



# Florida Space Research Program (FSRP)



## **2023 Program Announcement & Request for Proposals Supporting Statewide University Involvement in Aerospace Research, Technology Development and Education to Expand and Diversify Florida's Economy**

### **Sponsored by**

Florida Space Grant Consortium      [www.floridaspacegrant.org](http://www.floridaspacegrant.org)

Space Florida      [www.spaceflorida.gov](http://www.spaceflorida.gov)

### **Timeline:**

March 15, 2023	Request for Proposals Issued
April 24, 2023	Notice of Intent and Abstract sent to <a href="mailto:fsgc@ucf.edu">fsgc@ucf.edu</a>
May 26, 2023	Proposals Due
July 28, 2023	Grants Announced
On or after August 7, 2023	Awards made (subject to receipt of funding from NASA for 2023 program cycle)

The purpose of this grant program (FSRP) is to support the expansion and diversification of Florida's aerospace industry by addressing workforce development, including student research experience, and increasing statewide academic involvement in space research, technology development, engineering, education and training programs that are consistent with the state's space industry priorities.

Funding is intended to support research that will: a) align with the priorities of NASA's four Mission Directorates; b) compete for larger sponsored research awards; c) attract and leverage other federal or industry funding; d) produce technologies that lead to commercial opportunities; e) promote Florida leadership in emerging aerospace technologies; f) address workforce development issues and/or g) in other ways enhance the technological competitiveness of Florida universities and space industry.

### **Contact for More Information...**

**Dr. Jaydeep Mukherjee, FSGC Director**  
**NASA Florida Space Grant Consortium,**  
**12354 Research Parkway, Room 218**  
**Orlando, FL 32826-0650**  
**Tel # 407-823-6177**  
**Email: [jaydeep.mukherjee@ucf.edu](mailto:jaydeep.mukherjee@ucf.edu)**  
Preferred mode of contact: Email

**Program Focus:**

The focus of the FSRP is on space exploration and the technology required to carry out the exploration of Space **that are aligned with the priorities of NASA's four Mission Directorates** (Science Mission Directorate, Human Exploration and Operations, Space Technology, and Aeronautics). By Space exploration, is meant, the scientific understanding of our planet, other planets and solar system bodies, the interplanetary environment, the Sun and its effects on the solar system, and the universe beyond. Space technology is the technology developed by space science or the aerospace industry for use in spaceflight, satellites, or space exploration. Space technology includes spacecraft, satellites, space stations, and support infrastructure, equipment, and procedures. **Please see Appendix A for links to NASA Mission Directorates.**

NASA has released formerly-patented agency technologies into the public domain, making its government-developed technologies freely available for unrestricted commercial use. In addition to the release of these technologies, a searchable database now is available that catalogs thousands of expired NASA patents already in the public domain. NASA's patent portfolio is managed by the agency's Technology Transfer Program (<https://technology.nasa.gov/>).

These technologies were developed to advance NASA missions but may have non-aerospace applications and can be used by commercial space ventures and other companies free of charge, eliminating the time, expense and paperwork often associated with licensing intellectual property. The more than 1000 technologies include advanced manufacturing processes, power generation, general electronics, sensors, propulsion methods, rocket nozzles, thrusters, aircraft wing designs and improved rocket safety and performance concepts.

The Fiscal Year 2023 Budget for NASA (Fiscal Year 2023 Budget not yet finalized at the time of this RFP release) invests \$26 billion in NASA to reinforce innovative human space exploration while maintaining strong support for NASA's full suite of science, aeronautics, and technology work.

