



**New Investigator Program Grant Year
2019 - 2020**

**Project Period:
July 1, 2019 – May 1, 2020**

REQUEST FOR PROPOSALS

**North Carolina Space Grant
New Investigator Program - Request for Proposals**

1. Summary

The New Investigator Program is designed to strengthen North Carolina's research infrastructure by providing startup funding to early career college and university faculty who are conducting research that is directly aligned with the National Aeronautics and Space Administration (NASA) mission. NASA's research interests embrace a wide range of science, engineering, computational and other disciplines. This opportunity is available to those who have yet to become established researchers. Awardees must be tenure track faculty who are within the first five years of their academic careers.

2. Background

The National Space Grant College and Fellowship Program was established by Congress under Title II of the National Aeronautics and Space Administration Authorization Act of 1988. Today the 52 Space Grant Consortia include over 1,000 affiliates from universities, colleges, industry, museums, science centers, and state and local government agencies.

North Carolina Space Grant (NC Space Grant) is a state-federal partnership with NASA and institutions of higher education across the State of North Carolina that promote, develop, and support aeronautics and space-related science, technology, engineering and mathematics (STEM) education and training. These institutions work together to expand opportunities for Americans to understand and participate in NASA's aeronautics and space projects by supporting and enhancing STEM education, research and public outreach efforts.

NC Space Grant has been administered at NC State University since 1991 and has provided consistent leadership in strengthening connections with NASA's research, technology and science missions. The program's mission is to promote, develop, and support STEM education and workforce development opportunities for students and faculty across North Carolina.

Programs are conducted in areas of fellowships, scholarships, education, research, and public service to promote, develop and support aeronautics and space-related science, engineering and technology training and programs. A common focus is to involve women, underrepresented minorities and persons with disabilities, and to reach more citizens of North Carolina.

3. Project Overview and Guidelines

3.A. Range and Performance Period

3.B. Eligibility

This solicitation is open to faculty members from any 4-year accredited college or university in the State of North Carolina within the first five years of their initial academic career. Awardees must be qualified to serve as a principal investigator at their respective institution and be U.S. citizens. Permanent residents, foreign nationals and resident aliens may apply for funding but with budget restrictions (see Section 4.F. Budget and Budget Narrative). Any student(s) supported with award funds must also be a U.S. citizen(s).

Submission is limited to one proposal per Principal Investigator. An investigator may receive only one NC Space Grant New Investigator Program award in his/her academic career. NC Space Grant encourages proposals from females and underrepresented minority groups.

4. Proposal Content

4.A. Title Page (1 page)

The cover page must include the following items: Project title; period of performance (July 1, 2019 – May 1 2020); Principal Investigator (PI) (faculty) name, institution, address, phone, fax, and email; concurrence signatures from the PI and the Authorizing Official of the proposing institution (sponsored research officer); and the program name (New Investigator Program).

4.B. Project Description (5 pages maximum)

The PI is expected to use these discretionary funds to further establish his/her professional career through new research or expansion of existing research in the aviation, aerospace or other space-related STEM discipline.

Some examples of factors to consider for inclusion in highly competitive proposals: support for graduate or undergraduate student involvement in the research; publication costs; travel funds to establish collaborative relationships with NASA and/or industry researchers, professional associations or societies, etc.; and research supplies (not an all-inclusive list). This section should include the following (refer to Section VII for evaluation rubric):

- Detailed description of the proposed research;
- Relevance of proposed research to NASA's Strategic Framework, Mission Directorates and NC Space Grant Strategic goals for research (refer to Appendices A-C);
- Total number of students supported through research efforts including a breakdown of underrepresented groups, e.g., gender, race, ethnicity, disability, age, military service, etc.*;
- Description of how funding will impact investigator's career;
- How funds will be leveraged to obtain additional research funding (and from whom); and
- Description of past projects supported by NC Space Grant (if applicable).

**Proposals that include support for students will be more favorably reviewed. All students supported must be US citizens (refer to Section 3.B. Eligibility).*

4.C. Current and Pending Support

Identify current and pending support of the Principal Investigator including source of support; project title; amount of award; period covered by award; months or percent of time committed by the investigator during the award period; and location of research.

4.D. Curriculum Vita (Pages as needed)

The Principal Investigator must include a biographical sketch (not to exceed two pages) that includes his/her professional experiences and positions and a bibliography of recent publications, especially those relevant to the proposed investigation. Curriculum Vita from others who will play critical technical roles in the proposed investigation should also be included.

