

MSGC Hands-On Experiences for College Student Groups – Merit Details

Projects will be evaluated based on the degree of alignment with the following areas of emphasis that NASA has specified for 2019-2020 programs (excerpted from NASA solicitation):

- Authentic, hands-on student experiences in science and engineering disciplines - the incorporation of active participation by students in hands-on learning or practice with experiences rooted in NASA-related, STEM-focused questions and issues, and the incorporation of real-life problem-solving and needs as the context for activities. Human Exploration Mission Directorate examples include but are not limited to: **Rock-on Workshop, Robotic Mining Competition, Micro-g NExT and NASA Human Exploration Rover Challenge.**
- Human Exploration and Operations Mission Directorate (HEOMD) Research (<https://www.nasa.gov/directorates/heo/education/index.html>) - HEOMD provides the Agency with leadership and management of NASA space operations related to human exploration in and beyond low-Earth orbit. Examples include: Support for NASA's Commercial Crew Program activities via educators and informal science venues (e.g., virtual field trip equipment, launch viewing parties, professional development workshops) and EM-1 mission support via EM-1 STEM Engagement activities (e.g., EM-1 university competition)
- Space Technology Mission Directorate (STMD) Research (https://www.nasa.gov/directorates/spacetech/about_us/index.html) - STMD is responsible for developing the crosscutting, pioneering, new technologies and capabilities needed to achieve NASA's current and future missions. Examples of Space Technology Areas (are shown in the table below) ... (excerpted from the MISTC solicitation <https://nspires.nasaprs.com/external/viewrepositorydocument?cmdocumentid=605133&solicitationid={4F44576B-B36B-1AF0-4A44-12AD35907998}&viewSolicitationDocument=1>).
- Also seeking solutions for the STMD: Centennial Challenges (https://www.nasa.gov/directorates/spacetech/centennial_challenges/index.html) and STMD: BIG Idea Challenge (<http://bigidea.nianet.org/>)

Space Technology Areas	NASA Center(s)/Facility
Aerosciences research for flight in all atmospheres	ARC/LaRC
Power technology and advanced development	GRC/MSFC
Propulsion--technology and advanced development (chemical propulsion)	GRC/MSFC
Propulsion--technology and advanced development (electric propulsion systems)	GRC/MSFC
Entry, Descent and Landing	ARC/LaRC/JPL
Vehicle Structures and Materials Technology	LaRC
Advanced Manufacturing	LaRC/MSFC
Communications and Navigation	GRC/GSFC/JPL
In-Situ Resource Utilization (ISRU) Technology	GRC/JPL
Robotics	GSFC/JPL/ARC
Autonomy	ARC/JPL/LaRC
Avionics technology and advanced development	GSFC/JPL
Cryogenic fluid flight systems	GRC