

**This Proposal Packet is a tool to guide UNF Principal Investigators (PIs)
through the proposal development process for
Research In Undergraduate Institutions projects**

Definitions

A RUI proposal is a mechanism available to Primarily Undergraduate Institutions. RUI stands for **Research In Undergraduate Institutions**. All NSF directorates participate in the RUI program and UNF should always submit RUI proposals unless the Program Solicitation states that the RUI mechanism may not be used. The RUI Web site is http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=5518&from=fund.

The Office of Research & Sponsored Programs (ORSP) can also provide Proposal Packets for solicited proposals such as the CAREER, CCLI, or MRI programs.

Purpose

The following packet contains guidelines and tips from ORSP for submitting an unsolicited proposal to the National Science Foundation and information to walk you through the steps required for development and submission of an NSF proposal.

The information contained in this guide will enable you utilize ORSP services, develop a timeline for submission and ensure all appropriate documents and processes are completed prior to the submission deadline. It includes general guidelines for submitting proposals to the agency as extracted, and in places directly quoted, from *NSF Grant Proposal Guide*.

The full text of the *NSF Grant Proposal Guide* is available online at http://www.nsf.gov/pubs/gpg/nsf04_23/.

Components of the Proposal Packet

Section I provides an overview of the proposal development process.

Use this as a planning guide, paying attention to the suggested timeline and whether the PI, ORSP, or both are responsible for preparing the specific proposal sections.

Section II contains detailed information and guidelines on writing the proposal.

Write the proposal with this at your side to guide you through the section of the proposal.

Appendix A goes into more detail on the critical merit review criteria: broader impacts.

Appendix B is a template for a NSF formatted Biographical Sketch.

Contact ORSP at any time for assistance!
Office of Research & Sponsored Programs
Building 3, Room 2501
620-2455

SECTION I: PROPOSAL DEVELOPMENT OVERVIEW

<u>Steps</u>	<u>Suggested Timeline</u>	<u>Target Date</u>	<u>Done</u>
1. Inform ORSP of your intent to submit a proposal. Meet with ORSP to review required content, roles and responsibilities and a timeline for completing requirements by the submission deadline.	As soon as you decide to submit a proposal		<input type="checkbox"/>
2. Contact the Program Officer to discuss your proposed project to ensure it is appropriate for the funding mechanism and NSF Directorate	3-4 months before deadline		<input type="checkbox"/>
3. Develop the Proposal Contents and complete the required forms – see table below .	Begin after meeting with ORSP and complete at least two weeks prior to deadline.		<input type="checkbox"/>
4. Secure Internal Approvals via the Signature Routing Sheet. Obtain approval from EH&S if necessary. Provide to ORSP.	At least one week before deadline		<input type="checkbox"/>
5. Upload and submit proposal	Before the deadline		<input type="checkbox"/>
<i>Breathe a Sigh of Relief, Congratulate Yourself, and Keep in Touch with ORSP</i>			

<u>Proposal Component/Form</u>	<u>Info provided by</u>	<u>Done</u>
Information about PIs and Co-PIs	PI	<input type="checkbox"/>
Suggested Reviewers or Reviewers Not to Include	PI	<input type="checkbox"/>
Proprietary or Privileged Information	PI	<input type="checkbox"/>
Proposal Certifications	ORSP	<input type="checkbox"/>
Proposal Cover Page	ORSP	<input type="checkbox"/>
Project Summary	PI	<input type="checkbox"/>
Table of Contents	ORSP	<input type="checkbox"/>
Project Description	PI	<input type="checkbox"/>
Biographical Sketches	PI / ORSP	<input type="checkbox"/>
Budget	ORSP	<input type="checkbox"/>
Budget Justification	PI / ORSP	<input type="checkbox"/>
Current and Pending Support	PI / ORSP	<input type="checkbox"/>
Facilities, Equipment, and Other Resources	PI	<input type="checkbox"/>
Special Information & Supplementary Documentation	Varies	<input type="checkbox"/>
RUI Impact Statement	PI / ORSP	<input type="checkbox"/>

STEP 1:

Contact ORSP. ORSP views proposal submission as a collaboration between the PI and ORSP. Use ORSP's resources to assist you in submitting a fundable proposal that UNF can endorse and to register you in NSF's proposal submission portal (NSF FastLane).

