State University System of Florida
Summary of the University of Florida Issues
2008-09 Legislative Budget Request

Issue Title	University	BOG Goal	Priority	Brief Description/Justification	University Outcomes	2008-2009 Budget Request	Amount from Non-Recurring Funds
Educational & General							
Biodiversity and Environmental Biology: The Bioinformatics Renaissan	UF-E&G	Building World-Class Academic Programs and Research Capacity	1	To assemble bioinformatics electronic databases that holds information associated with our collection of specimens. As the world's biodiversity comes under ever-increasing threats, it becomes critical to develop a better understanding of the world's biota. This bioinformatics initiative will make UF not only competitive, but also the model in the field for other major universiti	This initiative will allow the University of Florida and the Florida Museum of Natural History to make all of our existing specimen information available via the Internet over the next few years, catapulting the UF/FLMNH to first place nationally in the amount of information served to the public, scientists and public servants.	$ 1,086,000	$ 585,000
Florida Teach: Increasing the Quality and Quantity of Mathematics and Science Teachers	UF-E&G	Meeting Statewide Professional and Workforce Need	2	Florida Teach, a new program at UF is designed and managed by the Colleges o Liberal Arts and Sciences and Education. The central strategy of Florida Teach i to create a comprehensive program in which students with a potential interest in Science, Technology, Engineering, and Math (STEM) teaching at the 6-12 level are recruited, mentored, and rewarded throughout their university career, with a strong emphasis on field experiences in area classrooms starting in the first year in the program.	Production of Math and Science Teachers by Florida Teach 2008-2013 08-09 09-10 10-11 11-12 12-13 # New Students 50 75 100 125 150 # Students in Program 50 125 200 275 350 Graduate (B.S./B.A) 0 25 50 75 100	$ 1,000,000	$ 159,000
Forensic Molecular Laboratory	UF-E&G	Meeting Community Needs and Fulfilling Unique Institutional Responsibilitie	3	This funding will be used to augment and enhance the current capability of the human identification process provided by the C.A. Pound Human Identification Laboratory by incorporating the latest technologies available in genetic forensic It is proposed to develop molecular forensic services, specifically using mtDNA technologies that will be made available to law enforcement and families seekin to reconcile cold cases, missing person's and unidentified decedents.	The InterdisciplinaryProgram in Biomedical Sciences recent decision to create a program in Forensic Medical Sciences at the Master's and ultimately Doctoral level would be greatly strengthened by this new capability at the Pound Laboratory which will house four students in the first two year and an additional two students thereafter. Also, this will allow the resolution of cold cases, by identifying the unidentified, assists in the prosecution of homicide and otherwise undetermined deaths in Florida	$ 1,431,660	$ 820,500
Interdisciplinary Program in Sustainability and a Healthy Environme	UF-E&G	Meeting Community Needs and Fulfilling Unique Institutional Responsibilitie	4	A new program designed to utilize expertise developed internationally to promote sustainability literacy through graduate and undergraduate teaching and to promote sustainable development in Florida through research and extension. It will formalize the relationship between UF's nationally recognized campus sustainability practices and the academic mission by incorporating the Office of Sustainability into this new comprehensive program. Utilizing the campus itself as a laboratory for sustainability research will more efficiently connect our statewide researchers on campus and extension personnel in the field.	*Teaching*: 2 new university-wide certificate programs will be developed for undergraduate and graduate students. Student will contribute to the incorporation of sustainability practices in community context. *Research:* Success will be determined based on the extent to which interdisciplinary research collaborations result in new knowledge and technologies developed, applied and reported. *Extension*: Success will be measured by the extent to which knowledge and technologies are transferred from the University of Florida campus to county extension offices and applied in the communities they serve.	$ 3,483,500	$ 316,000
Nanoscience Institute for Medical and Engineering Technology (NIMET	UF-E&G	Building World-Class Academic Programs and Research Capacity	5	The purpose of this request is to provide unique, world-class instrumentation an staff for this newly constructed facility so that it can create research, education, and commercialization opportunities in nanoscale science and technology in the State of Florida. Competing in Nanoscale Science &Technology at the nationa level requires leading-edge equipment, facilities, and technical staff; and these can be provided through the Nanoscience Research Facility housed at UI	The NIMET is expected to generate: Increased federal funding opportunities over a five year period of $50M; support that will result in the transfer of nanotechnology and creation of start-up companies within Florida; training of more than 150 graduate students; and development of new research concepts, crop improvement, and manufacturing initiatives through collaborative interactions.	$ 6,797,225	$ 5,972,225
Real-time Awareness, Decision-making and Response (RADAR) System: Enhanced Security and Quality of Life at the Local and National Lev	UF-E&G	Meeting Community Needs and Fulfilling Unique Institutional Responsibilitie	6	The RADAR system will provide integrated (1) real-time monitoring of large-scale areas and infrastructure (2) augmenting informed decision-making with timely access to data integrated from trusted sources and (3) coordination of swift and effective response to a wide variety of unforeseen situations. These situations range from typically routine occurrences (i.e. urban hazard and rescue or rural fires and flooding) to campus and community monitoring, and response to large-scale events including disaster preparation/relief, agricultural infestations, and biological, conventional or unconventional terrorist attempts. The results of integrating these various systems into a coherent visualization wil vastly increase the speed and effectiveness decision-makers in times of stress an potential crisis.	Primary benefits to Florida campuses and communities include effective coordination of information between local, county, and State agencies for both routine and exceptional circumstances and our leaders and decision-makers will be provided with functionally-enhanced decision making capabilitie	$ 3,950,000	$ 2,439,526
Solutions for Water Resources Sustainabilit	UF-E&G	Building World-Class Academic Programs and Research Capacity	7	This proposal will develop a long-term, interdisciplinary research, education and technology transfer program aimed at developing technologies and sustainable solutions across natural and man-made threats to Florida's water resources. Florida's economic and social development over the past several decades has been fueled by its climate and abundant water resources. Increased population, rapid urban development, large agricultural water demands, and the need to protect natural resources, however, have led to water resource problems in many parts of the State. Florida's population is expected to increase from 16 million a present to 22 million by the year 2020	The outcome of this effort will be world-class research, education and technology transfer programs that will develop, demonstrate, and deliver solutions to state agencies, cities, agriculture, industry and private citizens facing water-related problems.	$ 1,500,000	$ -