4.E. Letter of Support

Include a letter of support and commitment from the Department Head or Research center/laboratory Director. This letter should outline the importance of the proposed research to the department and the direction of the college/university.

4.F. Budget and Budget Narrative (2 pages)

Provide a detailed budget using the format outlined in Appendix D (New Investigator Program – Proposed Budget for Grant Year 2019), along with a budget narrative. Each format should include expense summaries as well as the 50% non-federal cost match requirement. Specific budget details are noted below:

- Direct salary expenses for PI and students should be separated by titles or disciplines with hours, rates, and

total amounts for each position.

- Proposed travel should include the number of trips, destination, duration, etc. International travel is not allowed.
- *NOTE: Permanent residents, foreign nationals and resident aliens may not charge salary or travel expenses to the grant; unrecovered salary and travel can be used to meet the cost-match requirement.*
- All students (graduate and/or undergraduate) supported must be permanent U.S. citizens.
- Funds cannot be used to purchase equipment.
- Overhead costs are not allowed. Unrecovered facilities and administrative costs, however, may be used for required cost-matching. The detailed budget must include a description of the required 50% non-federal matching funds.
- Utilization of funds solely for the purpose of supplementing summer salaries is discouraged.
- The NASA Grants and Cooperative Agreements Handbook, Sections A and B, located at http://prod.nais.nasa.gov/pub/pub_library/grcover.htm provides additional information on uniform administrative requirements for grants and cooperative agreements with institutions of higher education.

4.G. Data Management Plan (2 pages max)

Consistent with the NASA Plan for Increasing Access to Results of Federally Funded Research, new terms and conditions about making manuscripts and data publically accessible may be attached to NASA awards. Some proposals will be required to provide a Data Management Plan (DMP) or an explanation of why one is not necessary given the nature of the work proposed. Any research project that does not require a DMP to be submitted shall explicitly indicate this fact in the DMP block. The type of proposal that requires a DMP is described in the NASA Plan for Increasing Access to Results of Scientific Research (see link below):

https://www.nasa.gov/sites/default/files/atoms/files/206985_2015_nasa_plan-for-web.pdf

In addition, SMD has posted a Frequently Asked Questions (FAQ) website that addresses questions about DMP requirements at <http://science.nasa.gov/researchers/sara/faqs/dmp-faqroses>. Note that although the questions pertain to the SMD ROSES Notice of Research Announcement (NRA), the requirements given in the answers also apply to this opportunity.

4.H. Proposal Format

The following guidelines and restrictions apply to all proposals. Proposals not meeting these requirements may not be considered.

- Proposals must be submitted in PDF format.
- Proposals should be one-sided, single-spaced on standard 8 ½ x 11 paper, no smaller than 12-point font and with no less than one inch margins throughout. Text restrictions are inclusive of all illustrations, tables, charts, exhibits, etc.
- All pages must be numbered sequentially.
- Proposals should contain only appendices and attachments specifically called for.
- All information you wish for reviewers to consider should be included in your proposal. It is not acceptable to refer reviewers to websites or other external sources for additional information or as evidence for your narrative. Additional appendices and attachments are not allowed.

5. Proposal Submission

Proposals should be submitted via the NC Space Grant website application portal by Friday, May 24, 2019 by 5:00 PM (EST) which can be found at: <https://ncspacegrant.ncsu.edu/programs/new-investigator-program-for-faculty/>

Questions should be submitted to:

Jobi Cook, Associate Director

jobi_cook@ncsu.edu

6. Proposal Review and Evaluation

Proposals will be reviewed by a panel of peers who are technically literate, but not necessarily experts in each proposed field of research. Proposals will be grouped into 'research areas' based on information provided by the PI during proposal submission. Proposals will be evaluated for technical/scientific merit, alignment to NC Space Grant and NASA goals, student engagement and budget which will be scored per the parameters below:

- Research Plan (30%)
- Alignment of research to NASA and NC Space Grant Strategic Goals (25%)
- Involvement of students (graduate and/or undergraduate) in research (20%)
- Budget alignment to research plan (15%)
- Letter of support (10%)

The selection will reflect the full review process, panel recommendations, available funding, current program priorities. Applicants should be aware that not all highly rated projects will be funded. NC Space Grant does not have enough funding to cover all the outstanding applications that we receive.

