

**NASA SPACE TECHNOLOGY RESEARCH FELLOWSHIPS (NSTRF) -
Fall 2011 Fellowship Start**

Call for proposals.....	December 29, 2010
Proposals due.....	February 23, 2011 at 11:59 PM ET
Announcement of new fellowships.....	May 18, 2011 (target)
Fellowship acceptance deadline.....	May 27, 2011 (target)
Start date of fellowships.....	August 1, 2011 (target)

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1. Introduction

NASA's Office of the Chief Technologist (OCT) seeks to sponsor U.S. citizen and permanent resident graduate student researchers who show significant potential to contribute to NASA's strategic goals and missions.

This call for graduate fellowship proposals, entitled *NASA Space Technology Research Fellowships (NSTRF) – Fall 2011 Fellowship Start*, solicits applications from accredited U.S. Universities on behalf of individuals pursuing or planning to pursue Master's (e.g., M.S.) or Doctoral (e.g., Ph.D.) degrees in relevant space technology disciplines at their respective institutions. This call is open to students pursuing advanced degrees in Science, Technology, Engineering and Mathematics (STEM). The goal of NSTRF is to provide the nation with a pipeline of highly skilled engineers and technologists to improve America's technological competitiveness. NASA Space Technology Fellows will perform innovative space technology research while building the skills necessary to become future technological leaders.

Selected candidates will perform graduate student research both on their respective campuses and at NASA Centers and, in the future, also at nonprofit U.S. Research and Development (R&D) laboratories. Subsequent calls will provide a list of all labs with which NASA has negotiated agreements. In addition to his or her academic advisor, each student will be matched with a technically relevant and community engaged researcher who will serve as the student's professional mentor. Through this experience, students will advance their STEM education, gain relevant research experience, and learn the research process.

Awards resulting from this competitive selection will be made in the form of training grants to the respective universities. If the student is planning to embark on a new degree program (e.g., M.S. or Ph.D.) at an academic institution different from his/her current academic institution, he/she is encouraged to work with faculty at the prospective university, or universities, in assembling and submitting packages to this fellowship call.

The financial and programmatic support for NSTRF will come from the NASA Office of the Chief Technologist. NSTRF has its basis with the Graduate Student Research Program in the Office of Education and will continue NASA's rich history of supporting students via the Office of Education and the Mission Directorates. Awards are planned to coincide with the start of the 2011 academic year and are subject to the availability of appropriated funds.

2. Background: Office of the Chief Technologist and Space Technology Overview

NASA has renewed its commitment to technology and innovation, balancing its three long-standing core competencies of research and technology, spaceflight hardware development, and mission operations. Via the Office of the Chief Technologist, many positive outcomes are likely from a long-term NASA advanced concepts and broad technology development program with mission-focused, crosscutting, game-changing and early-stage innovation components. These include a more vital and productive aeronautics and space future; a means to focus NASA intellectual capital on significant national needs; a spark to a technology-based economy, an international symbol of our country's scientific and technological leadership; and motivation for many of the country's best young minds to pursue educational programs and careers in engineering and science.

Our nation's economic competitiveness and high standard of living are based on decades of investment in innovation. A focus on innovation and technology is required both to enable new approaches to NASA's current missions and to allow the Agency to pursue entirely new missions. Innovative research and technology, tied to exciting missions with national importance, is a strong motivator for students to pursue STEM disciplines, and a strong attraction for new hires.

NASA's Space Technology efforts will be managed by OCT and will be grouped under three major divisions and an agency partnership development and strategic integration function. The three major divisions will be Early Stage Innovation, Game Changing Technology and Crosscutting Capability Demonstrations. The Early Stage Innovation Division will serve as the host for the NASA Space Technology Research Fellowships. Within the Early Stage Innovation Division, innovative projects with high risk/high payoff will be sought. The overall portfolio will feature projects that address forward-reaching concepts, ideas or technology development efforts that create new opportunities or new capabilities critical to NASA's and the nation's needs. The fellowship program will, thereby, be coupled to a larger national research and development effort in science and technology that will lead to new products and services, new business and industries, and high-quality, sustainable jobs.

Material further describing NASA's Office of the Chief Technologist and Space Technology are available at <http://www.nasa.gov/offices/oct/>.

3. Space Technology Areas of Support

OCT's Space Technology efforts are consistent with NASA's Mission:

Drive advances in science, technology, and exploration to enhance knowledge, education, innovation, economic vitality, and stewardship of the Earth.

More specifically, NASA's Space Technology efforts can be defined as the orderly pursuit of the following NASA strategic goal and its associated outcomes.