If needed, ORSP can advise you on the appropriate NSF Program Officer to contact and provide information to guide your discussion.



Note: If you are working with any third parties such as collaborators/consultants or co-investigators at other institutions, let ORSP know so we can ensure the appropriate commitments from the other institutions or individuals are on hand prior to proposal submission.

STEP 2:

Contact the NSF Program Officer. Program Officers can offer valuable advice prior to proposal submission regarding the project concept. They can also ensure that the proposed work is responsive to the program announcement/solicitation, the proposed work is appropriate for funding by NSF, and UNF is submitting the proposal to that appropriate area (Directorate) at NSF.

STEP 3:

Develop the proposal working with ORSP. See Section II for specific instructions for completing the required proposal sections and forms.

Development of a fundable proposal is a labor-intensive process that requires the completion of several components; as the PI, you are responsible for not only writing the technical portion of the proposal, but also for collaborating with ORSP to submit a high-quality, complete proposal prior to the NSF deadline.

While the PI may be indicated as the party responsible for providing information in the table on the previous page, ORSP is available to assist and provide guidance with any aspect of proposal development. The services ORSP can provide are limited only by the amount of time remaining prior to the deadline and the number of proposals currently being developed by ORSP.



Note: The earlier ORSP is involved, the more assistance we can provide.

STEP 4:

Obtain institutional approvals. As soon as all required information is gathered and the budget is finalized, ORSP will provide you with a signature routing sheet.

- Complete the checkboxes and obtain signatures prior to the proposal submission. This form indicates that the necessary internal approvals have been obtained regarding dedicating your effort to the project, available space and resources, department or college cost-sharing, and that the project is within the mission of your area.
- Compliance approvals for the IRB, IACUC, or the IBC do not have to be secured in order to submit a proposal; however, if your proposal utilizes hazardous or radioactive materials or chemicals, potentially infectious materials, radiation-producing machines, lasers, controlled substances, or generates chemical waste, it must be reviewed by the Environmental Health and Safety Office **prior to** submission.
- Proposals submitted without all required approvals or without adequate time for review may be withdrawn after submission.

STEP 5:

Submit the proposal. NSF proposals are submitted via FastLane or Grants.gov. The authorized institutional official (ORSP) uploads all files and submits the proposal.



Note: Provide all of your documents to ORSP in either Word or Excel format.

SECTION II: DETAILED PROPOSAL PREPARATION GUIDELINES AND REQUIREMENTS



Note: Items underlined and bolded are the sections required for an NSF proposal.

Before you begin writing:

- **Review the RUI Guidelines on Page 10 prior to beginning to write**
- Set the page margins to 1 inch
- Set the font type to Arial, Times New Roman, or Helvetica
- Set the font size to 11 point
- Use single spacing
- Do not use high-resolution graphics
- Write in the third person using an active voice
- Do not use jargon or include URLs

ORSP will double-check that these guidelines have been adhered to and will number the proposal pages. If you prefer to upload your own documents, please contact ORSP for information on the NSF required format for page numbering.



Tip: Write the Project Description first, then the Project Summary, and then decide on a descriptive title for the project.

Information About PIs and Co-PIs

If you wish to provide information on the gender, race, ethnicity and disability status, you must complete these fields in your FastLane user account. Otherwise, be sure the box is checked within your FastLane user account that you do not wish to provide this information. ORSP can do this on your behalf if you notify us to make a change.

This information is voluntary and does not affect NSF's review of the proposal.

List of Suggested Reviewers or Reviewers Not to Include (optional)

You may include a list of suggested reviewers who you believe are especially well qualified to review the proposal. You also may designate persons you would prefer not review the proposal, but the reason (e.g. potential conflict of interest) must be indicated. NSF may contact these individuals for more information and the NSF Program Officer will consider your request.

Proprietary or Privileged Information

Alert ORSP if your proposal contains patentable ideas, trade secrets, privileged or confidential commercial or financial information.

