

## BROADER IMPACTS

The National Science Foundation (NSF) revised their Merit Review principles & criteria in early 2013, with a major impact on the Broader Impacts (BI) criterion. The Broader Impacts criterion encompasses the potential to benefit society and contribute to the achievement of specific, desired societal outcomes. This criterion is now judged by the same principles and elements as Intellectual Merit, NSF's other review criterion.

The new Grants Proposal Guide (GPG) adds requirements for assessment/evaluation of broader impacts activities, as well as bringing broader impacts to the forefront of the proposal and reporting process with new formatting requirements.

Excerpted from [http://www.nsf.gov/pubs/policydocs/pappguide/nsf13001/gpg\\_3.jsp](http://www.nsf.gov/pubs/policydocs/pappguide/nsf13001/gpg_3.jsp) - emphasis added:

### Relevant Merit Review Principles:

- NSF projects, in the aggregate, should contribute more broadly to achieving societal goals. These broader impacts may be accomplished through the research itself, through activities that are directly related to specific research projects, or through activities that are supported by, but are complementary to, the project. The project activities may be based on previously established and/or innovative methods and approaches, but in either case must be well justified.
- Meaningful assessment and evaluation of NSF funded projects should be based on appropriate metrics, keeping in mind the likely correlation between the effect of broader impacts and the resources provided to implement projects. If the size of the activity is limited, evaluation of that activity in isolation is not likely to be meaningful. Thus, assessing the effectiveness of these activities may best be done at a higher, more aggregated, level than the individual project.

The following elements should be considered in the review for Broader Impacts:

1. What is the potential for the proposed activity to benefit society or advance desired societal outcomes (Broader Impacts)?
2. To what extent do the proposed activities suggest and explore creative, original, or potentially transformative concepts?
3. Is the plan for carrying out the proposed activities well-reasoned, well-organized, and based on a sound rationale? Does the plan incorporate a mechanism to assess success?
4. How well qualified is the individual, team, or organization to conduct the proposed activities?
5. Are there adequate resources available to the PI (either at the home organization or through collaborations) to carry out the proposed activities?

### In General:

- Make the broader impacts activity relevant to the research program. You cannot completely outsource this.
- In the same context, DO leverage existing programs on campus (some are described below), but DO NOT make the activities a plug-n-play kind.
- Quantify your activities: for example with recruitment of underrepresented groups, give numbers for what has been accomplished at the college/university level, and what your goal is.
- The BI activities you propose need intellectual input from your research agenda.

### External resources:

NSF presentation summarizing the changes:

[http://www.nsf.gov/bfa/dias/policy/merit\\_review/overview.pdf](http://www.nsf.gov/bfa/dias/policy/merit_review/overview.pdf)

“Broader Impacts 2.0: Seeing—and Seizing—the Opportunity”:

[http://digital.library.unt.edu/ark:/67531/metadc155643/m2/1/high\\_res\\_d/bio201363302\\_Viewpoint\\_Tankersley.pdf](http://digital.library.unt.edu/ark:/67531/metadc155643/m2/1/high_res_d/bio201363302_Viewpoint_Tankersley.pdf)

## UF RESOURCES

### Teaching Resources

#### Natural Area Teaching Laboratory

<http://natl.ifas.ufl.edu/>

The University of Florida Natural Area Teaching Laboratory (NATL) is dedicated to teaching students and the public about ecology and biotic diversity. It consists of 60 acres in two contiguous tracts in the southwest corner of campus. The larger tract, known as NATL-west, has 49 acres and is west of Natural Area/Surge Area Drive. The smaller tract, known as NATL-east, has 11 acres and is east of Natural Area/Surge Area Drive. NATL has significant samples of three upland ecosystems characteristic of north peninsular Florida: *hammock*, *upland pine*, and *old-field succession*. It has a variety of wetland habitats, including a 9-acre *marsh* in NATL-east that drains into a *pond and sinkhole* in NATL-west and a 3-acre *ecologically engineered retention basin* ([SEEP](#)) in the northeast corner of NATL-west.