State University System of Florida
Summary of the University of Florida Issues
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Issue Title	University	BOG Goal	Priority	Brief Description/Justification	University Outcomes	2008-2009 Budget Request	Amount from Non-Recurring Funds
Florida High Tech Corridor Council Program	UF-E&G	Building World-Class Academic Programs and Research Capacity	8	This program is an expansion of the existing Florida High Technology Corridor initiative at the University of Florida. The University of Florida entered into this program in FY2005-2006 and is seeking an increase in funding to support program growth. The program is to provide research opportunities between Florida high technology companies and universities as well as to give graduate students training that can be used by these high technology companie	This program will allow UF to expand the High Tech Matching Grants Program by supporting 15-30 research projects	$ 2,000,000	$ -
Translational Imaging Technology and Application	UF-E&G	Building World-Class Academic Programs and Research Capacity	9	These funds will be used to combine and expand imaging research and enhance its transition, in both the short and long terms, into the clinic and marketplace while providing the faculty, staff and imaging infrastructure to rapidly expand and advance research and technology development in imaging for the enhancement of human health. Imaging is an essential component of virtually every area of modern biomedical research and clinical medicine.	The proposed new faculty recruits and technical support staff will significantly add to the existing infrastructure and talent at UF and the state of Florida and will contribute to new extramural funding opportunities, new major program project grants, new shared instrumentation grants, and new student education and training opportunities at UF. Additionally it is expected that they will contribute both to the overall health of the human population and towards the expansion of the biomedical research and technology base in industry in Florida. With the critical collaborations with the CTSI, these new opportunities will translate into improved human health and economic opportunities to the citizens of Florida.	$ 6,362,500	$ 4,000,000
UF/USF/FIU Florida Public Health Consortium	UF-E&G	Meeting Statewide Professional and Workforce Need	10	The three colleges of public health in the state of Florida have committed to identify ways to effectively collaborate in the current and future education of the public health workforce in the state. Because of the geographical distribution of the three universities, it is possible for the Consortium to serve the entire state of Florida and for each of the three universities to offer their expertise and resources to the Department of Health and to the education of all health professions in the respective campuses and throughout the state	Each university will enroll ten additional students which at maturity will result in thirty new MPH professionals working within local health departments and offer four short courses per year to local health department employees or others interested in public health issues	$ 1,500,000	$ -
Clinical and Translational Research Institute	UF-E&G	Building World-Class Academic Programs and Research Capacity	11	The State of Florida and the Nation in general, face a critical shortage of skilled clinical investigators capable of translating basic science discoveries into new therapies for the diagnosis, prevention, treatment and cure of human disease. University of Florida's strategy to position itself and the State of Florida to be national leaders in clinical and translational research and training. The Clinical and Translational Science Institute will enable UF to bring necessary personnel and resources together under one roof, including space for education and training, clinical trials coordination, biostatistics, epidemiology, biomedical informatics, bioethics, study design, regulatory support, community health and health policy research. The colleges participating in planning for the CTSI include Agriculture and Life Sciences, Dentistry, Engineering, Fine Arts, Health and Human Performance, Liberal Arts and Sciences, Medicine, Nursing, Pharmacy, Public Health and Health Professions and Veterinary Medicine.	With our history of leveraging extramural funding from federal, foundation, and industry grants, we estimate conservatively that the annual return on investment will be approximately $3.5M to $4M per year if the university's Clinical and Translational Science Award (CTSA) request is funded	$ 2,000,000	$ -
Florida Partnership for Climate and Society (PCS	UF-E&G	Building World-Class Academic Programs and Research Capacity	12	The Florida PCS will organize, acquire, and analyze scientific information in order to understand the causes, consequences and rates of climate-induced changes in our State. A better understanding of the nature and time-scale for the manifestation of climate change in Florida is urgently needed for policy makers and government officials to craft sensible responses that minimize the societal and ecological impacts of looming climate changes. Research questions that will be addressed in this program are: (1) how can patterns of past climate change help us anticipate the magnitude and rate of future climate change, (2) what are the most accurate measures of changing climate in Florida and how will these changes be manifested in Florida, and (3) what can Floridians do to prevent or cope with these changes?	Liberal Arts and Sciences will hire faculty including: a climate analysis scientist; a paleoclimatologist to study past perturbations of the climate system; a coastal processes scientist to study Florida's 2200 miles of dynamic coastline; a coastal and land use ecologist to study sea level rise, changes in mangrove and salt marsh ecosystems, saltwater intrusion into coastal aquifers, and impacts on near-shore forest ecosystems; an organism and population scientist to evaluate the biological consequences of climate change; and an environmental social scientist who can evaluate potential impacts of climate change on institutions (e.g., health care, housing, education, transportation), and on Florida's population	$ 1,500,000	$ -
	UF E&G Total					**$ 32,610,885**	**$ 14,292,251**

Issue Title	University	BOG Goal	Priority	Brief Description/Justification	University Outcomes	2008-2009 Budget Request	Amount from Non-Recurring Funds
Health Science Center							
Clinical and Translational Research Institut	UF-HSC	Building World-Class Academic Programs and Research Capacity	1	The State of Florida and the Nation in general, face a critical shortage of skilled clinical investigators capable of translating basic science discoveries into new therapies for the diagnosis, prevention, treatment and cure of human disease. University of Florida's strategy to position itself and the State of Florida to be national leaders in clinical and translational research and training. The Clinical and Translational Science Institute will enable UF to bring necessary personnel and resources together under one roof, including space for education and training, clinical trials coordination, biostatistics, epidemiology, biomedical informatics, bioethics, study design, regulatory support, community health and health policy research. The colleges participating in planning for the CTSI include Agriculture and Life Sciences, Dentistry, Engineering, Fine Arts, Health and Human Performance, Liberal Arts and Sciences, Medicine, Nursing, Pharmacy, Public Health and Health Professions and Veterinary Medicine.	With our history of leveraging extramural funding from federal, foundation, and industry grants, we estimate conservatively that the annual return on investment will be approximately $3.5M to $4M per year if the university's Clinical and Translational Science Award (CTSA) request is funded	$ 2,000,000	$ -
Florida Veterinary Workforce Expansion Initiativ	UF-HSC	Meeting Statewide Professional and Workforce Need	2	There is a critical shortage of veterinarians nationally that is especially acute in Florida. This proposal is to better meet these needs and better serve Florida by a significant expansion of veterinary student enrollment. There is an immediate need for over 500 veterinarians in public health practice, based primarily in state and federal agencies. We would expand enrollment in the UF College of Veterinary Medicine by 50%. We will admit 44 more students to each entering class, thus when all four classes are filled to this number the total enrollment increase will be 176 students. We have sufficient applicants to accept this additional number with no drop in student qualification	An increase in the number of veterinary medicine students over the next 5 years beginning in: 2009-10 = 44; 2010-11 = 42; 2011-12 = 42; 2012-13 = 42 An increase in the number of MPH and PhD students beginning in: 2009-10 = 6 FTE; 2010-11 = 18 FTE; 2011-12 = 22 FTE; 2012-13 = 23	$ 5,910,958	$ -
	UF-HSC Total					**$ 7,910,958**	**$ -**

Issue Title	University	BOG Goal	Priority	Brief Description/Justification	University Outcomes	2008-2009 Budget Request	Amount from Non-Recurring Funds
IFAS							
Promoting Healthy, Sustainable Animal System	UF-IFAS	Building World-Class Academic Programs and Research Capacity	1	This initiative is designed to produce new, science-based information and transfer the information to Florida's livestock industries, animal owners, and public to be applied in every county in Florida. Considering the breadth of impact of animal agriculture, it is clear that sustaining the industry is critical to the health and welfare of all Floridians, now and in the future. Because Florida's environment is not replicated in any other area in the US, we must generate data specific to this setting and evaluate the impact of this environment on animal performance and well-being. In the broader perspective, the data generated in Florida has application on an international scale and brings that global dimension to our activities, an important factor in today's interconnected world.	Under this initiative we will conduct: Genetic research; on new forage species and crops for livestock feed and grazing systems; research on beef/forage integrated production systems; basic research on genetics and physiology of animal feed conversion and nutrition to increase production efficiency; economic studies on livestock production systems: research on livestock and equine nutrition and health; research and education programs on livestock waste management; and expand education programs, especially for youth, on livestock and equine care, management, and health	$ 2,240,000	$ -
Development of Disease Resistant Citrus Cultivar	UF-IFAS	Building World-Class Academic Programs and Research Capacity	2	Invasions of citrus canker, citrus greening and several insect pests in the past decade create challenges for pest management that cannot be overcome with increased pesticide use, and thus, permanent genetic solutions are indicated. Combining traditional plant breeding and plant microbiology with new molecular tools will lead to increased understanding of the disease/plant cycles and will point to opportunities for the development and evaluation of new plant cultivars that can better withstand the attack of exotic disease organisms. Directing current scientific capability to this set of issues will not only address the critical challenges of today's diseases, but the knowledge generated will accelerate efforts to address new disease and pest challenges as they materialize in the future.	While genetic solutions on a perennial plant like citrus encompass longer term considerations, the search for genetic resistance mechanisms already is underway. Within 2-3 years, candidate resistance genes and mechanisms can be identified and preliminarily tested within citrus plant tissues. An additional period of several years will be required to integrate candidate genes into citrus plant material and test effectiveness under laboratory and greenhouse conditions	$ 1,400,608	$ -
Development of Bio-energy Systems and Bio-energy Feedstock	UF-IFAS	Building World-Class Academic Programs and Research Capacity	3	This new initiative will provide the platform for bioenergy crop and ethanol production research to provide the knowledge necessary to build a vibrant biofuels industry in Florida. Research will identify bioenergy crops and management conditions that are best suited for Florida. Emphasis will be placed on maximizing the amount of biomass produced per acre, minimizing inputs and reducing costs of production, and maximizing the amount of bioenergy produced per unit of biomass.	The outcome will be realized in new private investment in commercial plant facilities and their accompanying economic development in Florida. Investment in this research and extension initiative will result in economic development based on these new energy production technologies	$ 1,250,000	
Diversified Specialty Crop Agrisystem	UF-IFAS	Building World-Class Academic Programs and Research Capacity	4	This program will allow the identification of specialty crops that will be marketable and of high value. This program will also allow agriculture and natural resource industries to increase their multi-billion dollar economic impact on Florida in these regions through research and extension activitie	Industry efficiencies and global competitiveness; improvements and identification of high cash value vegetable, fruit and floriculture crops, preserve and enhance soil, air, and water resources, increase the number of years of viable production, and target all agricultural chemical inputs appropriately and recommend the use of new harvest systems	$ 1,342,000	$ 417,000
Florida Partnership for Climate and Society (PCS	UF-IFAS	Building World-Class Academic Programs and Research Capacity	5	The Florida PCS will organize, acquire, and analyze scientific information in order to understand the causes, consequences and rates of climate-induced changes in our State. A better understanding of the nature and time-scale for the manifestation of climate change in Florida is urgently needed for policy makers and government officials to craft sensible responses that minimize the societal and ecological impacts of looming climate changes. Research questions that will be addressed in this program are: (1) how can patterns of past climate change help us anticipate the magnitude and rate of future climate change, (2) what are the most accurate measures of changing climate in Florida and how will these changes be manifested in Florida, and (3) what can Floridians do to prevent or cope with these changes?	IFAS will hire faculty including: a coordinator with expertise in the application of climate information to agricultural and water resources management; an agro meteorologist with background in crop modeling, drought, and interdisciplinary research; an aero-biologist to study and model the effects of climate on movement of organisms in the atmosphere and corresponding disease outbreaks and spread of invasive species; a natural resource economist to analyze tradeoffs and opportunities for financial gain; an agricultural education and extension specialist to lead extension/outreach activities; an agronomist or horticulturalist for impact studies on crops; and a hurricane housing development specialis	$ 600,000	$ -