This type of information 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. ORSP will work closely with you on this aspect of the proposal.

Proposal Certifications

ORSP provides required certifications on behalf of UNF when a proposal is submitted.



Note: Please indicate on the Signature Routing Sheet that ORSP will provide if you or any key personnel have a potential conflict of interest. ORSP will work with the individual to determine an appropriate management plan should the need arise.

Proposal Cover Page

ORSP will complete the Cover Page with institutional information and based on discussions with you during the proposal development.

Project Summary

The PI should write a summary of the proposed activity that is suitable for publication. **Do not exceed 1 page.** This section should be informative to other persons working in the same or related fields and understandable to a technically literate lay reader

- Write a self-contained description of the activity that would result if the proposal were funded - this should not be an abstract of the proposal
- Include a statement of objectives and methods to be employed
- **Merit Review Criteria:** clearly address in separate statements (1) the **intellectual merit** of the proposed activity; and (2) the **broader impacts** resulting from the proposed activity using easy to spot headings.



Note: The intellectual merit and the broader impact statements should be written with extra care; **NSF returns proposals without review** if they do not address intellectual merit or broader impacts.

- **Intellectual merit:**

- How important is the proposed activity to advancing knowledge and understanding within its own field or across different fields?
- How well qualified are you or the team of investigators to conduct the project?
- To what extent does the proposed activity suggest and explore creative and original concepts?
- How well conceived and organized is the proposed activity?
- Is there sufficient access to resources?

- **Broader impacts:** If you are already undertaking similar kinds of activities as those you are proposing, carefully consider how to link these examples to the research and education projects you are proposing. Consider what types of activities best suit your interests, while enhancing the broader impacts of the project being proposed.

- How well does the proposed activity advance discovery and understanding while promoting teaching, training, and learning?
- How well does the proposed activity broaden the participation of underrepresented groups (e.g. gender, ethnicity, disability, geographic, etc)?
- To what extent will the proposed activity enhance the infrastructure for research and education, such as facilities, instrumentation, networks, and partnerships?
- Will the results be disseminated broadly to enhance scientific and technological understanding?
- What may be the benefits of the proposed activity to society?



Tip: [Appendix A](#) contains more detailed information on broader impacts. Contact ORSP for clarification or assistance in interpreting the guidelines.

ORSP will review this section to

- Ensure that all required information is included
- Ensure that the summary is understandable to a lay person
- Ensure that font, margin, and page limitations are adhered to
- Provide feedback regarding readability, grammar and spelling errors, and use of active third person voice

Table of Contents

This page is automatically generated by FastLane.

Project Description

The PI should write a self-contained project description. **Do not exceed 15 pages.** Visual materials, including charts, graphs, maps, photographs and other pictorial presentations are included in the 15-page limitation.

- Provide a **clear statement of the work** to be undertaken and include
 - Objectives for the period of the proposed work and expected significance
 - Relation to longer-term goals of the project
 - Relation to the present state of knowledge in the field, to your work in progress under other support, and to work in progress elsewhere
- Outline
 - The **general plan of work** including the broad design of activities to be undertaken
 - Where appropriate, provide a **clear description of experimental methods and procedures and plans for preservation, documentation, and sharing of data, samples, physical collections, curriculum materials and other related research and education products**
- Describe as an integral part of the narrative, the **broader impacts** resulting from the proposed activities, addressing one or more of the following as appropriate for the project:
 - How the project will integrate research and education by advancing discovery and understanding while at the same time promoting teaching, training, and learning
 - Ways in which the proposed activity will broaden the participation of underrepresented groups (e.g., gender, ethnicity, disability, geographic, etc.)
 - How the project will enhance the infrastructure for research and/or education, such as facilities, instrumentation, networks, and partnerships
 - How the results of the project will be disseminated broadly to enhance scientific and technological understanding
 - Potential benefits of the proposed activity to society at large
- If applying under the **RUI program** (the majority of proposals from UNF should be submitted as RUI proposals, this mechanism is discussed on page 10), include a description of
 - How student involvement in the research project and in the presentation of research results will be fostered
 - How the research will be integrated with the students' education
 - How the equipment, if requested, will enhance the research
 - Educational uses planned for the instrumentation, if applicable
- **Results from Prior NSF Support:**
 - Using a distinct heading, include information for yourself and for any co-PIs that have received NSF funding in the previous five years. If none of the PI/Co-PIs have had NSF support in the previous five years, so state. Each PI and co-PI who has received *more than one award* (excluding amendments) must report on the award most closely related to the proposal.
 - Results may be summarized in fewer than five pages, which would give the balance of the 15 pages for the Project Description.
 - This section must describe the earlier project, if any, and its outcomes in sufficient detail to allow reviewers to judge the scientific value of the results achieved in the previous NSF-supported project.
 - The following information must be provided:

- The NSF award number, amount and period of support
- The title of the project
- A summary of the results of the completed work, including, for a research project, any contribution to the development of human resources in science and engineering
- Publications resulting from the NSF award
- A brief description of available data, samples, physical collections and other related research products not described elsewhere
- If the proposal is for renewed support, a description of the relation of the completed work to the proposed work

➤ **Unfunded Collaborations:**

- Any substantial collaboration with individuals not included in the budget should be described and documented with a letter from each collaborator.
- Contact ORSP if this applies to your proposal.

➤ **References Cited:**

- Each reference must include the names of all authors (in the same sequence in which they appear in the publication), the article and journal title, book title, volume number, page numbers, and year of publication.
- If the document is available electronically, the Website address also should be identified.
- While there is no established page limitation for the references, this section must include bibliographic citations only and must not be used to provide parenthetical information outside of the 15-page project description.

ORSP will review this section to

- Ensure that all required information is included
- Ensure that font, margin, and page limitations are adhered to
- Provide feedback regarding readability, grammar and spelling errors, active third person voice

Biographical Sketches for Senior Project Personnel

A two-page biographical sketch in the format described in [Appendix B](#) is required for each individual identified as senior project personnel.

Senior project personnel are defined as:

- The PI and Co-PIs: the individual(s) who will be responsible for the scientific or technical direction of the project
- Faculty Members other than the PI/Co-PIs who will participate in the project
 - If not appointed at UNF, work with ORSP to ensure the other institution has provided the appropriate authorized official approval for their participation

ORSP suggests that each senior project personnel provide their biographical sketch to you or ORSP in this format. However, if this cannot be done, ORSP can assist with contacting administrators that may have a NSF-formatted bio-sketch available or with reformatting the bio-sketches/CVs provided (1) adequate time is allowed and (2) the PI is available to give input.

Biographical Sketches for Other Personnel

For students (research assistants), other professionals, and postdoctoral associates, the proposal also may include information on exceptional qualifications that merit consideration in the evaluation of the proposal.

Budget

ORSP will develop the budget based on discussions with the PI. ORSP must be involved in budget development since specific budget items must be consistent with UNF's cost accounting practices and federal guidelines.

Each proposal must contain a budget for each year of support requested. The proposal may request funds for the project so long as the items and amounts are considered necessary and reasonable for the performance of the proposed work.



Note: Do not ask for more funding than is necessary (padding the budget) and do not ask for less funding than is required (cutting the budget or cost sharing). **The work being proposed drives the budget request.**

ORSP is available to research other projects that NSF has awarded to gauge a reasonable amount of funding to request from the specific NSF Directorate to which the proposal will be submitted. The PI may also discuss this with the NSF Program Officers during the initial conversations that precede proposal development.



Note: Do not make any firm commitments or agree to cost sharing/matching when speaking to Program Officers. The discussion regarding budget should be limited to gathering information from NSF, not providing information to NSF.

If NSF indicates that they will not fund proposals over a set amount and your budget is over that set amount, the statement of work should be reduced to what can realistically be done with the funding that will be available.

Budget Justification

Each category for which funds are requested must be justified within 3 pages. The PI and ORSP collaborate to write this section.