#### UFTeach

<http://ufteach.clas.ufl.edu/>

Dr. Tom Dana

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Dr. Rick Smith

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UFTeach is designed to dramatically strengthen the recruitment and retention of middle and high school mathematics and science teachers, a critical workforce need in Florida and across the nation. The Florida Department of Education estimates that fewer than 10% of mathematics and science teacher vacancies are filled by current teacher education efforts. Throughout Florida, fewer than 20% of mathematics and science teachers are fully certified in the subjects they teach. The University of Florida has undertaken

an unprecedented effort in Florida to bolster science and mathematics educator development that will not only supply highly qualified new teachers but also support new teachers of these subjects through their induction years. This mission will be accomplished through new partnerships between the University of Florida's College of Liberal Arts and Sciences, College of Education, College of Agricultural and Life Sciences, College of Engineering, and several Florida school districts. UFTeach will use imaginative recruiting strategies to bring UF's best and brightest into teaching.

UFTeach is an innovative initiative based on the successful UTeach model at the University of Texas-Austin. The program at UF is a semi-finalist in the National Math and Science Initiative (NMSI)/ExxonMobil competition to replicate UTeach. A grant of up to \$2.4 million for the replication of UTeach, along with the generosity of private donors, is allowing UF to initiate and sustain UFTeach.

Highlights include:

- early and intensive field experiences in real classrooms
- deep-level understanding of mathematics and science content
- deep-level understanding of methods of effectively teaching mathematics and science content
- compact degree plan that allows most students to complete degree and certification in four years
- leveraging public and private funds
- creation of undergraduate minors focusing on mathematics teaching and science teaching
- creation of an unprecedented discipline-specific induction support system for new teachers

## Evaluation Resources

### **Collaborative Assessment and Program Evaluation Services (CAPES)**

Dr. M. David Miller [dmiller@coe.ufl.edu](mailto:dmiller@coe.ufl.edu)

Dr. Cynthia Wilson Garvan [cgarvan@ufl.edu](mailto:cgarvan@ufl.edu)

The mission of Collaborative Assessment and Program Evaluation Services (CAPES) is to provide researchers at the University of Florida with timely and appropriate support for program evaluation and research for educational and training programs. Evaluation services include formative assessments to provide for program improvement and summative assessments to inform accountability. The types of methodological assistance provided by CAPES include:

- comprehensive evaluation planning, implementation, and reporting
- survey development, analysis and reporting
- development of assessments including piloting and psychometric analysis
- advanced psychometric techniques including methods based on classical test theory, item response theory, factor analysis, and generalizability theory
- applied statistical analysis including hierarchical modeling, structural equation modeling, and general linear modeling
- qualitative and mixed method evaluations

CAPES works with clients to understand their needs and addresses those needs with the support of its staff of evaluators, measurement specialists, applied statisticians, and qualitative methodologists. Services may be provided through cooperative writing and submission of grants or through hourly consulting services.

### **Program Development and Evaluation Center**

<http://pdec.ifas.ufl.edu/about/function.shtml>

Dr. Glenn Israel [gdi@ifas.ufl.edu](mailto:gdi@ifas.ufl.edu)

Supports Faculty in Programming

- teaches in-service education programs
- assists and organizes needs assessment surveys
- conducts situational analyses using socio-demographic data
- provides guidance in implementing educational programs
- develops publications and how-to handouts on programming

Assists with Strategic Planning

- teaches faculty to develop and use strategic plans
- assists with monitoring the accomplishment of strategic plans

Supports Faculty in Evaluation

- teaches in-service education programs
- assists and organizes evaluation surveys
- identifies impact measures and guides impact studies
- develops publications and how-to handouts on evaluation

Enhances Program Quality

- coordinates county program reviews
- uses evaluation data for marketing programs to key stakeholders

Maintains State Accountability Data and Assists With Assessing and Implementing Programming Strategies

- coordinates UF/IFAS evaluation and accountability efforts
- designs and assembles POW & ROA databases
- analyzes management data to assess organizational performance
- coordinates the preparation of accountability reports
- designs frameworks for long-range planning
- supports program design and interdisciplinary research teams
- researches new model and strategies for accountability systems

## **Outreach Resources**

### **Center for Precollegiate Education and Training**

<http://www.cpet.ufl.edu/default.html>

Dr. Mary Jo Koroly [cpet@cpet.ufl.edu](mailto:cpet@cpet.ufl.edu)

The Center for Precollegiate Education and Training (UF-CPET) promotes and supports the use of the facilities and faculty of the research university in the preparation and enhancement of science and technology teaching at the secondary education level. As the University of Florida "umbrella" for the articulation and transfer of science and technology to public school and community college teachers, students and the public-at-large, UF-CPET combines many outreach activities, providing access to university research disciplines/faculty and fostering life-long relationships between researchers, teachers and students. UF-CPET science education programs enable individualized and team-centered direct, and ultimately pervasive, public dissemination of research and knowledge through enhanced teaching.