**NASA Fiscal Year 2023 Budget Request (Summary)**

[https://www.nasa.gov/sites/default/files/atoms/files/fy23\\_nasa\\_budget\\_request\\_summary.pdf](https://www.nasa.gov/sites/default/files/atoms/files/fy23_nasa_budget_request_summary.pdf)

**NASA Fiscal Year 2023 Budget Request Agency Fact Sheet**

[https://www.nasa.gov/sites/default/files/atoms/files/fy23\\_agency\\_fact\\_sheets.pdf](https://www.nasa.gov/sites/default/files/atoms/files/fy23_agency_fact_sheets.pdf)

**NASA Fiscal Year 2023 Budget Request Mission Directorate Fact Sheets**

[https://www.nasa.gov/sites/default/files/atoms/files/fy23\\_mission\\_fact\\_sheets.pdf](https://www.nasa.gov/sites/default/files/atoms/files/fy23_mission_fact_sheets.pdf)

**Eligibility:**

Grants are intended for faculty researchers from FSGC affiliated universities and colleges. Please see Appendix B for a listing of FSGC affiliates. Proposals from non-affiliated Florida universities, colleges, community colleges, and industry will be accepted if the project involves collaborations with FSGC affiliates. Other non-academic organizations are also eligible to receive grant awards, especially if their proposed projects include involvement with FSGC affiliates.

Since FSGC is funded by NASA under a Cooperative Agreement/Training Grant and as required under the Terms and Conditions the following conditions apply:

- a. Research proposals from PIs who are US citizens may include direct support funds eg. Salary, travel etc. However, proposal from PIs who are non-US citizens may be selected for funding (based on their reviews) provided that NO salary, stipend, travel or any other form of direct support to the non-US citizen PI is funded from this award.
- b. Non-US citizens may receive support from their universities and these funds may be used as part of the 50% matching cost share (matching funds cannot be from a federal source) required for the grant.

- c. Students supported and funded by PIs under this program have to be US citizens only – no exceptions are allowed. Permanent residents are not considered as US citizens for the purposes of this program.
- d. PIs are allowed to submit only one proposal per Grant Category (see below).

### Exceptions and Previous Funding:

A submitted proposal that falls into any of the following categories must provide the documentation requested to be considered for funding:

- Any Principal Investigator who is required to submit a FSRP final report for a previously funded program but has not done so is ineligible for funding until a complete final report is received by FSGC.
- Any Principal Investigator who has received previous funding from FSGC under the FSRP, but is not yet required to submit a final report, must include a brief progress report in the proposal (item 11) citing the current status of the previously funded project.
- A Principal Investigator who has received a FSRP grant prior to 2022 may apply for the 2023 FSRP, so long as all the above conditions are met.

### FSRP Categories and Budget:

Grants will be awarded within the priorities of NASA's four Mission Directorates. The following chart lists the categories, anticipated budgets, and lists the programs under each Mission Directorate. More information on NASA's Mission Directorates can be found in Appendix A. Please note that NASA has organize its Human Exploration and Operations Mission Directorate into two areas: Exploration Systems Development and Space Operations. However, for the purposes of this program, please select HEO as your mission director category, even if your topic falls under either Space Operations or Space Exploration Development.

The following table describes the four Mission Directorates.

FSRP Category	Mission Directorate Program
Science Mission Directorate (SMD)	Earth Science Planetary Sciences Heliophysics Astrophysics Biological and Physical Sciences (BPS)
Human Exploration and Operations (HEO). Please note that NASA has organize its Human Exploration and Operations Mission Directorate into two areas: Exploration Systems Development and Space Operations.	Artemis Mission Exploration Systems Development Human Spaceflight Capabilities International Space Station Commercial Spaceflight Development Advanced Exploration Systems
Space Technology (ST)	Commercial Space Development Developing Cislunar Space Using the Commercial Orbital Transportation Services (COTS) Model Lunar Surface Innovation NASA Innovative Advanced Concepts (NIAC) Small Spacecraft Technology
Aeronautics (ARMD)	Safe, Efficient Growth in Global Operations Innovation in Commercial Supersonic Aircraft Ultra-Efficient Commercial Vehicles

	Transition to Low-Carbon Propulsion In-Time System-Wide Safety Assurance Assured Autonomy for Aviation Transformation
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FSGC and Space Florida expect to award at least 8 projects from the above 4 categories. The maximum award amount is \$25K.

### **Indirect Costs:**

Based on the indirect cost rate requested by FSGC from our prime sponsor, NASA, all proposals under this RFP will carry the flow down indirect cost rate of 10% (to be calculated on total direct cost). Master agreements(s) have been executed between UCF, acting on behalf of FSGC, and each affiliate member institution. The executed Master Agreement will be the base document for all awards received by your institution from FSGC via the respective project specific Task Orders to be executed for each awarded project.

