

NASA MUREP Space Technology Artemis Research (M-STAR) Implementation Awards

Title: Forging a trajectory for STEM Readiness in Space Technology

Institution: University of Central Florida

City/State: Orlando, FL

PI: Seetha Raghavan

Summary:

NASA's vision through Artemis lays the foundation for sustained lunar presence over the next decade, leveraging the resources and environment to expand our knowledge for future deep space exploration. Research and development of technologies to support the exploration and investigation of the lunar environment and its resources will pave the way for ground-breaking scientific discoveries of our Earth, solar system and universe. The research environment created by Artemis offers a powerful incubator for advances in space technology in our educational institutions to vastly expand the expertise and capabilities that will drive an inclusive future space technology workforce.

Researchers at the University of Central Florida have built a strong foundation in areas such as robotic technologies for exploration, multifunctional materials for extreme environments and simulation for entry, descent and landing with successful outcomes that demonstrate the potential to target and respond to opportunities soliciting innovative technological solutions for the Artemis program and beyond. This implementation grant offers UCF, a Hispanic Serving Institution, the opportunity to execute successful planning efforts to achieve research and education readiness in order to successfully recognize and respond to these needs. This is achieved by facilitating a suite of scientific and educational efforts that actively engage faculty and students along with administrators and appropriate partners while ensuring diversity and inclusion. Here, we outline a systematic approach to enhance STEM readiness at UCF, targeting six key strategic focus efforts that support both scientific and educational preparedness. Scientific preparedness is achieved by forging essential links to research partners in Artemis and STMD areas of need; leveraging access to essential facilities supporting Artemis and STMD research and expanding Industry partnerships in Space Technology. Educational preparedness is achieved through expanding Space Technology courses and curriculum; enhancing Space Research Proposal Response Readiness and expanding outreach to garner the next generation of Space Engineers to undertake the nation's toughest challenge.

This implementation effort will be led by PI Raghavan who has served as PI or Co-PI of multiple research projects from leading agencies including NSF, NASA, DARPA, Florida Space Grant Consortium (FSGC) and Florida Center for Advanced Aero-Propulsion (FCAAP). The team will execute the outlined focus efforts to achieve progress in pilot areas of research and student development along with NASA and industry partners that will support response to future individual NASA STMD opportunities. The research will ensure institutional readiness through the mobilization of a well-organized response team developed during a previous related planning grant that will leverage research links and partnerships as well as the educational support system to meet future STMD opportunities.