7. Reporting Requirements

Financial Progress Report and Data Requests

Awardees will be required to maintain and provide data necessary for NC Space Grant to report to the NASA Office of Education Performance Measurement System (OEPMS). This data typically includes but is not limited to description of work performed; evaluation of the impact of work performed; number of students, teachers, staff, faculty, and general public involved; gender/ethnic breakdown, birth date and contact information (email) of all participants; list of papers published, presentations given, conferences hosted/attended. This information may be requested at any time throughout the award period.

Any peer-reviewed scientific research publications authored or co-authored by investigators funded, in whole or in part by NASA, are required to ensure that those publications are submitted to PubMed Central system at www.ncbi.nlm.nih.gov. Further, it is NC Space Grant's responsibility to assure that any publications authored or coauthored by a sub-recipient (sub-award or contract) be submitted to the PubMed Central system. NC Space Grant will be required to provide a list of publications with annual and final reports.

Final Report

A final report is due within 30 days of the completion of the award. This report must contain the following (format will be provided):

1. Executive summary of the project that is suitable for publication. The executive summary should no more than 250 words.
2. Statement on how funding assisted investigator.
3. Data report for the number of students funded and/or significantly involved including a breakdown of underrepresented groups. (Significant awards must meet the following threshold: \geq \$3,000 monetary award, \geq 160 contact hours, or a combination of both.)

4. List of papers submitted for publication during the period of this award. Include title, publication, date of publication, author list, and an electronic copy of the paper.
5. List of all presentations delivered during the period of this award. Include presentation title, location, date, and a copy of the presentation.
6. List of all conferences attended during the period of this award. Include conference title, location, dates, and if investigator presented.
7. List of all proposals submitted during the period of this award that are relevant to the research performed. Include proposal title, announcement of opportunity title, name of sponsor, proposal due date, role of investigator, and funding status.
8. List of all patents that were applied for and/ or approved during the period of this award.
9. List of pending and actual support for investigator. Include source, PI, % time, and role of investigator.

8. Other Requirements

Acknowledgment of Support and Communications

An acknowledgment of NC Space Grant support (logo and/or written) must appear in all publications of any material based on this funding in the following terms: "Supported by the North Carolina Space Grant." Awardees are requested to interact with the NC Space Grant Communicator to translate the findings of their research into in a communication product (print, social media, etc.).

Audit and Records

Financial records, supporting documents, statistical records, and other material pertinent to this grant shall be retained by the grantee for a period of at least three years following submission of the final project report and shall be made available to NC Space Grant upon request.

Payments

Contingent upon NC Space Grant's receipt of NASA and State funds, a sub-agreement will be established between the grantee's institution and NC State University. Funds awarded may come from mixed sources (federal and state funds). The grantee institution shall receive payments under this grant through that institution's Office of Sponsored Programs. Invoices must be submitted no later than 30 days after the last day of the month in which the expense was incurred. Late invoices may not be honored.

Notification of Absence

NC Space Grant shall be notified prior to the Principal Investigator's absence from campus for a period of four months or more. Prolonged absences from the campus for non-project related purposes are subject to NC Space Grant review.

Transfer of Awards

If the principal investigator leaves the grantee institution or otherwise relinquishes active direction of the project, the institution must notify NC Space Grant as soon as possible and the award will be terminated. Awards may not be transferred if the PI leaves the grantee institution to another institution that is not an active academic member of the NC Space Grant.

Suspension or Termination

This grant may be suspended or terminated if the grantee fails to comply with all the terms and conditions of the grant.

Nondiscrimination

No person shall be excluded from participation in, be denied benefits of, or be otherwise subjected to discrimination under this grant on grounds of race, color, national origin, religious affiliation, physical disability, gender, or sexual orientation.

Compliance with Regulations

The investigator must abide by all state and federal regulations related to research.

9. Point of Contact

Questions regarding this announcement should be directed to:

Jobi Cook, NC Space Grant Associate Director

jobi_cook@ncsu.edu

(919) 515-5933

APPENDIX A: Strategic Framework for NASA

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.