Issue Title	University	BOG Goal	Priority	Brief Description/Justification	University Outcomes	2008-2009 Budget Request	Amount from Non-Recurring Funds
Sustaining Florida's Fisheries and Coastal Resources	UF-IFAS	Meeting Community Needs and Fulfilling Unique Institutional Responsibilities	6	This initiative will provide science-based alternatives to industry and resource managers and develop community-based educational programs that will address issues including habitat loss, fishing pressure, and water-dependent coastal issues including impacts of rapid development and environmental quality issues. This initiative will establish an integrative program to address critical issues affecting the health and long-term survival of Florida's marine and freshwater fisheries industries, the growing aquaculture industry and the water-dependent marine industries that are critical to Florida's future.	This initiative will provide: 1. Sustainable Fisheries: Scientific solutions and educational efforts will (a) contribute to making fisheries sustainable through ecosystem-based management; b) provide fisheries managers with science-based alternatives for management, and (c) inform citizens about the need to conserve and protect habitat, water quality and the fish communities they support. 2. Aquaculture: This sector of Florida's economy will benefit from (a) enhanced shellfish production and product safety; and (b) industry development through a reduction in both technical and non-technical barriers. 3. Marinas/Boating/Waterways: The water-dependent marine industries, the public and the resource managers will be provided science-based alternatives to (a) maintain the economic and environmental sustainability of this resource use, (b) create decision support tools to guide public policy to support coastal management; c) assist in developing a non-regulatory framework that maintains the environment while enhancing waterfront communities and business growth and (d) recommending ways to mitigate and prepare for coastal storms in order to minimize economic and environmental losses. 4. Academic Enhancement and Marine Education: The next generation of professionals for the both the private sector and resource managers will be trained and citizens will be educated through extension and outreach programs.	$ 644,000	$ -
Florida Veterinary Workforce Expansion Initiativ	UF-IFAS		7	Nationally there is a clear shortage of veterinarians in all areas of professional endeavor. Recent studies (NAS, KSU, AAVMC) document these critical needs. There is an immediate need for over 500 veterinarians in public health practice, based primarily in state and federal agencies. These positions, best filled by veterinarians, are focused on protecting public health by preventing diseases of animals that are capable of infecting humans such as rabies, avian influenza, ma cow disease, and many others. Some of these veterinarians focus on keeping our animal-based food supply free of infectious agents such as E. coli or chemical contaminants. Veterinarians are also needed in the FDA, USDA, Homeland Security, U.S. Army, CDC, NIH, as well as numerous Florida State agencies where regulation and control of animal disease, emergency preparedness and environmental protection are paramount.	See outcomes from HSC Initiative #2	$ 4,000,000	$ -
	UF-IFAS Total					**$ 11,476,608**	**$ 417,000**

State University System of Florida
Educational and General
2008-2009 Legislative Operating Budget Issue
Form I

University:	University of Florida
Descriptive Issue Title:	**Biodiversity and Environmental Biology: The Bioinformatics Renaissance**
University Priority Number:	**1**
Date Approved by Board of Trustees:	**6-15-2007**

Check **only one** of the following to indicate which SUS Strategic Plan Goal/Objective this issue will address:

☐ **Access to and Production of Degrees** *(Examples of issues that may be included under this goal would be new enrollment growth, outreach, recruitment, financial aid, academic tracking, advising, etc.)*
☐ **Meeting Statewide Professional and Workforce Needs** *(Examples of issues that may be included under this goal would be new or expanded targeted and/or educated citizenry / workforce programs, retention of students.).*
☒ **Building World-class Academic Programs and Research Capacity** *(Examples of issues that may be included under this goal would be new and/or expanded research initiatives, enhancements of certain academic programs or program implementation / expansion of non-targeted programs.)*
☐ **Meeting Community Needs and Fulfilling Unique Institutional Responsibilities** *(Examples could include issues important to a regional area or specific to an institution's mission.)*

I. Needs Statement *(What need will be addressed with the provision of funds for this issue?)***:**

With over 26 million specimens and artifacts in its collections, and an emphasis on Florida, the southeastern U.S., and the circum-Caribbean, the Florida Museum of Natural History (FLMNH) houses one of the largest scientific collections in the nation. The data associated with these specimens represent an irreplaceable information resource about the biodiversity and distribution of plants and animals in space and time. Yet, despite 100 years of collecting and documenting, much of the data exists only in hard copy where it can't be computer-accessed or shared electronically, limiting its usefulness. Linked information such as specimen images, DNA sequences, library citations, frozen tissues, and geographical localities, can dramatically enhance the value of the original specimen data. When the specimen data and the linked information are available in electronic format, and connected via a functioning Cyberinfrastructure, they can be accessed and examined rapidly by students and researchers in Florida as well as the world-over. Such information is essential to: ecologists investigating habitat preservation or the influence of invasive

species on natural populations; environmental engineers assessing the biotic effects of pollution or climate change; conservation biologists seeking to preserve biodiversity; regional and city planners concerned with the impact of development; medical researchers tracking natural vectors of disease; biologists predicting the spread of agricultural pests; and many more. The Bioinformatics Renaissance will revolutionize our ability to ask and answer questions about our natural world and realize a huge return on the investment of decades of data collected by hundreds of faculty, staff and students.

