

**Title:** NASA MIRO Center for Space Exploration and Technology Research  
**Institution:** University of Texas, El Paso  
**City/State:** El Paso, TX  
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**Summary:** The University of Texas at El Paso (UTEP), the only U.S. national research university with a student population that is majority (75%) Mexican American, proposes the renewal of MIRO Center for Space Exploration and Technology Research (cSETR). cSETR research and technology development efforts support NASA Artemis program and Moon to Mars vision by focusing on strategic capabilities in propulsion, robotic landers, lunar surface operations, and small spacecraft technologies and are aligned with Space Technology Mission Directorate (STMD) research priorities. cSETR non-MIRO funded unmanned aerial systems and hypersonic research and education programs are within the research priorities of NASA Aeronautics Research Mission Directorate. cSETR has developed an extensive and diverse collaboration ecosystem to achieve its strategic research, education, and sustainability goals. cSETR partners include NASA Centers: NASA JSC, NASA WSTF, NASA MSFC, NASA GRC, and NASA KSC (new partner), Aerospace Industries: Lockheed Martin Corporation (LMC), Blue Origin, and United Launch Alliance (ULA), Federal Laboratory: Air Force Research Laboratory (AFRL), Research Universities: Massachusetts Institute of Technology (MIT) and Arizona State University (ASU), universities in EPSCoR Jurisdiction: the University of Oklahoma (OU) and Southern Arkansas University (SAU), and HBCUs: Savannah State University (SSU) and Tuskegee University.

NASA MUREP funding was the catalyst of bringing UTEP into the aerospace research and technology development ecosystem, diversify, and expand the nation's aerospace research base. During the project period, cSETR supported 256 (102 BS, 93 M.S., and 61 Ph.D.) students (mechanical engineering, electrical and computer engineering, computer science, systems engineering, engineering leadership, chemistry, and business) as graduate and undergraduate research assistants. Among them, 93 (30 BS, 47 M.S., and 16 Ph.D.) were supported by MIRO funding. cSETR students received 121 internships, including 16 NASA Pathway internship opportunities in NASA and aerospace and defense industries. More than 77% of all students supported by cSETR are Hispanic. Students already graduated from cSETR programs received job offers from NASA (12%), Aerospace, Defense, and Related Industries (49%), Energy and other STEM Industries (27%), and Academia (12%). In 2019-2020 academic year alone, Lockheed Martin Corporation hired 101 (66 full-time and 35 intern/co-op) UTEP engineering students across its different business units. The majority of these students were trained through cSETR research and education programs. For the Group 6R Renewal project period, cSETR will pursue three interrelated strategic goals:

**Goal 1: Research: Research and Technology Development in Robotic Lander, In-Situ Propellant Production, and Lunar CubeSat Technologies to Support NASA Artemis Program and Moon to Mars Vision.**

Goal 2: Education: Increase the number of aerospace career-related degrees awarded to undergraduate and graduate students, especially Hispanic students.

Goal 3: Research Capacity Building: Expand Research Capacity and Infrastructure to Support Lunar Exploration and Moon to Mars Vision Research Priorities.

In alignment with the NASA MIRO Program priorities, cSETR will focus on training 158 engineering graduates annually in aerospace engineering education and research within the 2-year duration of the project. Each project year, the center will provide significant, direct awards to support research and education of 21 graduate and undergraduate students and 12 interns to NASA Centers. The center will also provide significant direct support to another 50 graduate and undergraduate students from leveraged sources and other federal grants and provide industry partner sponsored internship opportunities to another 15 students.