Flow-down clauses in the Master Agreement, amongst others, include restriction on indirect cost to 10% of total direct cost, no other administrative costs, except for indirect cost, will be supported by UCF funds and foregone overhead may be used by your institution to meet mandatory cost share requirements. Support for these projects are solely from the NASA Florida Space Grant Consortium and Space Florida.

### **Matching:**

The Consortium is required to match its prime award from NASA. Therefore, applicants will be required to match **50%** of the requested funds with non-federal funds from their institution.

Foregone overhead may be used to meet mandatory cost share requirements. Match can be in the form of either cash or in-kind, including waived indirect costs, academic release for faculty members, student stipends, instrument, and computer time. Equipment purchase and/or cost of pro-rated use cannot be considered as match.

### **Timeline:**

2023 Cycle	March 15, 2023 April 24, 2023 May 26, 2023 July 28, 2023 On or after August 7, 2023	Request for Proposals Issued Notice of Intent and Abstract sent to fsgc@mail.ucf.edu Proposals Due Awards Announced Awards made (subject to receipt of funding from NASA for 2022 program cycle)
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### **Equipment:**

Purchase of Equipment is not allowed under this training grant. "Equipment" will be defined as any single non-expendable item having an acquisition cost of \$5000 or more. However, if an awardee institution uses a lower cost threshold in their definition of equipment, then that lower cost threshold will be used to determine whether any item is "equipment" or not.

### **Delivery and Proposal Content:**

The signed proposal (main proposal and signed cover page) must be uploaded to the Florida Space Grant Consortium website. The proposal must be a pdf file. In order to upload a proposal, one must first register for an FSGC online account at [www.floridaspacegrant.org](http://www.floridaspacegrant.org). One simply must provide a university e-mail address and create a username and password. The email address must be a university email address.

Failure to submit the proposal exactly in the manner stated here will result in the proposal being considered as incomplete and will not be considered for review and participation in the funding process.

Proposers are requested to provide a notice-of-intent to FSGC, including a generalized proposal summary of no more than 500 words, the title of the project, and name of the PI and institution, to [fsgc@ucf.edu](mailto:fsgc@ucf.edu) by April 24, 2023. Proposals should contain adequate technical detail to enable a peer review process.

#### **Proposal Format:**

- 1) Completed Signature Page (see attached)
- 2) Project Summary with Title (limit 200 words)
- 3) Significance of Project
- 4) Work Plan
- 5) Prior state of knowledge in the field and how the project will carry those issues further
- 6) Extent to which the proposed work supports NASA's four Mission Directorates and/or the State's goals of building the space industry in Florida.
- 7) Potential Sources for Continued Support
- 8) Key Personnel and Levels of Commitment, **including details of student involvement in the project**
- 9) References
- 10) Budget (showing funding allocation to each participating organization)
- 11) Previous Funding status (if required)
- 12) Support letters (if any)
- 13) PI and Co-PI's Standard Curriculum Vita (including list of relevant publications)

Proposals are strictly limited to ten (10) pages in length (exclusive of items 1, 9, 10, 11, 12, and 13 above), preferably less. The proposal must be single- or double-spaced, using standard size (8 1/2" x 11") paper, in no smaller than 12-point font with a minimum of 1" margins on all sides for each page. Use an easily readable font face (e.g. Geneva, Helvetica, Times Roman). All pages must be numbered. No supplementary materials will be accepted. Over-length proposals will not be submitted for merit review.

**Performance Period:** The performance period cannot be for more than one year. The starting date can be as early as August 7, 2023.

#### **Evaluations of Proposals:**

The proposals will be evaluated by panels of industrial and academic reviewers chosen by the grant program sponsors. Each proposal will be judged and scored on its own merits using the criteria listed below:

- 1) Scientific/technical merit of the proposed project
- 2) The prior state of knowledge in the field and how this would carry those issues further
- 3) Extent to which the proposed work supports either the State's goals of building the space industry in Florida, including industry participation, and/or supporting NASA's four Mission Directorates (see Appendix A)
- 4) Potential for continued project development, including commercial or government support
- 5) Qualifications of the project team as evidenced by related refereed publications and award success
- 6) Soundness of proposed work plan, budget, and schedule
- 7) Student involvement in the project – proposals having higher numbers of student participation with special emphasis on student diversity is strongly encouraged and will be weighted favorably.