The FLMNH, UF Research and Graduate Programs, and the UF Provost collectively committed $500,000 to jump-start the first phase of this initiative. The FLMNH just hired Drs. Reed Beaman and Nico Cellinese away from Yale University this spring. They rank among the world's leading scientists in the field of biodiversity informatics. Even before arriving on campus, this team was selected as one of four semi-finalists to submit a NSF Plant Science Cyberinfrastructure Collaborative proposal for $50 million, which was submitted through UF in April. Drs. Beaman and Cellinese were notified on May 23, 2007 that their grant proposal was selected as one of two finalists. The NSF site visit team will arrive on campus Tuesday, June 12, 2007 for their review of the research team, facilities and infrastructure, and UF's institutional commitment. **The FLMNH requests $1,086,000 ($585,000 one-time funds; $501,000 recurring) to grow this Bioinformatics Initiative at UF.**

II. Justification

A. Description of the service or program to be: The information stored in collections, such as those at the FLMNH, is vitally important for documenting and conserving biodiversity; however, its applications extend far beyond basic science and conservation. As the world's biodiversity comes under ever-increasing threats, whether from uncontrolled development, anthropogenic climate changes, pollution, or other factors, it becomes critical to develop a better understanding of the world's biota. Scientists have been gathering this information for over 200 years, and the majority of these data are stored in natural history museums. Unfortunately, most of this information has been unavailable to rapid, large-scale examination because the data are textual and cannot be rendered digitally. This bioinformatics initiative will make UF not only competitive, but the model in a field where it has lagged behind other major universities.

Gainesville is home to the second largest collection of natural history specimens in the country, second only to the Smithsonian Institution. The information associated with these specimens, including species descriptions, geographic localities, images, library citations, frozen tissues, DNA sequences, etc., represents an enormous library of life on Earth. The University of Florida and Florida Museum of Natural History have partnered to assemble a bioinformatics initiative whose goal is to develop the tools to connect the electronic databases that hold this information with each other, as well as link to national and international biodiversity enterprises such as the Global Biodiversity Information Facility in Denmark.

This is a new program that clearly complements the **Building World-Class Institutions** goal of the 2008-09 Board of Governors Strategic Plan.

B. **Description of current university initiatives, and their resources, that will strengthen the provision of this program:** UF/FLMNH is uniquely poised to be the national leader in biodiversity informatics and environmental biology. The size and importance of the museum research collections, the university setting that encourages student training, the overall strength of UF with excellent associated CLAS departments such as Anthropology, Botany, Geosciences, and Zoology, along with associated IFAS departments such as Entomology & Nematology, Fisheries, Wildlife Ecology and Conservation, are unique in the U.S. The only missing component is strength in collection-related bioinformatics. The tremendous success of the University of California, Berkeley and the University of Kansas as leaders in biodiversity studies, despite their less important collection resources, is the direct result of the investment they made in bioinformatics.

C. **Description of outcome anticipated:** This initiative will allow UF/FLMNH to make all of our existing specimen information available via the Internet over the next few years, catapulting the UF/FLMNH to first place nationally in the amount of information served to the public, scientists and public servants. Once linked via the Internet with global databases, they will be mined by UF researchers and students for information vital to biodiversity and environmental issues facing Florida and the nation. Other institutions will look to UF and FLMNH for leadership in this rapidly expanding area of science, ultimately leading to new opportunities in genetics, medicine, and agriculture, in addition to basic biology. Specimen information can be used to trace the spread of invasive species and disease vectors and will become increasingly important as scientists and lawmakers seek to understand the impact of global warming on the distribution of species and habitats throughout Florida.

As mentioned in Section I, the two new UF faculty members hired to jump-start this bioinformatics initiative have already submitted a $50 million grant proposal to the National Science Foundation's new Plant Science Cyberinfrastructure Collaborative. A final decision will be made in November 2007 with funding of the successful proposal to begin early in 2008. The team of Beaman and Cellinese will bring $2 million in current bioinformatics NSF funding to UF from Yale University when they start in August 2007. Additional proposals to NSF and to private foundations will be forthcoming within the 2008-2009 academic year. They will involve the migration of diversified museum collection databases to a common platform, addition of bioinformatics components to renewals of two current "Assembling the Tree of Life" grants at the FLMNH, a proposal to integrate the Biocorder and TOLKIN initiatives, and renewal for their web service design grant for rapid digital specimen image and data capture.

III. Budget Request for 2008-09 (detail information provided on the OB Form II):

		2007-08 Budget for Issue (A)	**2008-09 State Funds Requested (B)**	2008-09 Anticipated Reallocation (C)		Budget for 2008-09 and Incremental Years (D)
a.	Recurring Funds:	$200,671	**$501,000**	$0		$501,000
b.	Non-recurring Funds:	$300,000 [1,2]	**$585,000**	$0		$585,000
c.	Total:	$500,671	**$1,086,000**	$0		$1,086,000

A. Identify 2007-08 funds (if not E&G funds, provide the source of the funds) that will be used to initiate this program (column A).

[1]Research and Graduate Programs - $200,000
[2]Florida Museum Grant Overhead - $100,000

B. Identify the amount of funds requested for 2008-09 (column B).

C. Identify existing programs from which funds will be reallocated, if applicable (include for example, salaries from reallocated or dedicated personnel) (column C).

D. If this is a multi-year request, identify the incremental funds needed from the state for each future year, by year, for a maximum of five years (column D only includes column B plus each future year's need).

IV. Facilities:

A. Does this issue require an expansion or construction of a facility?

This program does not require an expansion or construction of a facility.

B. If yes, is the project identified on the Capital Improvement List? If so, identify the project, fiscal amount, year requested and priority number.

	Facility Project Title	Fiscal Year	Amount Requested
1.			
2.			

2008-2009 Legislative Budget Request
EDUCATIONAL AND GENERAL
POSITION AND FISCAL SUMMARY
Operating Budget Form II

University: **University of Florida**
Issue Title: **Biodiversity and Environmental Biology: The Bioinformatics Renaissance**

	RECURRING	NON-RECURRING	TOTAL
Positions			
Faculty	1.00	0.00	1.00
Other (A&P/USPS)	5.00	0.00	5.00
Total	6.00	0.00	6.00
Salary Rate (for all positions noted above)			
Faculty	$70,000	$0	$70,000
Other (A&P/USPS)	$224,000	$0	$224,000
Total	$294,000	$0	$294,000
Salaries and Benefits	$405,978	$0	$405,978
Other Personal Services	$60,000	$0	$60,000
Expenses	$35,022	$385,000	$420,022
Operating Capital Outlay	$0	$0	$0
Electronic Data Processing	$0	$200,000	$200,000
Special Category (Specific)	$0	$0	$0
	$0	$0	$0
	$0	$0	$0
	$0	$0	$0
Total All Categories	$501,000	$585,000	$1,086,000

State University System of Florida
Educational and General
2008-2009 Legislative Operating Budget Issue
Form I

University:	**University of Florida**
Descriptive Issue Title:	**Florida Teach: Increasing the Quality and Quantity of Mathematics and Science Teachers**
University Priority Number:	**2**
Date Approved by Board of Trustees:	**6-15-2007**

Check **only one** of the following to indicate which SUS Strategic Plan Goal/Objective this issue will address:

☐ **Access to and Production of Degrees** *(Examples of issues that may be included under this goal would be new enrollment growth, outreach, recruitment, financial aid, academic tracking, advising, etc.)*
☒ **Meeting Statewide Professional and Workforce Needs** *(Examples of issues that may be included under this goal would be new or expanded targeted and/or educated citizenry / workforce programs, retention of students.).*
☐ **Building World-class Academic Programs and Research Capacity** *(Examples of issues that may be included under this goal would be new and/or expanded research initiatives, enhancements of certain academic programs or program implementation / expansion of non-targeted programs.)*
☐ **Meeting Community Needs and Fulfilling Unique Institutional Responsibilities** *(Examples could include issues important to a regional area or specific to an institution's mission.)*

I. **Needs Statement** *(What need will be addressed with the provision of funds for this issue. **The needs statement should be brief and succinct.**):*

The Florida Board of Governors (BOG) Strategic Plan, adopted June 9, 2005, identifies teacher shortages in middle and high school mathematics and science as a critical need to be addressed state-wide. The BOG goal is to produce 2,729 degrees in critical needs subject areas system-wide by 2012/2013. In addition, the BOG Strategic Plan targets several thousand graduates in emerging technology fields. The production of such college graduates will require a cohort of well-trained STEM (science, technology, engineering, and mathematics) graduates from Florida high schools. Unfortunately, many high schools do not have a sufficient quantity of qualified mathematic and science teachers.