These objectives allow teachers, students, graduate students, researchers and industry stakeholders to be at the forefront of science and technology literacy, educational vision and workforce development by uniting them in laboratory-based investigations and technology-driven solutions in science and mathematics.

#### **Florida Museum of Natural History**

<http://www.flmnh.ufl.edu/>

Dr. Bruce MacFadden [bmacfadd@flmnh.ufl.edu](mailto:bmacfadd@flmnh.ufl.edu)

Presentation: Broader Impacts and the Museum

[http://www.research.ufl.edu/research-program-development/research\\_program\\_development\\_docs/Broader%20Impacts%20and%20the%20Museum.pdf](http://www.research.ufl.edu/research-program-development/research_program_development_docs/Broader%20Impacts%20and%20the%20Museum.pdf)

#### **Science for Life (funded by the Howard Hughes Medical Institute)**

<http://sfl.chem.ufl.edu/>

Dr. Ben Dunn, Director [bdunn@ufl.edu](mailto:bdunn@ufl.edu)

With funding from the Howard Hughes Medical Institute the Science for Life Program has a mission "to strengthen and transform undergraduate research and interdisciplinary laboratory education in the life sciences" at the University of Florida and our partner institutions. Administered through the Office of the Provost, SFL will enhance early undergraduate research, faculty recognition and opportunities, and transform laboratory teaching in the life sciences.

#### **Center for Undergraduate Research**

<http://cur.aa.ufl.edu/>

Dr. Anne Donnelly [adonnelly@aa.ufl.edu](mailto:adonnelly@aa.ufl.edu)

Undergraduate research provides opportunities for students to engage faculty, graduate students, postdocs to discover and define scholarly interests. Research experiences can assist students in evolving ideas and deciding on a future career path.

- [UF Undergraduate Research Database](#)
- [University Scholars Program](#)

- [Research Programs](#)

### **IFAS Extension**

<http://solutionsforyourlife.ufl.edu/>

County Extension Offices - <http://solutionsforyourlife.ufl.edu/map/>

Extension is a partnership between state, federal, and county governments to provide scientific knowledge and expertise to the public. UF, together with [Florida A&M University](#) (FAMU), administers the Florida Cooperative Extension Service.

At the University of Florida, Extension is located in the [Institute of Food and Agricultural Sciences](#) (IFAS), along with the [College of Agricultural and Life Sciences](#) (CALS) and the [Florida Agricultural Research and Education Center](#), and is called UF/IFAS Extension.

### **UF Alliance**

<http://education.ufl.edu/uf-alliance/>

Dr. Diane Archer-Banks [dabanks@coe.ufl.edu](mailto:dabanks@coe.ufl.edu)

The mission of the UF Alliance is to enhance college access for historically underrepresented urban youth in partnership and collaboration with schools and community agencies by:

- Providing college outreach and awareness
- Engaging parents in the educational process
- Offering professional leadership development to educators
- Mentoring and fostering student leadership
- Granting scholarship support

### **UF Office of Sustainability**

<http://sustainable.ufl.edu/>

The mission of the Office of Sustainability is to make the University of Florida - in its operations, education, research, and outreach - a model of sustainability, integrating the goals of ecological restoration, economic development, and social equity. In pursuing this mandate, the Office of Sustainability will encourage and facilitate the collaborative efforts of faculty, students, and staff to generate knowledge, acquire skills, develop values, and initiate practices that contribute to a sustainable, high quality of life on campus, in the state of Florida, and across the globe.