Other issues will be considered in the award of grants when evaluations based on the seven above-listed criteria indicate substantially equal merit. These other issues will include amount and quality of matching

contributions (please include documentation showing matching contributions); geographic diversity; the applicant is pre-tenure/early career, including post-doctoral fellow; and level of collaboration between industry and academia.

**Intellectual Property:**

Due to the use of NASA funding for this grant program, grant recipients shall follow all applicable NASA rules and regulations for the ownership and use of intellectual property developed under any grant project. As sponsors of the grant program, FSGC and UCF have no ownership or control of such intellectual property, unless a sponsor is also a direct participant, or intended beneficiary, of any grant project. In such cases, intellectual property rights shall be covered under a separate agreement with the grant recipient.

**Publications:**

Principal Investigator may publish the results of the work in its own form. FSGC will require a copy of any publication within 60 days of the publication date.

Principal Investigator's publication shall acknowledge support of FSGC by inclusion of the following sentence in the published document "THIS PROJECT WAS SUPPORTED BY THE NATIONAL AERONAUTICS AND SPACE ADMINISTRATION THROUGH THE UNIVERSITY OF CENTRAL FLORIDA'S NASA FLORIDA SPACE GRANT CONSORTIUM AND SPACE FLORIDA".

**International Compliance:**

Projects involving international recipients must comply with all applicable export control laws and federal regulations. Proposals that feature international participation should include a brief section on their plans to comply with federal requirements, or describe why such requirements do not apply to their project.

**Reporting:**

A final technical report is due 13 months after commencement of project. This final report may contribute to follow on proposals that can be submitted to other agencies for continued support of the project. The grant program sponsors may coordinate with Principal Investigators to submit their final reports or abstracts for presentation and publication at upcoming Space Congress events and other space-related conferences. FSGC may establish a special seminar or conference where all funded research will be reported.

FSGC may contact PIs and students of approved projects from time to time for additional reporting information.

**Any financial or programmatic changes, including student involvement, will require prior approval of FSGC before such changes can be implemented. Failure to meet the proposal goals in relation to student recruitment for the project may result in reduced funding.**

**Since FSGC is a Training Grant, student demographics and other information is required for onward submission to NASA HQ as part of our annual report. We do not send individual information. All the information is aggregated and then compiled into our annual report to NASA. NASA in turn uses this information to present Space Grant program highlights to Congressional delegates in order to secure future years funding for the National Space Grant program through the NASA Education Office. A link to the demographic questionnaire will be emailed to all awardees.**

**Leveraged Funding:**

Proposers must indicate in their proposals whether their project is receiving funds from other sources, or whether they are involved in similar projects that are funded by state or federal grants. These other funding sources should be listed.

**Confidential Information in Proposals:**

Patentable ideas, trade secrets, privileged or confidential commercial or financial information, disclosure of which may harm the proposer, should be included in proposals only when such information is necessary to convey an understanding of the proposed project. Such information must be clearly marked in the proposal and be appropriately labeled with a legend such as, "The following is (proprietary or confidential) information that (name of proposing organization) requests are not released to persons outside UCF, except for purposes of review and evaluation."

**New Technology Reporting** – All NASA contractors, grantees, and NASA partners, have an obligation to report new technologies to NASA as required by their agreement. NASA CTSG requires all applicants to comply with this New Technology Report. The detailed guidelines are available [online](#)

**Awardee Responsibility:**

- Recipient of the FSGC award must ensure that students being supported through this project are US citizens only (permanent residents are not allowed) and that the students submit their completed demographic survey to FSGC within 7 days of their hire on the project. A link to the questionnaire will be emailed to all the awardees.
- If a student, supported with these award funds, graduates before the end of the project, the final report must be collected in a timely manner from the student so that it can be incorporated into the researcher's final report when it is due.
- Office of Education Performance Measurement (OEPM) form. The Office of Education Performance Measurement System (OEPM) is the centralized collection point for collection and reporting of Office of Education performance measurement data. The required information includes an abstract of the work and details of the students participating in the project. Instructions will be sent before the end of the award.