Current and Pending Support for Senior Project Personnel

The PI should collect information for senior project personnel (as defined above) on any current awards and pending proposals for any projects funded by any type of external sponsor. Only provide information for projects to which effort is being devoted even if no compensation is received (cost-sharing or devoting time in-kind). Include the project being proposed as well.

Information required:

- Whether the project is current, pending, or planned for submission in the near future
- Project title
- Sponsor name
- The total award amount for the entire award period covered (including indirect costs)
- The total award/performance period covered
- The location of the project
- The number of person-months per year to be devoted to the project by calendar year, academic year, or the summer
 - ORSP can do this calculation if you only have a percentage of effort figure

Additionally, if the project now being submitted has been funded previously by a source other than NSF, the information must be provided for the last period of funding.

Provide this information to ORSP for yourself and senior personnel. ORSP will upload into FastLane. Conversely, you may upload this section into FastLane if preferred and ORSP will review.



Note: ORSP can assist with gathering this information for UNF faculty members and contact research offices at collaborators' institutions if enough time remains prior to the deadline.

Facilities, Equipment, and Other Resources

The PI should complete this section as only those resources that are directly applicable to the project should be described. This section is used for NSF to assess the adequacy of the organizational resources available to perform the effort proposed. There is no page limitation.

- **Facilities:** Identify the facilities to be used at each performance site listed and, as appropriate, indicate their capacities, pertinent capabilities, relative proximity, and extent of availability to the project. Use "Other" to describe the facilities at any other performance sites listed and at sites for field studies. If none, so state.
 - Laboratory
 - Clinical
 - Animal
 - Computer
 - Office
 - Other
- **Major Equipment:** List the most important items available for this project and, as appropriate identifying the location and pertinent capabilities of each.
- **Other Resources:** Provide any information describing the other resources available for the project. Identify support services such as consultant, secretarial, machine shop, and electronics shop, and the extent to which they will be available for the project. Include an explanation of any consortium/contractual arrangements with other organizations.

Special Information and Supplementary Documentation

This section should alert NSF to unusual circumstances that require special handling. The following items may need to be included. This section should not be used to supplement the 15-page Project Description and only the items listed below may be provided.



Note: Please notify ORSP if any of the below are applicable to your project.

- Proprietary or other privileged information in the proposal or matters affecting individual privacy
- Required intergovernmental review under E.O. 12372 (*Intergovernmental Review of Federal Programs*) for activities that directly affect State or local governments
- Possible national security implications
- Rationale for performance of all or part of the project off-campus or away from organizational headquarters
- Documentation of collaborative arrangements of significance to the proposal through letters of commitment
 - If applying under the *RUI program* (discussed next), Signed letters of *commitment* should be included that document the proposed collaborative arrangements of significance to the project. Such letters are relevant when collaborators are not UNF employees or when the project depends on access to facilities or instrumentation at other institutions.
 - Letters of *support/endorsement* from collaborators, consultants, subcontractors are not permitted.
 - This section is also used when a Collaborative Proposal is submitted to NSF. Collaborative proposals are a mechanism by which two or more universities submit simultaneous proposals to NSF from their respective institutions for their portion of the project; the proposals are then linked together at NSF as a unified project. This mechanism is not available to most proposals. ORSP can advise you if this mechanism is available for your proposal.
- Environmental impact statement for activities that have an actual or potential impact on the environment

- Work in foreign countries
 - Some governments require nonresidents to obtain official approval to carry out investigations within their borders and coastal waters under their jurisdiction. PIs are responsible for obtaining the required authorizations and for advising NSF that they have been obtained or requested. Advance coordination should minimize disruption of the research.
- Research in Greenland
- Antarctic proposals to any NSF program require operational worksheets by the first Wednesday of June in the year before any proposed fieldwork
- Research in a location designated, or eligible to be designated, a registered historic place
- Research involving field experiments with genetically engineered organisms
- Documentation regarding research involving the use of human subjects, hazardous materials, vertebrate animals, or endangered species
- Projects that involve technology utilization/transfer activities, that require a management plan, or that involve special reports or final products
- Special components in new proposals or in requests for supplements for
 - *Facilitation Awards for Scientists and Engineers with Disabilities (FASSED)*
 - *Research Opportunity Awards (ROA)*
 - *Research Experiences for Undergraduates (REU)*
 - *Research in Undergraduate Institutions (RUI)*

Research in Undergraduate Institutions (RUI) Impact Statement

The PI and ORSP collaborate to write this section which is **limited to five pages**. ORSP will provide the Institutional Certification of Eligibility.