Goal: Create the innovative new space technologies for our nation's science, exploration and economic future.

Outcomes:

- Sponsor early stage innovation in space technologies in order to improve the future capabilities of NASA, other government agencies, and the aerospace industry.
- Develop and demonstrate the critical technologies that will make NASA's exploration, science, and discovery missions more affordable and more capable.
- Infuse game-changing and cross-cutting technologies throughout the nation's space enterprise, to transform the nation's space mission capabilities.
- Facilitate the transfer of NASA technology and engage in partnerships with other government Agencies, industry, and international entities to generate U.S. commercial activity and other public benefits.

All applications to NSTRF must address the strategic goal stated above. The Educational Research Area of Inquiry and Goals (see Section 10 - Application Procedures - for more information on the Educational Research Area of Inquiry and Goals) should tie the student's educational objectives to this goal.

OCT is interested in attracting outstanding young researchers and technologists that are committed to developing disruptive technologies for the aerospace sector and to being part of NASA's technological future by working on high-priority technologies to sustainably explore space

<http://www.nasa.gov/offices/oct/strategic_integration/technology_roadmap.html> ,

and who are interested in pursuing NASA's Grand Challenges

<http://www.nasa.gov/offices/oct/strategic_integration/grand_challenges_detail.html>.

The technology areas described in the first link above are summarized in the TABS_NSTRF_FY11.pdf file under "Other Documents" on the NSPIRES webpage associated with the NSTRF11 solicitation. Upon submission, each applicant will be asked to identify the Technology Area Breakdown Structure (TABS) element(s) most closely associated with the proposed NSTRF Educational Research Area of Inquiry and Goals. Identification of at least **one** TABS element is required; identification of up to two

additional elements is permitted since some technology sub-elements address multiple major technology areas. The applicant has flexibility in selecting the level of the technology area breakdown structure (first, second or third).

The student shall be responsible for defining the proposed NSTRF Educational Research Area of Inquiry and Goals, with input or supervision from his or her current or prospective faculty advisor, as appropriate. In cases when the current/prospective advisor already has an ongoing research award from NASA, it is permissible for the Educational Research Area of Inquiry and Goals proposed under NSTRF to address a similar research problem; however, the submission should clearly specify how the proposed effort goes beyond that which NASA has already agreed to support.

It should be noted that NSTRF is specifically aimed at **space technology** and is intended to complement existing science and aeronautics fellowship/scholarship opportunities.

4. Terms and Conditions

NSTRF awards are made initially for one year and may be renewed for no more than one additional year for a Master’s degree and no more than three additional years for a Doctoral degree, contingent upon satisfactory progress (as reflected in academic performance, research progress, recommendation by the faculty advisor and recommendation by the NASA Center or nonprofit R&D lab mentor) and the availability of funds. The four-year period is the maximum length a student may receive support from NSTRF.

Fellowships are awarded as training grants. The maximum amount of an NSTRF award is \$60,000 per year for a Master’s candidate and \$66,000 per year for a Doctoral candidate. Not-to-exceed values in each category are provided in the table below. Not all awards will require the maximum amount per year. Students are encouraged to work with their advisor and university Office of Sponsored Research (or similar functional office at the university) to determine the appropriate allocation in each budget category. Final budgets will be established during the training grant negotiation process.

Table 1

Category	Maximum value – Master’s candidate	Maximum value – Doctoral candidate
Student Stipend	\$30,000	\$36,000
Faculty Advisor Allowance	\$9,000	\$9,000
On-site NASA Center/R&D lab experience Allowance	\$10,000	\$10,000

Health Insurance Allowance	\$1,000	\$1,000
Tuition and Fees Allowance	\$10,000	\$10,000
TOTAL	\$60,000	\$66,000

In addition to a student's 12-month stipend, the amount of the award is to include allowances for the faculty advisor (the faculty advisor allowance includes student travel support as described below); relocation, travel and living expenses associated with the on-site NASA Center/R&D lab experience; health insurance and tuition remission.

As outlined in Table 1, the fellowship may be used to defray a student's **stipend**. Stipends are for 12-month tenure and should be prorated monthly for shorter periods. The **faculty advisor allowance** is to be used to directly enhance the student's training experience but may not be used to supplement the student stipend; faculty advisor time and travel in direct support of the student is permitted. The allowance may be used to cover fellowship student travel to technical and scientific meetings; it is *expected* that the fellowship student will attend at least one technical conference for presentation of the work being conducted under the fellowship. Other permissible charges in this category include lab books, expendable laboratory supplies, page charges for journal articles, printing of a thesis and similar charges. The **on-site center/lab experience allowance** may be used for relocation, living expenses and for student travel in direct preparation for the experience only. A **health insurance allowance** not to exceed \$1,000/year has been included to assist with this expense, *if needed*. The **tuition and fees allowance** provides up to \$10,000 per year to offset the fellowship student's tuition and fees.