2023 Florida Space Research Program  
Sponsored By FSGC and Space Florida

**PROPOSAL COVER PAGE**

Project Name: \_\_\_\_\_

Faculty or Industry PI: \_\_\_\_\_

Department/Institution: \_\_\_\_\_

Address: \_\_\_\_\_

\_\_\_\_\_

Phone: \_\_\_\_\_ E-mail: \_\_\_\_\_

Budget Request:	Note: A detailed budget justification is required.
Grant	\$ _____
Matching Contribution	\$ _____
Total Project Cost	\$ _____

Please identify which FSRP Category is applicable to your project (check only one that is most appropriate):

- ☐ Science Mission Directorate (SMD)  
☐ Human Exploration and Operations (HEO) (Space Operations or Space Exploration Development)  
☐ Space Technology (ST)  
☐ Aeronautics (ARMD)

Does your project have any student participation? Yes ☐ No ☐

If yes, how many? \_\_\_\_\_

Start Date: \_\_\_\_\_ Ending Date: \_\_\_\_\_

\_\_\_\_\_  
(Signature) Faculty PI / Date

\_\_\_\_\_  
(Signature) Department Head / Date

\_\_\_\_\_  
Name

\_\_\_\_\_  
Name

\_\_\_\_\_  
Title

\_\_\_\_\_  
Title

\_\_\_\_\_  
(Signature) Institute Official / Date

\_\_\_\_\_  
Name

\_\_\_\_\_



## Appendix A. Strategic Framework for NASA

### I. NASA Mission Directorates

NASA's Mission to pioneer the future in space exploration, scientific discovery, and aeronautics research, draws support from four Mission Directorates, each with a specific responsibility.

- Aeronautics Research Mission Directorate (ARMD): Research conducted by ARMD directly benefits today's air transportation system, the aviation industry, and the passengers and businesses who rely on aviation every day. ARMD scientists, engineers, programmers, test pilots, facilities managers and strategic planners are focused on aviation's future. They design, develop and test advanced technologies that will make aviation much more environmentally friendly, maintain safety in more crowded skies, and ultimately transform the way we fly. NASA's aeronautics research is primarily conducted at four NASA centers: Ames Research Center and Armstrong Flight Research Center in California, Glenn Research Center in Ohio, and Langley Research Center in Virginia (<https://www.nasa.gov/aeroresearch>)
- The Science Mission Directorate (SMD) leads the Agency in four areas of research: Earth Science, Heliophysics, Planetary Science, and Astrophysics. NASA's Science Mission Directorate (SMD) and the nation's science community use space observatories to conduct scientific studies of the Earth from space to visit and return samples from other bodies in the solar system, and to peer out into our Galaxy and beyond. NASA's science program seeks answers to profound questions that touch us all:
  - How and why are Earth's climate and the environment changing?
  - How and why does the Sun vary and affect Earth and the rest of the solar system?
  - How do planets and life originate?
  - How does the universe work, and what are its origin and destiny?
  - Are we alone?(<https://science.nasa.gov/>)
- The Human Exploration and Operations (HEO) The Human Exploration and Operations (HEO) Mission Directorate provides the Agency with leadership and management of NASA space operations related to human exploration in and beyond low-Earth orbit. HEO also oversees low-level requirements development, policy, and programmatic oversight. The International Space Station, currently orbiting the Earth with a crew of six, represents the NASA exploration activities in low-Earth orbit. Exploration activities beyond low Earth orbit include the management of Commercial Space Transportation, Exploration Systems Development, Human Space Flight Capabilities, Advanced Exploration Systems, and Space Life and Physical Sciences Research & Applications. <https://www.nasa.gov/directorates/heo/index.html>

Please note that NASA has organized its Human Exploration and Operations Mission Directorate into two areas: Exploration Systems Development (<https://www.nasa.gov/directorates/exploration-systems-development>) and Space Operations (<https://www.nasa.gov/directorates/space-operations-mission-directorate>).