Recent estimates suggest that 18% - 30% of new Florida secondary mathematics and science teachers do not have certification appropriate to the subject they are hired to teach. The University of Florida currently does not have pathways for undergraduates to

pursue teaching credentials as an undergraduate. The Florida Teach initiative will meet a *critical state workforce need* and contribute to meeting secondary school STEM needs by significantly increasing the number of B.A. & B.S. graduates in STEM fields who graduate with eligibility for teaching certification through a new FL-DOE-approved minor in education.

II. Justification

A. Description of service or program to be provided: *(Include whether this is a new or expanded service/program. If expanded, what has been accomplished with the current service/program?)*

Florida Teach will be a new program at UF, collaboratively designed and managed by the College of Liberal Arts and Sciences and the College of Education. The program will increase the number of quality mathematics and science teachers prepared to teach at the undergraduate level and provide graduate-level support during the critical induction years when as much as 30% of the teaching force leaves the profession after three years. Florida Teach will take advantage of a new state of Florida rule that permits universities to offer an education minor as a means of certification for teacher candidates majoring in liberal arts and sciences disciplines. Completers of the competency-based education minor meet all the state's professional education requirements and are recommended for a temporary teaching certificate. Upon completion of one year of successful teaching, a professional certificate can be issued. Florida Teach will target approximately 100 graduates/per year by the year 2013 in math and sciences with professional 6-12 teacher certification.

The central strategy of Florida Teach is to create a comprehensive program in which students with a potential interest in STEM teaching at the 6-12 level are recruited, mentored, and rewarded throughout their university career, with a strong emphasis on field experiences in area classrooms starting in the first year in the program. Florida Teach also embraces a job-embedded professional development framework that equips teachers with critical subject-specific knowledge and teaching skills while teaching. A robust induction approach will be developed and made available to Florida Teach graduates, as well as new mathematics and science teachers who enter teaching in all Florida schools through alternative certification routes (currently 49% of new teachers!). Finally, we will customize a professional development program for those teachers who host Florida Teach interns in their classrooms so they can become effective mentors of new teachers.

Critical features of the Florida Teach program are:

- Employs professional faculty and program staff, with dedicated, central office space and classrooms. The bulk of the recurring budget for Florida Teach is for these faculty and staff. The program faculty will be recruited nationally and will have outstanding academic credentials. Experience in the public schools will be strongly preferred for the faculty positions.

- Creates new major sequences in science and math through CLAS departments; programs will be 120 hours and can be completed in four years. Expands existing Pathways to Teaching program between CLAS and CoEd.
- Insures graduates earn a Florida Professional Teaching Certificate in Mathematics, Biology, Chemistry, Physics, or Earth-Space Science upon degree completion and one year of successful teaching in a Florida school.
- Creates multiple entry points for 2nd, 3rd, 4th year and post-baccalaureate students.
- Offers specialized courses in the CLAS and COE departments, focusing on scientific inquiry, pedagogy, and applications of technology

The production of large numbers of STEM teachers will require much more than a curriculum for a degree, as mentoring and a sense of a community with other future teachers must be built. The program will be administered by a central academic program office, which will be closely modeled after UF's undergraduate Honors programs. As with honors programs, Florida Teach students will be part of something special. For example:

- Recruitment of new Florida Teach students begins with Preview, in the summer prior to their arrival on campus.
- Students will be offered paid internships and scholarships funded by private and corporate donations.
- Advising by professional mentors, who will also assist with postgraduate placement in Florida schools.
- Field experiences in local public schools will begin in the first year of program. These experiences are meant to solidify their commitment to teaching in the early years their college careers.
- The field experiences are mentored by specially chosen science or mathematics teachers in the surrounding school districts, selected and compensated by the program
- Graduate assistants will supplement the program faculty and assist in field experiences, professional training, and enhancement of subject area skills for Florida Teach students.
- Teaching institutes and in-service programs will be offered to Florida mathematics and science teachers, and these workshops will increase knowledge and skills in subject areas and contemporary teaching methods.

Building on successful national models such as the UTeach program at the University of Texas at Austin and the California Teach program in the University of California system, we propose an intensive, comprehensive, and attractive program in science education and mathematics education at the University of Florida.

B. **Description of current university initiatives, and their resources, that will strengthen the provision of this service/program**:

The University of Florida has many existing academic programs that will serve as the underlying infrastructure for Florida Teach:

- Existing B.S./B.A. program structures, and an approved Pathways to Teaching minor. Approximately 1900 mathematics and science majors and approximately 230 full-time mathematics and science faculty currently in CLAS.
- Specialized classrooms and laboratories available in CLAS and CoEd.
- New faculty lines in Science Education and in Mathematics Education recently filled in CoEd.
- Existing Academic Advising Center in CLAS and Student Services Center in CoEd would assure program completion with teacher certification requirements.
- Existing campus-wide science outreach efforts include CPET (Center for Precollegiate Education and Training), SPICE (an NSF-funded GK-12 program).
- Bolstered by a $1.5 million grant from the Howard Hughes Medical Institute (HHMI) and a match of nearly $3 million in university and private funds, nearly 50 UF academic departments in 10 colleges are partnering in the *Science for Life* initiative. *Science for Life* is creating a new interdisciplinary science teaching laboratory, undergraduate opportunities for authentic research experiences, and a series of innovative new science courses to recruit and retain bright and talented students into the sciences.

C. **Description of outcome anticipated:** *(Be specific. For example, if this issue focuses on improving retention rates, indicate the current retention rate and the expected increase in the retention rate.* In addition, identify the following, if applicable.)

i. Number of Headcount Students receiving services or participating in the program by year, for the next five years:
ii. Number of FTE Students receiving services or participating in the program by year for the next five years. If these are new FTE Students are they included in the 5-year enrollment plan?
iii. Additional degrees, if any, produced as a result of this initiative *(Indicate the additional number of Bachelor, Master, Doctoral & Professional degrees produced by school year.)*
iv. Other outcomes:

Teachers Produced at UF, 2000-2005

	2000/01	2001/02	2002/03	2003/04	2004/05	Total
Math 6-12	6	5	3	5	0	19
Biology 6-12	7	8	7	11	10	43
Chemistry 6-12	0	0	0	2	1	3
Physics 6-12	0	0	3	0	0	3

Expected Production of Math and Science Teachers by Florida Teach 2008-2013

Year	2008/09	2009/10	2010/11	2011/12	2012/13
Number of New Students	50	75	100	125	150
Total Students in Program	50	125	200	275	350
Graduates (B.S./B.A.)		25	50	75	100

The targets represent an approximately 7-fold increase in STEM 6-12 teachers once the level of 100 graduates per year is attained. By way of concrete example, as of Spring 2005 the UTeach program at the University of Texas (http://uteach.utexas.edu/) recruits approximately 100 new students each fall, has 403 students enrolled in the program, and in 2004 graduated 76 students in math and science with professional certification. Based on experiences in UTeach, we expect that 50% of the new teachers will come from biological sciences fields; the remaining 50% will come equally from mathematics, chemistry, and physics.

Other outcomes:

- UF-trained teachers will be ambassadors for the State University System in the Florida school systems, increasing the ability of our universities to attract the best and most diverse entering students, especially in math and science. This deeper talent pool should help all Florida colleges and universities to develop more robust undergraduate programs in STEM fields. Therefore, Florida Teach will help the State meet its critical needs in emerging technologies for economic development and the health professions.

- The program can serve as a coordinator for interactions with the public schools for many different UF programs, including those funded by federal and state grants. The program will increase the UF success rate for research grant proposals that incorporate science and mathematics education components.

