Aerospace Academy (MAA)**

**Institution: University of Central Florida**

**Title: NEXTGEN-EDC: Novel Experience Geared to NASA Engineering Design Challenges**

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In support of NASA's Minority University Research and Education Project (MUREP) program Aerospace Academy (MAA), NEXTGEN-EDC: Novel Experience Geared to NASA Engineering Design Challenges will be created. NEXTGEN-EDC will be led by the University of Central Florida (UCF), a certified Seal of Excellencia minority-serving institution (MSI). NEXTGEN-EDC will enhance science, technology, engineering, and mathematics (STEM) education. UCF will cultivate a High School cohort using About the Center for Initiatives in STEM (iSTEM), which conducts K-12 Outreach activities through the Central Florida Region, which is highly diverse. The mission goal is to get high school students and their communities thinking about Space by involving over 100 student participants directly in the EDC each year. These students will have professional development opportunities, college discovery opportunities, career-building workshops, four per calendar year public speaking opportunities, and gain technical prowess to ensure success in life.

UCF has brought together numerous organizations to facilitate these efforts spanning Federal and State Entities to provide an unparalleled and NASA-relevant learning experience. Each year Staff Scientist Dr. Travis St. James Gabriel from the United States Geological Survey (U.S.G.S.) Flagstaff Office will provide a relevant kick-off session for participants, using experiences from the science he has conducted using NASA Martian Rovers. UCF has even secured additional funding through NASA Florida Space Grant Consortium (FSGC). In the form of two Vooxel 3d printers in Year 1 and, starting in Year 2, research scholarships for EDC students who enroll in UCF; such scholarship opportunity will spur competition and incentivization. NEXTGEN-EDC will provide a minimum of 64 in-person contact hours per academic year in which UCF learning facilitators oversee and guide high school students through STEM activities outside of scheduled classes. Special events such as annual field trips to Kennedy Space Center (KSC) to show NEXTGEN-EDC participants the genuinely amazing things NASA does. UCF has also secured annual college funding and career awareness workshops from the United States Space Force (USSF) and United States Air Force (USAF).

NEXTGEN meetings will be held at a partnering high school in an approximately 1 hour and 45 minute session. UCF facilitators, comprised of faculty and near-peer undergraduate research assistant (URA) mentors, will begin the activity in tactfully direct "briefing," in which visual & auditory skills transfer concepts and activity goals to participating teams. Each team will be comprised of high schoolers, and in instances where there is sufficient family present (e.g., parents, grandparents, siblings, etc.), to compete in simulated NASA-style mission EDCs under selected themes: Y1 (2022-2023) Rover, Y2 (2023-2024) Acoustics, Y3 (2024-2025) Powering Spacecraft. Teams of high schoolers will communicate internally to achieve the task and learning activities. Simultaneously during each activity, UCF personnel interact with each group to

stimulate direction and photograph the Mission experience for documentation. A Post-EDC Briefing will then be conducted to ensure continuity of ideas and goals for next week.

In addition, teams of high school students will be eligible to conduct multiple professional presentations throughout the year. Some of these will include NEXTGEN-EDC participants sharing concepts, and engineering design highlights learned at in-school assemblies, enabling direct transfer of knowledge from EDC participants to the student body at hosting high schools. Additional public speaking opportunities will involve an end-of-the-year presentation at UCF, which will be open to the public.