Note: All NSF directorates participate in the RUI program and UNF should always submit RUI proposals unless the Program Solicitation states that the RUI mechanism may not be used.

Keep NSF's objectives for the RUI program in mind as the proposal is developed: The specific objectives of RUI are to

- 1) Support high-quality research by faculty members of predominantly undergraduate institutions,
- 2) Strengthen the research environment in academic departments that are oriented primarily toward undergraduate instruction,
- 3) Promote the integration of research and education.

RUIs provide an opportunity for integration of the excitement of scientific discovery into undergraduate education. As the ultimate in inquiry-based learning, undergraduate research is a critical component of high-quality education in science, mathematics, engineering, and technology, providing a strong foundation for careers in science and engineering and for graduate study. The involvement of undergraduate students is an important feature of RUI, providing them with research-rich learning environments. While it is expected that research assistants usually will be undergraduate students, support for masters-degree students, full-time technicians or postdoctoral researchers may be appropriate to a particular project. However, the overriding purpose of RUI is the support of faculty research, which maintains faculty members' intellectual vibrancy in the classroom and research community.

- Describe the expected effects of the project on the research and educational environment at UNF
- Provide information that a reviewer will find helpful in assessing the likely impact of the proposed research activity on

- The research environment of the institutions
- The careers of the faculty participants
- The ability of the involved departments to prepare students for entry into advanced-degree programs and/or careers in science and engineering. An enhanced departmental environment may be reflected in direct student training in research and in increased involvement of the faculty in competitive research, which in turn leads to improved student preparation. It may also be reflected in curricular impact and faculty development

➤ Highlight

- The record of the department(s) and institution in educating undergraduates for science and engineering careers
- Plans to attract qualified undergraduate students to the project, including criteria for selection
- Provisions that will increase participation of groups underrepresented in science and engineering
- Any plans for measuring the effect of participation in the project on the participating students both during and after their undergraduate years
- The anticipated contribution of new research tools (instrumentation, databases, etc.) to both educational and research opportunities for students and faculty

➤ The following may also be included

- Factors affecting research productivity such as teaching loads, availability (or lack) of support personnel, nature of experimental and computational facilities, and features of the student population.
- Institutional support for research activity by faculty and students and the anticipated impact of that support on the proposed project

APPENDIX A BROADER IMPACTS

The components of the broader impacts criterion are listed below. The list is followed by short sections on each component that provides background information and representative activities.

Not all of the suggestions may apply to your proposal. Draw from the examples below, but be creative in your approach to demonstrating the broader impacts of the project. NSF reviewers will be asked to address only those considerations that are relevant to the proposal being considered and for which the reviewer is qualified to make judgments.