The NSTRF budget should include itemization of the anticipated use of the grant funding; the budget must be provided as part of the 2011 NSTRF Program Specific Data (items 28 through 37), a required element of the fellowship application submission via NSPIRES. Equipment, including computers, may NOT be purchased with NSTRF funds. Government furnished equipment will not be provided.

The training grant supports graduate education and does not provide university overhead.

Requirements for Access to NASA Facilities and Information:

Section 1260.35, Investigative Requirements, of the NASA Grants and Cooperative Agreement Handbook, hereafter referred to as the *Grants Handbook*, available at http://prod.nais.nasa.gov/pub/pub_library/grcover.htm, requires in part that Recipients needing access to a NASA Center, facility, or computer system, or to NASA technical information shall provide the personal background and biographical information requested by NASA. In addition, Grant Recipients shall comply with the requirements of

GIC 06-02 and its attached "PIV Card Issuance Procedures." GIC 06-02 may be found at the following URL: http://prod.nais.nasa.gov/pub/pub_library/grantnotices/gic.html.

5. Eligibility

This call for graduate fellowship proposals, entitled *NASA Space Technology Research Fellowships (NSTRF) – Fall 2011 Fellowship Start*, solicits applications from accredited U.S. Universities on behalf of individuals pursuing Master's or Doctoral degrees relevant to space technology. This call is open to students seeking to pursue advanced STEM degrees. U.S. citizen or permanent resident students that have applied to, have been admitted to, or are already enrolled in, a full-time Master's or Doctoral degree program at accredited U.S. universities are eligible to apply, provided they have completed no more than twelve months of full-time graduate study in pursuit of the degree that would be supported by the fellowship. Students are also encouraged to apply in their senior year prior to receiving their baccalaureate degree. Students planning to move to a new educational institution for their advanced degree are encouraged to work with faculty members at prospective universities of their choice. Each selected student must be enrolled as a full-time Master's or Doctoral student at the proposing U.S. university for the fall 2011 Term.

At most three accredited U.S. universities may submit an application on behalf of a student. The proposal title, Educational Research Area of Inquiry and Goals, transcripts, GRE scores, student Curriculum Vitae, and the majority of the letters of recommendation must be identical in all applications submitted on behalf of a particular student. The training grant will be awarded to the university selected by the student for the pursuit of his/her graduate studies.

An individual accepting this award may not concurrently receive any other Federal fellowship or traineeship. If the annual cost on campus is more than the amount of the NASA fellowship, the NSTRF may be partially supplemented by other forms of employment other than by another Federal fellowship or traineeship. However, on a case-by-case basis, NASA may allow an applicant to receive supplements from other U.S. Federal agencies to cover expenses not covered by the NASA fellowship.

The NSTRF call is open to applicants who are **citizens, nationals or permanent resident aliens of the United States**. The term "nationals" refers to native residents of a possession of the United States such as American Samoa. Students with disabilities and/or from underrepresented minority groups are urged to apply. No applicant shall be denied consideration or appointment as a NASA Space Technology Research Fellow on the grounds of race, creed, color, national origin, age, or sex.

6. Reporting Requirements and Intellectual Property

In addition to the grants reporting requirements that will be specified by the official training grant sent to the student's host university upon issuance of the award (see sections 1260.22 and 1260.75 of the *Grants Handbook*), the NSTRF award will require the submission of a detailed research training plan at the conclusion of the first academic term (semester or quarter) of the award. The research training plan will be based on the proposal and will more specifically tie the student's research being performed on campus, as part of his/her degree program, with the research to be conducted at the NASA Center or R&D lab. These plans will be made available to the Space Technology fellowship community in order to foster an awareness of the variety of activities that are being sponsored within each technology area and to encourage discussion, both virtual and in-person, between all students, faculty advisors and professional mentors. Additionally, one of NASA's missions is to provide for the widest practicable and appropriate dissemination of information concerning its activities and the results thereof. Therefore, it is NASA's intent that all knowledge developed under this solicitation be shared broadly through publication of the results of the student's research.

In accordance with 35 U.S.C. 212, no scholarship, fellowship, training grant, or other funding agreement made by a Federal agency primarily to an awardee for educational purposes will contain any provision giving the Federal agency any rights to inventions made by the awardee.