- Space Technology Mission Directorate (STMD). STMD rapidly develops, demonstrates, and infuses revolutionary, high-payoff technologies through transparent, collaborative partnerships, expanding the boundaries of the aerospace enterprise. STMD employs a merit-based competition model with a portfolio approach, spanning a range of discipline areas and technology readiness levels. By investing in bold, broadly applicable, disruptive technology that industry cannot tackle today, STMD seeks to

mature the technology required for NASA's future missions in science and exploration while proving the capabilities and lowering the cost for other government agencies and commercial space activities. <https://www.nasa.gov/directorates/spacetech/home/index.html>

Please visit each NASA organization website to find detailed information about current projects and current areas of interest.

## **II. NASA Research Areas of Interest**

NASA research priorities are defined by the Mission Directorates—Aeronautics Research, Science, Human Exploration and Operations, and Space Technology. Each Mission Directorate covers a major area of the Agency's research and technology development efforts. Research priorities for each of the Mission Directorates can be found at the following locations:

### **Aeronautics Research Mission Directorate (ARMD)**

Researchers responding to the ARMD should propose research that is aligned with one or more of the ARMD programs. Proposers are directed to the following:

- ARMD Programs: <https://www.nasa.gov/aeroresearch/programs>

### **Science Mission Directorate (SMD)**

Detailed information on SMD research priorities is available at the following URLs:

- NASA Science Strategy: <https://science.nasa.gov/about-us/science-strategy>
- Web pages for scientists and engineers who plan to propose or have submitted a proposal to a research solicitation from the Science Mission Directorate. <https://science.nasa.gov/researchers>
- Funding Opportunities: Grant Solicitations <https://science.nasa.gov/researchers/sara/grant-solicitations>

### **Human Exploration and Operations (HEO) Mission Directorate**

For information on HEO programs, please go to <http://www.nasa.gov/directorates/heo/home/index.html>.

Please note that NASA has organized its Human Exploration and Operations Mission Directorate into two areas: Exploration Systems Development (<https://www.nasa.gov/directorates/exploration-systems-development>) and Space Operations (<https://www.nasa.gov/directorates/space-operations-mission-directorate>).

### **Space Technology Mission Directorate (STMD)**

For the Space Technology programs, please go to <https://www.nasa.gov/directorates/spacetech/programs>

## **III. NASA's Technology Transfer Program**

NASA's Technology Transfer Program ensures that innovations developed for exploration and discovery are broadly available to the public, maximizing the benefit to the Nation.

<https://technology.nasa.gov/>

## **APPENDIX B**

### **FSGC Affiliates**

#### **Universities and Colleges**

Bethune-Cookman University (Dr. Masood Poorandi)

Broward College (Dr. Rolando Branly)

Embry-Riddle Aeronautical University (Dr. Sergey V. Drakunov)

Eckerd College (Dr. Nazarré Merchant)

Florida Atlantic University (Dr. Frederick Bloetscher)

Eastern Florida State College (Dr. Mevlut Guvendik)

Florida Gulf Coast University (Dr. Michael Fauerbach)

Florida Institute of Technology (Dr. Tristan Fiedler)

Florida International University (Dr. Berrin Tansel)

Florida Polytechnic University (Dr. Aslihan Vuruskan)

Florida State University (Dr. Alan Hanstein)

Florida A&M University (Dr. Charles Weatherford)

Miami Dade College (Dr. Carlos Genatios)

University of Central Florida (Dr. Yunjun Xu)

University of Florida (Dr. Josephine Allen)

University of Miami (Dr. Qingda Yang)

University of North Florida (Dr. Nirmal Patel)

University of South Florida (Dr. Stephanie Carey)

University of West Florida (Dr. Brad Regez)

#### **Other Organizations**

Astronauts Memorial Foundation (Mr. Thad Altman)

Kennedy Space Center (Ms. Patricia Gillis)

Orlando Science Center (Ms. Jill Goddard)

Space Florida (Mr. Tony Gannon)