

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

**Institution: University of Hawaii, Honolulu**

**Title: From High School through College Degree to Aerospace STEM Careers: Hawai'i's Aspiring Aerospace Engineers Academy (HAAEA)**

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We propose to establish an aerospace engineering academy to provide engaging STEM opportunities for Hawai'i's high school students of underrepresented and underserved communities. The academy aims to inspire, motivate, educate and train its student participants through experiential learning module-classes, hands-on projects, research studies, engaging with NASA experts and other STEM professionals, and exposure to space exploration missions and technologies. Enriched with engaged cultural curriculum, these activities are designed to pursue college STEM degrees and professional careers. The proposed academy intends to serve as a steady, sustainable and guided pathway from high school to college to aerospace STEM careers. We aim to align our activities with NASA's Aeronautics Research and Space Technology Mission Directorates' space mission programs and the development of aerospace technologies to foster a group of aspiring young engineers to become the next generation of STEM professionals.

The proposed educational and research activities, including the module-classes, hands-on and research projects, intend to promote the Moon outpost mission, Artemis, as part of the Gateway program and scientific experiments on the lunar surface followed by the Mars landing mission and exploration technologies. Of particular interest are the artificial intelligence (AI)-assisted technologies to establish near real-time communications and control utilizing lunar surface rovers, orbiting spacecraft, Earth mission control centers, Mars rovers and unmanned aerial platforms.

The project team will be led by the University of Hawai'i at Manoa (UHM), the host of the proposed academy, and comprised of the UHM and Kapiolani Community College faculty, experts of Terabase Energy Ltd., IoT Logistics, LLC., the Native Hawai'ian Science and Engineering Mentorship Program, and NASA Ames Research Center. The UHM undergraduate and graduate students will serve as the near-peer mentors for the academy's students. In collaboration with the schools' STEM teachers and coordinators, we intend to select and engage the students of up to eight high schools located on the island of Oahu. In the project activities we intend to emphasize on socio-economic aspects of the schools' environments and multiple forms of diversity (cognitive, experiential, and demographic), which are important and beneficial to the creativity of the students and impact of the academy on society. The proposed project is titled Hawai'i's Aspiring Aerospace Engineers Academy and given the acronym HAAEA for ease of reference.