### **Florida Energy Systems Consortium (FESC) Public Outreach**

[http://www.floridaenergy.ufl.edu/?page\\_id=10](http://www.floridaenergy.ufl.edu/?page_id=10)

The overall twin goals of the FESC Outreach effort are to increase Florida's energy use efficiency and to measurably reduce its emissions of greenhouse gases. Dr. Pierce Jones, Professor & Director, Program for Resources Efficient Communities, UF, leads outreach through his experience with the Florida Cooperative Extension Service.

### **Department of Family, Youth and Community Sciences**

<http://fyics.ifas.ufl.edu/>

Website provides research-based information, resources, and tips for families, consumers, and educators.

### **The Digital Library Center**

<http://web.uflib.ufl.edu/digital/>

The Digital Library Center hosts the [UF Digital Collections \(UFDC\)](#), which has millions of pages, hundreds of thousands of items, and over a hundred collections. In addition to supporting existing collections and materials in UFDC, the Digital Library Center is also a digitization facility. It is the primary contributor to all of the collections in and hosted by UFDC, adding more unique materials regularly. The Digital Library Center also supports collaborative and innovative projects.

### **Center of Excellence for Regenerative Health Biotechnology (CERHB)**

Education and Training Programs - [http://www.cerhb.ufl.edu/education\\_overview.html](http://www.cerhb.ufl.edu/education_overview.html)

The CERHB Education Center has classrooms, conference areas, a cleanroom simulator, and wet labs outfitted with state-of-the-art equipment. The CERHB has formed strategic partnerships with corporations, state and local government agencies, and educational institutions to train faculty and deliver curricula to attract and educate high school and college students, as well as provide existing workforce training for entry and mid-level careers in the biotechnology industry. The CERHB is creating model curricula and pilot programs at all levels including Community College and High School levels that will then be reproduced throughout the state and the nation.

In addition, the CERHB Education Center provides a unique capability for a realistic training environment and, ultimately, employment for university students and industry professionals. Employers play a major role in curriculum development to assure that the students are trained in suitable courses.

### **Sea Grant Florida**

<http://www.flseagrant.org/>

Florida Sea Grant uses academic research, education and extension to create a sustainable coastal economy and environment. We are a partnership between the Florida Board of Education, the National Oceanic and Atmospheric Administration and Florida's citizens, industries, and governments.

### **UF International Center**

<http://www.ufic.ufl.edu/>

Program Development Office - <http://www.ufic.ufl.edu/PD/staff.html>

The Program Development unit within the International Center supports faculty, staff, and student interests and initiatives in developing programs and activities that further the internationalization efforts of the university.

The mission of the Program Development Office is to promote and support international education within and across the entire university, community, state and the world. The Office prepares people to participate in an increasingly globalized world – as informed citizens, as skilled workers, and as engaged individuals. The Office encourages and supports excellence in the development of international

education programs and activities through consultation, training, outreach, workshops, research, internships, course development, grants opportunities, and awards.

### **Center for Entrepreneurship**

<http://warrington.ufl.edu/fire/entrepreneurship/cei/>

<http://www.uflyoungentrepreneurs.org/>

Dr. Jamie Kraft [jamie.kraft@warrington.ufl.edu](mailto:jamie.kraft@warrington.ufl.edu)

The Center for Entrepreneurship and Innovation (CEI) was created to teach, coach and inspire students to be entrepreneurial in their lives. The Center provides students the tools and experiences necessary to creatively pursue new opportunities and innovations in the start-up, social, and corporate venture arenas.

Through courses, degree programs and complementary activities such as speakers and workshops, CEI currently serves more than 2,000 students per year. Partnering with other colleges at the University, CEI delivers introductory and specialized courses at both the graduate and undergraduate level, provides practical learning opportunities through GatorNest—an experiential learning laboratory, and offers every graduate student at the University of Florida the option to earn a certificate in new venture creation.

The UF Young Entrepreneurs for Leadership & Sustainability summer program gives college bound high school students the opportunity to live, work, eat, and play on the campus of the University of Florida for five weeks each summer while learning about entrepreneurship and social entrepreneurship, being inspired to solve social problems, and practicing sustainability.

In addition, CEI offers the nation's most comprehensive specialized Master's degree program in Entrepreneurship, the Thomas S. Johnson Entrepreneurship Master's Program (MSE).