- **How well does the activity advance discovery and understanding while promoting teaching, training and learning?**
 - *Background:* Integration of research and education is one of "three core strategies that guide NSF in establishing priorities, identifying opportunities, and designing new programs and activities. Effective integration of research and education at all levels infuses learning with the excitement of discovery and assures that the findings and methods of research are quickly and effectively communicated in a broader context and to a larger audience."
 - *Examples of Activities:*
 - Integrate research activities into the teaching of science, math and engineering at all educational levels (e.g., K-12, undergraduate science majors, non-science majors, and graduate students)
 - Include students (e.g., K-12, undergraduate science majors, non-science majors, graduate students) as participants in the proposed activities as appropriate
 - Participate in the recruitment, training, and/or professional development of K-12 science and math teachers
 - Develop research-based educational materials or contribute to databases useful in teaching (e.g., K-16 digital library)
 - Partner with researchers and educators to develop effective means of incorporating research into learning and education
 - Encourage student participation at meetings and activities of professional societies
 - Establish special mentoring programs for high school students, undergraduates, graduate students, and technicians conducting research
 - Involve graduate and post-doctoral researchers in undergraduate teaching activities
 - Develop, adopt, adapt or disseminate effective models and pedagogic approaches to science, mathematics and engineering teaching
- **How well does the proposed activity broaden the participation of underrepresented groups (e.g., gender, ethnicity, disability, geographic, etc.)?**
 - *Background:* One of NSF's five-year strategies is to "broaden participation and enhance diversity in NSF programs. At present, several groups, including underrepresented minorities, women, certain types of academic institutions, and some geographic areas are less than full participants in the science and engineering enterprise. NSF is committed to leading the way to an enterprise that fully captures the strength of America's diversity."
 - *Examples of Activities:*
 - Establish research and education collaborations with students and/or faculty who are members of underrepresented groups
 - Include students from underrepresented groups as participants in the proposed research and education activities
 - Establish research and education collaborations with students and faculty from non-Ph.D.-granting institutions and those serving underrepresented groups
 - Make campus visits and presentations at institutions that serve underrepresented groups

- Establish research and education collaborations with faculty and students at community colleges, colleges for women, undergraduate institutions, and EPSCoR (Experimental Program to Stimulate Competitive Research) institutions
 - Mentor early-career scientists and engineers from underrepresented groups who are submitting NSF proposals
 - Participate in developing new approaches (e.g., use of information technology and connectivity) to engage underserved individuals, groups, and communities in science and engineering
 - Participate in conferences, workshops and field activities where diversity is a priority
- **To what extent will it enhance the infrastructure for research and education, such as facilities, instrumentation, networks and partnerships?**
- *Background:* “The NSF Act of 1950 authorizes and directs NSF to foster and support the development and use of computer and other scientific and engineering methods and technologies, primarily for research and education in the sciences and engineering. NSF investments provide state-of-the-art tools for research and education, such as instrumentation and equipment, multi-user facilities, telescopes, research vessels and aircraft, Internet-based and distributed user facilities, research networks, digital libraries and large databases.”
 - *Examples of Activities:*
 - Identify and establish collaborations between disciplines and institutions, among the U.S. academic institutions, industry and government and with international partners
 - Stimulate and support the development and dissemination of next-generation instrumentation, multi-user facilities, and other shared research and education platforms
 - Maintain, operate and modernize shared research and education infrastructure, including facilities and science and technology centers and engineering research centers
 - Upgrade the computation and computing infrastructure, including advanced computing resources and new types of information tools (e.g., large databases, networks and associated systems, and digital libraries)
 - Develop activities that ensure that multi-user facilities are sites of research and mentoring for large numbers of science and engineering students
- **Will the results be disseminated broadly to enhance scientific and technological understanding?**
- *Background:* “NSF advocates and encourages open scientific communication. NSF expects significant findings from supported research and educational activities to be promptly submitted for publication. It expects PIs to share with other researchers, at no more than incremental cost and within a reasonable time, the data, samples, physical collections and other supporting materials created or gathered in the course of the work. It also encourages grantees to share software and inventions and otherwise to make the innovations ... widely useful and usable.”
 - *Examples of Activities:*
 - Partner with museums, nature centers, science centers, and similar institutions to develop exhibits in science, math, and engineering
 - Involve the public or industry, where possible, in research and education activities
 - Give science and engineering presentations to the broader community (e.g., at museums and libraries, on radio shows, and in other such venues)
 - Make data available in a timely manner by means of databases, digital libraries, or other venues such as CD-ROMs
 - Publish in diverse media (e.g., non-technical literature, websites, CD-ROMs, press kits) to reach broad audiences
 - Present research and education results in formats useful to policy-makers, members of Congress, industry, and broad audiences
 - Participate in multi- and interdisciplinary conferences, workshops, and research activities
 - Integrate research with education activities in order to communicate in a broader context

➤ **What may be the benefits of the proposed activity to society?**

- *Background:* “NSF is committed to fostering connections between discoveries and their use in service to society. The knowledge provided by NSF-funded projects offers a rich foundation for its broad and useful application. For example, projects may contribute to understanding the environment, commercial technology, public policy, health or safety and other aspects of the public welfare.”
- *Examples of Activities:*
 - Demonstrate the linkage between discovery and societal benefit by providing specific examples and explanations regarding the potential application of research and education results
 - Partner with academic scientists, staff at federal agencies and with the private sector on both technological and scientific projects to integrate research into broader programs and activities of national interest
 - Analyze, interpret, and synthesize research and education results in formats understandable and useful for non-scientists
 - Provide information for policy formulation by Federal, State or local agencies.