- The Aeronautics Research Mission Directorate (ARMD) conducts vital research to make air travel more efficient, safe, green, and to uncover leading-edge solutions for the Next Generation Air Transportation System (NextGen) in the United States. ARMD's fundamental research in traditional aeronautical disciplines and emerging disciplines helps address substantial noise, emissions, efficiency, performance and safety challenges that must be met in order to design vehicles that can operate in the NextGen. (<http://www.aeronautics.nasa.gov>)
- The Science Mission Directorate (SMD) leads the Agency in four areas of research: Earth Science, Heliophysics, Planetary Science, and Astrophysics. SMD works closely with the broader scientific community, considers national initiatives, and uses the results of National Research Council studies to define a set of "Big Questions" in each of these four research areas. These questions, in turn, fuel mission priorities and the SMD research agenda. The SMD also sponsors research that both enables, and is enabled by, NASA's exploration activities. SMD has a portfolio of Education and Public Outreach projects that are connected to its research efforts. (<http://nasascience.nasa.gov>)
- 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. 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 Sciences Research & Applications. (<http://www.nasa.gov/directorates/heo/home/index.html>)
- The Office of the Chief Technologist (OCT) serves as the NASA Administrator's principal advisor and advocate on matters concerning agency-wide technology policy and programs. The Office of the Chief Technologist (OCT) is responsible for direct management of NASA's Space Technology programs and for coordination and tracking of all technology investments across the agency. The office also serves as the NASA technology point of entry and contact with other government agencies, academia and the commercial aerospace community. The office is responsible for developing and executing innovative technology partnerships, technology transfer and commercial activities and the development of collaboration models for NASA. (http://www.nasa.gov/offices/oct/about_us/index.html)

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

APPENDIX B: NASA Education Strategic Coordination Framework

The Mission of NASA, as stated in the NASA 2014 Strategic Plan stresses education: *“Drive advances in science, technology, aeronautics, and space exploration to enhance knowledge, education, innovation, economic vitality, and stewardship of Earth.”* NASA contributes to national efforts for achieving excellence in STEM education through a comprehensive education portfolio implemented by the Office of Education, the Mission Directorates, and the NASA Centers. NASA will continue the Agency’s tradition of investing in the Nation’s education programs and supporting the country’s educators who play a key role in preparing, inspiring, exciting, encouraging, and nurturing the young minds of today that will manage and lead the Nation’s laboratories and research centers of tomorrow.

http://www.nasa.gov/sites/default/files/files/FY2014_NASA_SP_508c.pdf

NASA Education Areas of Emphasis that relate to this call for proposals:

- 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; the incorporation of real-life problem solving and needs as context for activities.
- Engage middle school teachers in hands-on curriculum enhancement capabilities through exposure to NASA scientific and technical expertise. Capabilities for teachers to provide authentic, hands-on middle school student experiences in science and engineering disciplines.
- Summer opportunities for secondary students on college campuses with the objective of increased enrollment in STEM disciplines or interest in STEM careers.
- Diversity of institutions, faculty, and student participation.

APPENDIX C: NC SPACE GRANT STRATEGIC PLAN, 2015-2018

The NC Space Grant 2015-2018 Strategic Plan is available online:

http://ncspacegrant.org/uploads/images/images/about%20us/2015-2018_Mission%20and%20Strategic%20Plan.pdf

**APPENDIX D: New Investigator Program – Proposed budget for Grant Year 2018
(July 1, 2018 – March 30, 2019)**

Institution: _____

PI: _____

AWARD AMOUNT: \$_____ ; COST SHARE COMMITMENT: \$_____

(The award amount and cost-share commitment should match what is reported below)

| Budget Category | NASA Funding | Cost-Share | TOTAL |
|--------------------------|---------------------|-------------------|-----------------|
| Salaries | \$ _____ | \$ _____ | \$ _____ |
| Travel | \$ _____ | \$ _____ | \$ _____ |
| Supplies | \$ _____ | \$ _____ | \$ _____ |
| Services | \$ _____ | \$ _____ | \$ _____ |
| Equipment** | \$ _____XXX_____ | \$ _____ | \$ _____ |
| Student Salaries/Stipend | \$ _____ | \$ _____ | \$ _____ |
| Other (Explain) | \$ _____ | \$ _____ | \$ _____ |
| Indirect Costs* | \$ _____XXX_____ | \$ _____ | \$ _____ |
| TOTALS: | \$ _____ | \$ _____ | \$ _____ |

**Indirect costs are not allowed. Unrecovered facilities and administrative costs may be used for required cost-matching.*

*** NASA training grant funds cannot be used to purchase equipment.*

Budget Narrative: (please attach on a separate sheet)