### **UF Center for the Humanities and the Public Sphere (CHPS)**

College of Liberal Arts and Sciences

<http://www.humanities.ufl.edu>

The CHPS supports faculty, staff, and graduate students doing research in or linked to the humanities to develop programs and activities that reach beyond individual disciplines and into the community in which we live and teach. The CHPS maintains several funding programs that enable faculty to explore the broader impacts of their work, particularly the **Interdisciplinary Team-Teaching Program in the Humanities**, **Library Enhancement Grants** (which can be used to create digital projects and databases), and **Support for Workshops and Speaker Series**. More information about these opportunities can be found at: <http://www.humanities.ufl.edu/proposals.html>.

Since 2009, the University of Florida is proud to be a member-institution of [Imagining America \(IA\)](#), a nationwide consortium of colleges and universities committed to strengthening public scholarship and practice in the arts, humanities, and design. In support of this mission, the CHPS gathers resources to

assist faculty interested in doing work in the **Public Humanities** (<http://www.humanities.ufl.edu/public-humanities.html>) and in the **Digital Humanities** (<http://www.humanities.ufl.edu/digitalhum.html>).

We are also happy to help faculty outside the humanities identify potential research partners for grant proposals, research projects, and team-teaching initiatives. This includes scholars interested in exploring the humanities dimensions (e.g., history, culture, ethics, theory, or criticism) of the sciences, engineering, business, law, agriculture, or other research areas. We are currently affiliated with two cross-college working groups in the [Environmental Humanities](#) and the [Digital Humanities](#).

## NSF-Funded Outreach Programs

### **South East Alliance for Graduate Education and the Professoriate (SEAGEP)**

<http://www.seagep.ufl.edu/>

Dr. Anne Donnelly [adonnelly@erc.ufl.edu](mailto:adonnelly@erc.ufl.edu)

The South East Alliance for Graduate Education and the Professoriate (SEAGEP) is a member of the National Science Foundation Alliance for Graduate Education and the Professoriate family of programs designed to increase diversity in the nation's professoriate in science, technology, engineering, and mathematics (STEM). The program provides students with exceptional Ph.D. experiences. SEAGEP unites a group of institutions that have considerable experience in higher education diversity programs and a history of collaboration.

The SEAGEP Program includes the University of Florida as lead institution and Clemson and the University of South Carolina as primary partners. Secondary partners are the Florida-Georgia Louis B. Stokes Alliance for Minority Participation, the South Carolina Louis B. Stokes Alliance for Minority Participation, and the University of the U.S. Virgin Islands. SEAGEP also partners with The Latin American and Caribbean Consortium of Engineering Institutions.

SEAGEP offers graduate students awards, travel funding, international internships, career shadowing, professional development, and an annual meeting with students across the Alliance.

### **UF Atlantic Coast-Social, Behavioral and Economic Sciences Alliance (AC-SBE)**

<http://graduateschool.ufl.edu/finances-and-funding/uf-sbe-program>

Janet Broiles [jbroiles@ufl.edu](mailto:jbroiles@ufl.edu)

The University of Florida, Howard University, the University of Maryland at College Park, the University of Miami, and the University of North Carolina at Chapel Hill are individually among the nation's top 25 producers of underrepresented minority (URM) doctoral recipients in the social, behavioral and economic disciplines. However, with the creation of the AC-SBE Alliance, funded by the National Science Foundation, the universities plan to broaden the participation of URM doctoral students in SBE programs, produce even more Ph.D. recipients and encourage and prepare undergraduate students to enter Ph.D. SBE disciplines and thus to increase the number of URMs entering the SBE professoriate. The AC-SBE seeks to achieve four objectives:

- Recruit and prepare undergraduates to pursue the PhD degree.

- Assist students in the transition from BS to PhD programs.
- Retain graduate students to completion of the PhD.
- Prepare future faculty for success.