- The program will actively seek federal, foundation, and private funding to enhance teacher training activities on campus.

- The program will coordinate with the recently funded Howard Hughes Medical Institute UF Science for Life grant and will assist that program in meeting its educational goals, especially in the biological sciences teacher training component. This program includes several other institutions, including Scripps Florida, among its collaborators.

- The commitment by UF to the program should enhance the STEM quality of local schools and improve chances of attracting top faculty, who are concerned about the local school quality.

- Based on the University of Texas UTeach experience, we can project that the program will be more diverse than the UF student population as a whole. This will improve the diversity in math and science majors and enhance proposal success for those disciplines.

- Ultimately, improving the math and science literacy of the Florida population will increase the public support for education, technology and research investments.

- Florida Teach at UF can become a model for similar programs at other SUS schools.

III. **Budget Request for 2008-09 (detail information provided on the OB Form II):**

		2007-08 Budget for Issue (A)	**2008-09 State Funds Requested (B)**	2008-09 Anticipated Reallocation (C)		Budget for 2008-09 and Incremental Years (D)
a.	Recurring Funds:	$0	**$ 841,000**	$ 14,000		$1,700,000
b.	Non-recurring Funds:	$0	**$ 159,000**	$0		$663,000
c.	Total:	$0	**$1,000,000**	$14,000		$2,363,000

A. Identify 2007-08 funds (if not E&G funds, provide the source of the funds) that will be used to initiate this program (column A).
B. Identify the amount of funds requested for 2008-09 (column B).
C. Identify existing programs from which funds will be reallocated, if applicable (include for example, salaries from reallocated or dedicated personnel) (column C).

Tom Dana (College of Education) and Alan Dorsey (College of Liberal Arts and Sciences) will serve as Co-Directors of Florida Teach and will donate time to its start-up and overall management.

D. If this is a multi-year request, identify the incremental funds needed from the state for each future year, by year, for a maximum of five years (column D only includes column B plus each future year's need).

	2008-2009	**2009-2010**	**2010-2011**	**2011-2012**	**2012-2013**
Recurring	$841,000	$155,000	$304,000	$200,000	$200,000
Non-Recurring	$159,000	$204,000	$100,000	$100,000	$100,000
Total	$1,000,000	$359,000	$404,000	$300,000	$300,000

IV. **Facilities:**

A. Does this issue require an expansion or construction of a facility?

No. However, a centralized office/teaching lab suite on the UF campus will need to be identified. Some renovations may be necessary.

B. If yes, is the project identified on the Capital Improvement List? If so, identify the project, fiscal amount, year requested and priority number.

	Facility Project Title	Fiscal Year	Amount Requested
1.			
2.			

2008-2009 Legislative Budget Request
EDUCATIONAL AND GENERAL
POSITION AND FISCAL SUMMARY
Operating Budget Form II

University: **University of Florida**

Issue Title: **Florida Teach: Increasing the Quality and Quantity of Mathematics and Sciences Teachers**

	RECURRING	NON-RECURRING	TOTAL
Positions			
Faculty	6.00	0.00	6.00
Other (A&P/USPS)	5.00	0.00	5.00
Total	11.00	0.00	11.00
Salary Rate (for all positions noted above)			
Faculty	$325,000	$0	$325,000
Other (A&P/USPS)	$150,000	$0	$150,000
Total	$475,000	$0	$475,000
Salaries and Benefits	$617,500	$0	$617,500
Other Personal Services	$75,000	$0	$75,000
Expenses	$53,500	$0	$53,500
Operating Capital Outlay	$10,000	$0	$10,000
Electronic Data Processing	$0	$0	$0
Special Category (Specific)	$0	$0	$0
Inservice teacher workshop	$50,000	$0	$50,000
Internship/travel	$35,000	$0	$35,000
Space renovation	$0	$159,000	$159,000
Total All Categories	$841,000	$159,000	$1,000,000

State University System of Florida
Educational and General
2008-2009 Legislative Operating Budget Issue
Form I

University:	**University of Florida**
Descriptive Issue Title:	**Forensic DNA Identification Laboratory**
University Priority Number:	**3**
Date Approved by Board of Trustees:	**6-15-2007**

Check **only one** of the following to indicate which SUS Strategic Plan Goal/Objective this issue will address:

☐ **Access to and Production of Degrees** *(Examples of issues that may be included under this goal would be new enrollment growth, outreach, recruitment, financial aid, academic tracking, advising, etc.)*
☐ **Meeting Statewide Professional and Workforce Needs** *(Examples of issues that may be included under this goal would be new or expanded targeted and/or educated citizenry / workforce programs, retention of students.).*
☐ **Building World-class Academic Programs and Research Capacity** *(Examples of issues that may be included under this goal would be new and/or expanded research initiatives, enhancements of certain academic programs or program implementation / expansion of non-targeted programs.)*
☒ **Meeting Community Needs and Fulfilling Unique Institutional Responsibilities** *(Examples could include issues important to a regional area or specific to an institution's mission.)*

I. **Needs Statement** *(What need will be addressed with the provision of funds for this issue. **The needs statement should be brief and succinct.**):*

This document represents the C.A. Pound Human Identification Laboratory's (CAPHIL) need to create a forensic molecular DNA component in order to positively identify Florida's victims of violent crime and provide relief for families. There are over 100,000 missing persons at any one time in the United States and over 50,000 unidentified decedents that are known to exist. The State of Florida, serving as a microcosm for the US with its overall large population size, mix of urban and rural settings, fluctuating migrant population and multi-interstate system, accounts for a great many of these missing persons and unidentified human remains. UF is in a position to set the Gold-Standard for forensic DNA identification. This request is critical in order to upgrade capabilities to compete for federal funds.

Missing persons and unidentified human remains investigations, particularly, if a case goes cold, present a tremendous challenge for financially strapped

state and local law enforcement agencies. As of December 31, 2006, there were 110,484 active missing person records in the NCIC (National Crime Information Center). Children under the age of 18 denote 53.18% of the records and 11.46% represent young adults between the ages of 18 and 20 (FBI-NCIC Missing Person and Unidentified Person Statistics for 2006). Many who go missing are never reported. By enhancing and expanding the capabilities of the CAPHIL, to include mitochondrial (mt) DNA sequencing, UF proposes to develop the capacity to perform molecular analyses that does not currently exist anywhere in the State of Florida: to identify the unidentified dead and assist Florida's families, law enforcement agencies, and medical examiners in resolving cold cases and unsolved cases of missing persons.

This request directly addresses the needs of Florida's citizens and the CAPHIL's mission ***to be the statewide center for identification of Florida's missing and unidentified; to conduct all functions required to care for our past, present, and future victims; to bring closure to families; and to ensure there is never again an unknown decedent.***

II. Justification

A. Description of service or program to be provided: *(Include whether this is a new or expanded service/program. If expanded, what has been accomplished with the current service/program?)*

The purpose of this funding request is to augment and enhance the current capability of the human identification process provided by the CAPHIL by incorporating the latest technologies available in genetic forensics. It is proposed to develop molecular forensic services, specifically using mtDNA technologies that will be available to law enforcement and families seeking to reconcile cold cases, missing person's and unidentified decedents.

Florida currently has over 5,000 missing adults and children. Many of these are presumed dead. There are over 500 known unidentified bodies in the state of Florida per a recent survey of the Medical Examiner Commission and the Florida Department of Law Enforcement (FDLE). The 500 refers only to cases after 1975. There are likely numerous others in Potter's Fields throughout the state.