7. Obligation to the Government

A student receiving support under the described NSTRF activity does not thereby incur any formal obligation to the Government of the United States. However, the objectives of the fellowship will clearly be best served if the student actively pursues a career in a space technology-related field after completion of graduate studies.

8. Disposition of Unused Funds

In the event a student ceases to participate in the program for any reason, the university, with prior NASA approval, may appoint another student to complete the remaining portion of the current grant year only, provided the area of research remains the same. Beyond the current grant year, the substitute recipient must submit a complete application to NASA to be evaluated with other new applicants in the next announcement cycle in the following year. If the student seeks to change faculty advisors at the same academic institution, the training grant can be transferred to a new faculty advisor with prior NASA written approval.

9. Proposal Evaluation and Selection

All eligible fellowship applications will undergo a technical review by experts; electronic and/or panel reviews will be employed. Criteria for evaluation include: (a) merit of the Applicant's Proposed Educational Research Area of Inquiry and Goals; (b) the relevance of the proposed research to NASA's Space Technology goal and associated outcomes as outlined in Section 3 above; and (c) academic excellence based upon an applicant's transcripts, GRE scores, four signed letters of recommendation by the student's proposed academic advisor and other faculty members or professionals with detailed knowledge of the student's abilities, and a curriculum vitae that describes relevant work experience, publications and honors and awards.

The merit assessment of the applicant's Educational Research Area of Inquiry and Goals will consider the following factors:

- candidate's potential in terms of scientific curiosity, creativity, acumen, and success in research appropriate to his/her educational level, as indicated in their planned course of study
- research area description, knowledge of relevant research literature and relevance to the strategic goal stated in Section 3
- technical merit as appropriate to the candidate's educational level
- organizational, analytical, and written skills

Subsequent to the technical review, candidates deemed excellent will be submitted to the Office of the Chief Technologist at NASA Headquarters for final consideration and selection.

10. Application Procedures

The student shall be the principal author of the Educational Research Area of Inquiry and Goals, with minimal assistance from the current/prospective faculty advisor. By submitting the application for consideration, the student and faculty advisor certify that the student was the principal author of the application.

All applications must be submitted in electronic format only. **NO MAIL-IN MATERIALS WILL BE ACCEPTED.** Detailed instructions for submitting electronic proposals are located at <http://nspires.nasaprs.com> - click on "Solicitations," then click on "Open Solicitations," then select the **NASA Space Technology Research Fellowships/ 2011** announcement (solicitation NSTRF11), and then select "NSTRF11 Proposal Submission Instructions" under "Other Documents."

Applications must include:

1. NSPIRES generated proposal cover page to be completed online, which includes a proposal summary/abstract and responses to the NSTRF program-specific data questions;
2. A description of the applicant's Educational Research Area of Inquiry and Goals, including references or bibliography, and figures and tables, as appropriate, totaling no more than **5 pages** single-spaced pages (using 12-point font with at least 1-inch margins on all sides).

The Educational Research Area of Inquiry and Goals description should provide a summary of the applicant's educational program objectives. This statement should describe the kinds of research in which the applicant would like to be engaged during his/her graduate study including specific research questions of interest to the applicant. These research interests should be discussed in sufficient detail for an expert who is technically competent in the appropriate technology area to judge the applicant's understanding of the questions to be addressed. Appropriate detail includes relevant hypotheses and approaches one might take to answering the questions, benefits of the proposed research and other research principles required to investigate the identified research area.

The Educational Research Area of Inquiry and Goals description should be reflective of the applicant's ability to think independently and creatively, as well as his/her ability to write about research or study plans accurately, thoughtfully, and concisely. The written response should include all relevant information pertaining to the stated goals. Finally, the description should discuss how the NASA or research lab internship would contribute to the applicant's educational goals. A mentor at a NASA Center or R&D lab will be identified during the selection and grant negotiation process, but the applicant may indicate a Center preference (based on research interests, and with contact information if available/desired) in this section. At this time, NASA is seeking to enter into agreements with the nation's nonprofit R&D labs regarding the hosting of NASA Space Technology Research Fellows. Subsequent calls will provide a list of all labs with which NASA has negotiated agreements.