The AC-SBE offers the following programs and opportunities:

- Campus Visitation Program: designed to encourage underrepresented students to pursue advanced degrees. During the visitation, participants get to learn more about UF's graduate and professional programs, as well as meet with administrators, faculty members, and current graduate students.
- UF Board of Education Fellowship Program: provides an outstanding opportunity for newly admitted minority and first generation graduate students to become acquainted with UF.
- Undergraduate Research Support/Recruitment: enhances recruitment efforts and prepares undergraduate students for graduate studies. Each of the five participating departments receives two \$5,000 SBE awards per year to offer to incoming students.
- Graduate Research Support: provides two SBE research assistantship top-ups per year to go towards the research support of eligible students. Amounts will be \$2,500 for each fall and spring semesters and \$5,000 for summer research for students involved in doctoral dissertation research.
- Travel Awards for Professional Development: made to SBE Scholars to attend programs, including the Odum Institute at UNC-Chapel Hill and Howard University's Preparing Future Faculty (PFF) and Postdoctoral Workshop.
- Support/Professional Development: held once a month and are open to all graduate students. Sponsored by the Office of Graduate Minority Programs, the topics of the seminars range from getting a job, how to get published, defending a dissertation, and passing qualified exams.

Contact [Janet P. Broiles](#), Recruitment and Graduation Coordinator for UF Graduate Minority Programs, for more information.

### **Florida-Georgia Louis Stokes Alliance for Minority Participation (FGLSAMP)**

<http://www.fglsamp.com/>

FGLSAMP Central Office

[FL\\_GAinfo@yahoo.com](mailto:FL_GAinfo@yahoo.com)

The Florida-Georgia Louis Stokes Alliance for Minority Participation (FGLSAMP), a National Science Foundation (NSF) Project, includes over 1,000 talented undergraduates in Science, Technology, Engineering, and Mathematics (STEM) majors. It is a coalition of twelve institutions in Florida and one in Georgia.

The primary focus of FGLSAMP is to increase the number of baccalaureate degrees granted to underrepresented students in the STEM disciplines. In addition, FGLSAMP has increased the number of students enrolled in graduate education and has placed more than 43% of STEM students in graduate programs. The Alliance continues to stress the value of the experiential exposure for all participants.

The overarching goal of the FGLSAMP Project is to increase significantly the number of students who obtain undergraduate and graduate degrees in (STEM). Several other goals include:

- To recruit increased numbers of students to the discipline at the freshmen and junior levels and graduate these students from the disciplines of their choice in 5 years (some engineering disciplines), 4 years or 2 years respectively.
- To promote improved student relationships among students and between students and faculty.
- To provide students a summer experience that will review and preview important mathematics and science concepts as a part of a plan to reduce high attrition in the freshman year.

### **Research Experiences for Undergraduates (REU)**

[http://www.nsf.gov/funding/pgm\\_summ.jsp?pims\\_id=5517&org=NSF](http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=5517&org=NSF)

Contact the individual programs for more information.

The Research Experiences for Undergraduates (REU) program supports active research participation by undergraduate students in any of the areas of research funded by the National Science Foundation. REU projects involve students in meaningful ways in ongoing research programs or in research projects specifically designed for the REU program.

UF offers REU programs in the following areas:

- Chemistry: <http://www.reu.chem.ufl.edu/>
- Physics/Materials Science: <http://www.phys.ufl.edu/REU/>
- Marine Bioscience: <http://www.whitney.ufl.edu/index.php/education/undergraduate>
- Water Resources: <http://abe.ufl.edu/reu/>

### **Innovation through Institutional Integration Program (I<sup>3</sup>)**

<http://i3.institutes.ufl.edu/>

Dr. Sandra Russo [srusso@ufic.ufl.edu](mailto:srusso@ufic.ufl.edu)

The I<sup>3</sup> Program is a five-year project funded by the National Science Foundation to foster integration of all NSF-funded student-based research and training programs in Science, Technology, Engineering, Mathematics (STEM) and Social, Behavioral, Economics (SBE) disciplines at the University of Florida. The goal of the project is to establish the Program for Institutional Integration (I<sup>3</sup>: PII) to facilitate collaboration and dialogue among all NSF-funded programs through the synergism of their resources, capabilities, and experience to fully involve graduate students, faculty, and administration, thereby expanding the overall impact of NSF programs across campus. While focused on graduate students, I<sup>3</sup> also involves undergraduate students, interested in STEM and SBE careers.

## **Recruitment/Retention of students in groups traditionally underrepresented in STEM disciplines**

Refer to document: [Minority Student Recruitment/Retention Resources](#)