These new forensic services, and others, will be delivered to any local or state agency who arranges to submit tissue samples from unidentified decedents and exemplar samples from possible family members. DNA services will expand the current program of clinical services delivered by the CAPHIL to Florida's citizens, law enforcement and medical examiner's by increasing the number of decedents identified, and further expand our mission regionally and nationwide. Forensic scientists at the Pound Laboratory have been cooperating with law enforcement and medical examiners since the late 1980's and in that time have provided clinical services and courtroom

testimony in judicial circuits worldwide and have examined over 2400 decedents. The FDLE, representing the needs of the people of this state, currently do not and will not develop these very specialized DNA laboratory capabilities. All molecular analyses, data collection and sampling of both primary and family reference samples tissues will strictly adhere to the published FBI protocols and forensic standards. Further we will establish a systematic re-evaluation of any and all human tissue (bone, hair, and teeth) considered to be related to any cold case regardless of the passage of time for its evidentiary potential, including the exhumation of any and all Jane or John Does interred in 'Potter's Fields' throughout the state of Florida, regardless of postmortem interval. This model has been used successfully by the Joint Pacific Accounting Command – Central Identification Laboratory to identify the nation's military service members from all foreign conflicts.

The new facility will also perform technical research on enhancing the analytical value of compromised or contaminated tissue samples and exploring the potential DNA yield of abiotic sources, such as reduced size STR and mtDNA amplicon performance. Research has demonstrated that a reduction in amplicon size will increase the potential success from severely degraded tissue samples such as bone exposed to the environment and passage of time. There is little information on the persistence of mtDNA from degraded human tissue in contact with soil. We will test issues related to the extraction and purification of human DNA from soil thus increasing our ability to positively identify cold cases. Several commercially available DNA extraction protocols will be evaluated for their ability to extract and purify template DNA and new technologies developed and patented based on these results.

Research on contaminated tissue including pathogens naturally occurring or via an unfriendly agent, especially after exposure to the elements and more specifically thermal damage will directly address issues facing the government after 911 and continuing today.

B. Description of current university initiatives, and their resources, that will strengthen the provision of this service/program:

a. Consultation and coordination with the Florida Department of Law Enforcement Forensic Laboratories is on going.

b. The University of Florida's College of Medicine, Department of Pathology, Immunology and Laboratory Medicine, recently acquired the Office of the District Eight Medical Examiner and provides clinical pathologic services. Cooperation with that unit has been long standing and this new program will compliment their daily mission.

c. The University of Florida's Cancer/Genetic Research Institute's program in Genetics will be an invaluable resource for young new researchers.

d. The University of Florida's Cancer/Genetic Research Institute, a 60 million dollar investment, will provide additional space to the current CAPHIL to house the new capability, taking advantage of state of the art equipment and personnel attuned to these specific requirements.

e. The Interdisciplinary Program in Biomedical Science's recent decision to create a program in Forensic Medical Sciences at the Master's and ultimately Doctoral level will compliment this new initiative by providing students with hands-on experience.

III. **Description of outcome anticipated:** *(Be specific. For example, if this issue focuses on improving retention rates, indicate the current retention rate and the expected increase in the retention rate.* In addition, identify the following, if applicable.)

The University of Florida has clearly demonstrated its commitment to molecular genetics as evidenced by the newly dedicated 350,000 square foot Cancer/Genetic Research Complex. Nearly 400 faculty, research scientists and staff are devoted to developing new methodologies and techniques, and are generating delivery systems for medical science. The CAPHIL moved into a custom-designed 4000 square foot laboratory, with a full autopsy suite, cold room, radiography, etc., in this state-of-the-art facility in July of 2006. This new initiative takes advantage of any and all potential collaborations with in-house expertise.

The establishment of this facility will allow the University of Florida to take advantage of the President's allocation of nearly 5 billion dollars (www.DNA.gov) made available for resolving cold cases. The University of Florida will become the only non-profit institution east of the Mississippi to have these capabilities and can become the sole-source for this ever growing need for the citizens of the state. Finally, we envision making these services available to any submitting law enforcement agency or medical examiner in the US and the University of Florida becoming a leader in research on the circumstances these unique tissues present.

A. Number of Headcount Students receiving services or participating in the program by year, for the next five years:

Four (4) students from the proposed IDP in forensic medical sciences will be required and form the core for the first two (2) years, followed by an additional two students per year.

B. Number of FTE Students receiving services or participating in the program by year for the next five years. If these are new FTE Students are they included in the 5-year enrollment plan?

Not applicable.

C. Additional degrees, if any, produced as a result of this initiative *(Indicate the additional number of Bachelor, Master, Doctoral & Professional degrees produced by school year.)*

The Interdisciplinary Program in Biomedical Sciences recent decision to create a program in Forensic Medical Sciences at the Master's and ultimately Doctoral level would be greatly strengthened by this new capability at the Pound Laboratory.

D. Other outcomes:

The resolution of cold cases, by identifying the unidentified, assists in the prosecution of homicide and otherwise undetermined deaths in Florida.

III. **Budget Request for 2008-09 (detail information provided on the OB Form II):**

		2007-08 Budget for Issue (A)	**2008-09 State Funds Requested (B)**	2008-09 Anticipated Reallocation (C)		Budget for 2008-09 and Incremental Years (D)
a.	Recurring Funds:	$0	**$611,160**	$0		$611,160
b.	Non-recurring Funds:	$0	**$820,500**	$0		$820,500
c.	Total:	$0	**$1,431,660**	$0		$1,431,660

E. Identify 2007-08 funds (if not E&G funds, provide the source of the funds) that will be used to initiate this program (column A).

F. Identify the amount of funds requested for 2008-09 (column B).

G. Identify existing programs from which funds will be reallocated, if applicable (include for example, salaries from reallocated or dedicated personnel) (column C).

H. If this is a multi-year request, identify the incremental funds needed from the state for each future year, by year, for a maximum of five years (column D only includes column B plus each future year's need).

IV. **Facilities:**

A. Does this issue require an expansion or construction of a facility?

No. Existing space in the UF Genetics and Cancer Institute will be upgraded to meet the accreditation requirements of the American Society of Crime Lab Directors.

2008-2009 Legislative Budget Request
EDUCATIONAL AND GENERAL
POSITION AND FISCAL SUMMARY
Operating Budget Form II

University: **University of Florida**
Issue Title: **Forensic DNA Identification Laboratory**

	RECURRING	NON-RECURRING	TOTAL
Positions			
Faculty	9.00	0.00	9.00
Other (A&P/USPS)	0.00	0.00	0.00
Total	9.00	0.00	9.00
Salary Rate (for all positions noted above)			
Faculty	$110,000	$0	$110,000
Other (A&P/USPS)	$254,000	$0	$254,000
Total	$364,000	$0	$364,000
Salaries and Benefits	$80,160	$0	$80,160
Other Personnel Services	$32,000	$0	$32,000
Expenses	$0	$0	$0
Operating Capital Outlay (Equipment)	$0	$420,500	$420,500
Electronic Data Processing	$135,000	$0	$135,000
Special Category	$0	$0	$0
(Required Upgrades for Certification) including HVA	$0	$400,000	$400,000
at Forensic standards, Cross-Contamination	$0	$0	$0
Mitigation, and specialized Security measures	$0	$0	$0
Total All Categories	$611,160	$820,500	$1,431,660

State University System of Florida
Educational and General
2008-2009 Legislative Operating Budget Issue
Form I

University:	**University of Florida**
Descriptive Issue Title:	**Interdisciplinary Program in Sustainability and a Healthy Environment**
University Priority Number:	**4**
Date Approved by Board of Trustees:	**6-15-2007**

Check **only one** of the following to indicate which SUS Strategic Plan Goal/Objective this issue will address:

☐ **Access to and Production of Degrees** *(Examples of issues that may be included under this goal would be new enrollment growth, outreach, recruitment, financial aid, academic tracking, advising, etc.)*
☐ **Meeting Statewide Professional and Workforce Needs** *(Examples of issues that may be included under this goal would be new or expanded targeted and/or educated citizenry / workforce programs, retention of students.).*
☐ **Building World-class Academic Programs and Research Capacity** *(Examples of issues that may be included under this goal would be new and/or expanded research initiatives, enhancements of certain academic programs or program implementation / expansion of non-targeted programs.)*
☒ **Meeting Community Needs and Fulfilling Unique Institutional Responsibilities** *(Examples could include issues important to a regional area or specific to an institution's mission.)*

I. **Needs Statement** *(What need will be addressed with the provision of funds for this issue. **The needs statement should be brief and succinct.**):*

Sustainability is a quickly evolving cross-cutting perspective that links teaching, research, extension and service across disciplines involving ecology, economy and social equity, set in a global context. It is integral to nine of the twelve "Strategies for Maximum Impact" identified in the University of Florida Strategic Work Plan.[1] It also coheres with the growing recognition around the world, including at the 2002 United Nations World Summit on sustainable Development, which declared that developing sustainable lifeways and livelihoods must become civilization's axial social organizing principle. This belief was accurately grounded on the recognition that the health and prosperity of human beings and nature are intimately related.