3. A schedule stating the proposed start and completion dates and anticipated milestones of the applicant's degree program (there is no standard format);
4. Curriculum Vitae of the faculty advisor and student, limited to one page each;

5. Statement from faculty advisor (one page or less) on planned use of faculty advisor allowance. Ongoing or pending research awards from NASA that are related to the student's Educational Research Area of Inquiry and Goals should be briefly described in this section;
6. Four signed letters of recommendation from the student's proposed academic advisor and from other faculty members or professionals with detailed knowledge of the student's abilities. Letters must be on institutional letterhead and must include the name of the student and the NSTRF proposal title;
7. Legible and clearly unaltered undergraduate and graduate transcripts (provide an explanation if the transcripts are not current or recent); and
8. Legible and clearly unaltered GRE general test scores (provide an explanation if the GRE scores are not recent or current). If GRE scores were not required for graduate school admission and are therefore unavailable, please indicate this in your application.

Please Note: All required proposal elements which are not part of the NSPIRES cover page form must be combined into as a single .pdf document and uploaded on the NSPIRES site for submission.

The general conditions described in the NASA Federal Acquisition Regulation Supplement Part 1852.235-72 (See Appendix B at <http://www.hq.nasa.gov/office/procurement/nraguidebook/proposer2010.pdf>: Guidebook for Proposers Responding to NASA Research Announcements, January 2010) are applicable, except the special instructions provided herein pertaining to NSTRF (e.g., NSTRF evaluation criterion, page limit for description of the proposed research, maximum award amount, NSTRF application form, supporting documents, etc.).

Submission Deadline: 11:59 p.m. ET, February 23, 2011

11. Announcement of Selections

The planned timing to announce the fellowship awards is May 18, 2011, with a planned fellowship start date of August 1, 2011. Notification letters will be sent via e-mail to the student and faculty advisor at the appropriate addresses entered in NSPIRES. Selections will also be posted at <http://nspires.nasaprs.com>.

12. Inquiries

Inquiries regarding this call should be submitted via e-mail to hq-nstrf-call@mail.nasa.gov. An NSTRF11 Frequently Asked Questions (FAQ) document will be generated and maintained on NSPIRES (under “Other Documents”).

For further information about the NASA Space Technology Research Fellowships in general, please contact the NASA Space Technology Research Fellowships Point of Contact, Claudia Meyer, by e-mail at claudia.m.meyer@nasa.gov.

For assistance with NSPIRES, you may contact the NSPIRES Help Desk at (202) 479-9376 or nspires-help@nasaprs.com. The Help Desk is staffed from 8:00 AM to 6:00 PM EDT/EST.

Privacy Act Statement

General

Pursuant to Public Law 93-579, Privacy Act of 1974, as amended (5 U.S.C. 552a), the following information is being provided to persons who are asked to provide information to obtain a NASA Space Technology Research Fellowship.

Authority

This information is collected under the authority of the National Aeronautics and Space Act. Publication 85-568, as amended, 42 U.S.C. 2451, et. seq.

Purpose and Uses

The information requested as part of the submission process will be used to determine your eligibility for participation in NSTRF. The information requested regarding your disability status and race/ethnicity will be used to determine the degree to which members of each ethnic/racial/disability group are being reached by NASA's announcement of this opportunity, and will not affect your application. Additionally, NASA may disclose this information to other organizations or individuals having relationships with NASA, including but not limited to academic organizations, nonprofit organizations, and other governmental agencies, as well as Congressional offices in response to an inquiry made on your behalf. Disclosure may also be made to concerned parties in the course of litigation, to law enforcement agencies, and to other Federal agencies in exchanging information pertinent to an agency decision.

Effects of Nondisclosure

Furnishing the information requested is voluntary, but failure to do so may result in NASA's inability to determine eligibility for participation and selection for award. However, your application will not be affected if you choose not to provide information on your ethnic, racial, or disability status.

Definitions for Applicant Background

- American Native or Alaskan American: A Person having origins in any of the original peoples of North America and who maintains cultural identification through tribal affiliation or community recognition.
- Hispanic or Latino: A person of Mexican, Puerto Rican, Cuban, or South American or other Spanish culture or origin, regardless of race.
- Asian: A person having origins in any of the original peoples of East Asia, Southeast Asia or the Indian subcontinent. This area includes, for example, China, India, Indonesia, Japan, Korea and Vietnam.

- Pacific Islander/Native Hawaiian: A person having origins in any of the original peoples of Hawaii; the U.S. Pacific territories of Guam, American Samoa, and the Northern Marianas; the U.S. Trust Territory of Palau; the islands of Micronesia and Melanesia; or the Philippines.
- African American, not of Hispanic origin: A person having origins in any of the black racial groups of Africa.
- White, not of Hispanic Origin: A person having origins in any of the original peoples of Europe, North Africa, or the Middle East.
- Individuals with Disabilities: An individual having a physical or mental impairment that substantially limits one or more major life activities; who has a record of such impairment; or who is regarded as having such impairment.