NSF will give careful consideration to the following in making funding decisions:

Integration of Research and Education: One of the principal strategies in support of NSF's goals is to foster integration of research and education through the programs, projects and activities it supports at academic and research institutions. These institutions provide abundant opportunities where individuals may concurrently assume responsibilities as researchers, educators, and students, and where all can engage in joint efforts that infuse education with the excitement of discovery and enrich research through the diversity of learning perspectives.

Integrating Diversity into NSF Programs, Projects, and Activities: Broadening opportunities and enabling the participation of all citizens, women and men, underrepresented minorities, and persons with disabilities, are essential to the health and vitality of science and engineering. NSF is committed to this principle of diversity and deems it central to the programs, projects, and activities it considers and supports.

**APPENDIX B
BIO-SKETCH TEMPLATE**

PI NAME

University of North Florida
4567 St Johns Bluff Road, South
Jacksonville, FL 32224

Work: (904) 620-____
Fax: (904) 620-____
Email: _____@unf.edu

- a. Professional Preparation** [Instructions: A list of the individual's undergraduate and graduate education and postdoctoral training as formatted next]

University Name	Major/Area	Degree & Year
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- b. Appointments** [Instructions: A list, in reverse chronological order, of all the individual's academic/professional appointments beginning with the current appointment]

Date – Date	University of North Florida Appointment
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- c. Publications** [Instructions: A list of: (1) up to 5 publications most closely related to the proposed project; and (2) up to 5 other significant publications, whether or not related to the proposed project.

For unpublished manuscripts, list only those submitted or accepted for publication (along with most likely date of publication). Patents, copyrights and software systems developed may be substituted for publications. Additional lists of publications, invited lectures, etc., must not be included.

If applying under the *RUI program* (discussed below), faculty members are encouraged to include publications with undergraduate co-authors. Label student names with an asterisk.]

- d. Synergistic Activities** [Instructions: A list of up to five examples that demonstrate the broader impact of the individual's professional and scholarly activities that focuses on the integration and transfer of knowledge as well as its creation.

Examples could include, among others:

- Innovations in teaching and training (e.g., development of curricular materials and pedagogical methods)
- Contributions to the science of learning
- Development and/or refinement of research tools
- Computation methodologies, and algorithms for problem-solving
- Development of databases to support research and education
- Broadening the participation of groups underrepresented in science, mathematics, engineering and technology
- Service to the scientific and engineering community outside of the individual's immediate organization]

- e. Collaborators and Other Affiliations** [Instructions: The information in section (e) above of the biographical sketch is used to help identify potential conflicts or bias in the selection of reviewers. Use the following headings:

- **Collaborators and Co-Editors.** A list of all persons in alphabetical order (including their current organizational affiliations) who are currently, or who have been collaborators or co-authors with the individual on a project, book, article, report, abstract or paper during the 48 months preceding the submission of this proposal. Also include those individuals who are currently or have been co-editors of a journal, compendium, or conference proceedings during the 24 months preceding the submission of the proposal. If there are no collaborators or co-editors to report, this should be so indicated.
- **Graduate and Postdoctoral Advisors.** A list of the names of the individual's own graduate advisor(s) and principal postdoctoral sponsor(s), and their current organizational affiliations.
- **Thesis Advisor and Postgraduate-Scholar Sponsor.** A list of all persons (including their organizational affiliations), with whom the individual has had an association as thesis advisor, or with whom the individual has had an association within the last five years as a postgraduate-scholar sponsor. The total number of graduate students advised and postdoctoral scholars sponsored also must be identified.]