[1] The strategies most closely tied to sustainability are: 2) Internationalization, 3) Life Sciences, 4) Ecology and the Environment, 5) Energy, 6) Agriculture and its Impact, 9) Professional Preparation, 10) Health Professionals and Health Care, 11) Children and Families, and 12) Aging. Each of these strategies, *and the synergies they generate*, will increasingly benefit from adoption of the knowledge bases, research methods and ethical positions described by sustainability.

The University of Florida's Mission Statement, included in the Board of Governors' Strategic Plan, specifically recognizes that "changing times will require that we continually expand and evaluate our academic aspiration," and that the "University of Florida aspires to advance the state, nation and the international community by strengthening the human condition and improving the quality of life." The proposed interdisciplinary Program in Sustainability and a Healthy Environment directly addresses this culminating element in the University's Mission Statement.

II. Justification

A. Description of service or program to be provided: *(Include whether this is a new or expanded service/program. If expanded, what has been accomplished with the current service/program?)*

The Program for Sustainability and a Healthy Environment will be a new program designed to utilize expertise developed internationally to promote sustainability literacy through graduate and undergraduate teaching and to promote sustainable development in Florida through research and extension. *It will connect not duplicate, ongoing research programs.* It will formalize the relationship between UF's nationally recognized campus sustainability practices and the academic mission by incorporating the Office of Sustainability into this new comprehensive program. Utilizing the campus itself as a laboratory for sustainability research will more efficiently connect our statewide researchers on campus and extension personnel in the field. The Program proposes the following linked components:

- The Sustainable Development Laboratory (incorporating the existing Office of Sustainability)
- Undergraduate Certificate in Sustainability Studies (fostering sustainability literacy)
- Graduate Certificate in Sustainability and a Healthy Environment (training interdisciplinary professionals for the work force; creating new forms of service learning)
- Program in Applied Sustainability Research (developing new technologies and addressing human behavioral change)
- Extension Program in Sustainability (ensuring that technologies and knowledge are transferred where they are needed in Florida and beyond)

The Certificate programs will be campus-wide and incorporate experiential service learning into their pedagogy. The research and extension programs will bring new resources to the following campus units: The Warrington College of Business Administration, The College of Design Construction and Planning, The College of Engineering, The Levin College of Law, The School of Natural Resources and the Environment, The College of Liberal Arts and Sciences, and IFAS, including the IFAS Cooperative Extension Service.

B. **Description of current university initiatives, and their resources, that will strengthen the provision of this service/program**:

The new program will build on current and proposed sustainability initiatives at UF.

First, the Office of Sustainability, viewed as a national leader, and created as a five-year project by the President, will be institutionalized and explicitly linked to the academic program by creation of the Campus Sustainable Development Laboratory. This virtual facility will utilize the entire campus as the basis for experimentation in sustainable technologies and behavioral change.

Second, current research Centers, Institutes and Programs at UF have some focus on sustainability as it relates to water, energy, land use, natural resources and the built environment, among others, but consider sustainability from discrete disciplinary perspectives. This program will use sustainability's triple bottom line to integrate research between and among these campus units through project-based collaborations.

Third, the IFAS Cooperative Extension Service has formed a fledgling sustainability working group and has recently retained several new county agents explicitly tasked with a sustainability mission. Still on-campus extension programming does not currently deliver knowledge generated by all of UF's Colleges; some such as Business Administration and Design Construction and Planning are critical to addressing sustainability, yet employ no statewide extension specialists.

Finally, UF has a rich curriculum in courses that explicitly address, or are related to, sustainability - but these courses or collections of courses are not coordinated across the range of disciplines implicated in the triple bottom line. In the Fall of 2007 the Office of the Provost funded a project of the UF Sustainability Committee to support mini-grants to incorporate sustainability into the curriculum. More than a dozen proposals from a wide range of disciplines were funded. Clearly, there is significant faculty interest in bringing sustainability theory and methods into the classroom.

The Program for Sustainability and a Healthy Environment will connect and scale up this rich array of current and developing resources by creating conceptually sound certificate programs, organizing project-based interdisciplinary research and scholarship; promoting applied sustainability extension and outreach; modeling campus sustainability initiatives, and fostering state and national and international exchange through conferences and marketing.

C. **Description of outcome anticipated:** *(Be specific. For example, if this issue focuses on improving retention rates, indicate the current retention rate and the expected increase in the retention rate.* In addition, identify the following, if applicable.)

i. Number of Headcount Students receiving services or participating in the program by year, for the next five years:

ii. Number of FTE Students receiving services or participating in the program by year for the next five years. If these are new FTE Students are they included in the 5-year enrollment plan?
iii. Additional degrees, if any, produced as a result of this initiative *(Indicate the additional number of Bachelor, Master, Doctoral & Professional degrees produced by school year.)*
iv. Other outcomes:

The Program's outcomes will reflect and integrate the university's three part mission of teaching, research and service/extension.

Teaching: Research supported by the Office of the Provost concluded that our current offerings in sustainability-related courses are comparable to some peer universities. However, these are not connected and marketed across disciplinary divides. To overcome this deficiency, 2 new university-wide certificate programs will be developed for undergraduate and graduate students. Success will be determined by enrollment levels, the extent to which these Programs attract highly qualified students, post-graduate employment in sustainability-related professions, by the development of new and retooled existing courses (especially capstone courses, those that integrate service learning and those that offer critical approaches to sustainability theory), recruitment and retention of new faculty, and by Program recognition by state and national accreditation entities, professional associations and peer institutions.

Research: The program will create connectivity between colleges, subunits (institutes, centers, programs) and individual faculty members and to the Office of Sustainability. New lines will be distributed according to a collaborative decision making process; some lines may be used as rotating visiting lines, dedicated to time-limited projects. Specific projects, collaboratively determined and developed, will focus interdisciplinary action on programmatic priorities, also collaboratively determined. Success will be determined based on the extent to which interdisciplinary research collaborations result in new knowledge and technologies developed, applied and reported (through publications), and the extent to which applications, practices and policies are disseminated and implemented. Success will further be determined by the extent to which on-campus demonstration projects are established and long-term monitoring systems put into place. The number and value of interdisciplinary grants the Program facilitates will also serve as a key evaluative metric.

Extension: Service in a statewide context is described as extension and is the critical component of the University of Florida's land grant mission. The role of extension must change to reflect the State's changing priorities and under the current IFAS leadership this has already begun. This Program will add new statewide extension faculty from the participating units in order to further sustainability extension, and contribute to new county extension faculty where demand is expressed. Success will be measured by the extent to which knowledge and technologies are transferred from the University of Florida campus to county extension offices and applied in the communities they serve. Growth and development of sustainability extension services can also be measured

against already developed programs in peer institutions such as Michigan State, Wisconsin and North Carolina.

Service and Service Learning: Service learning allows students to incorporate community service into their course work, while reflecting on their community-based experiences. Typically described as the "scholarship of engagement" this form of pedagogy is underutilized and undervalued. This Program will fortify existing service learning programs in sustainability-related fields, foster new ones, and encourage interdisciplinarity in service learning. Success will be determined based on the extent to which students contribute to the incorporation of sustainability practices in community contexts. Because service learning remains a developing pedagogy, an additional metric will be a demonstration of national leadership through traditional academic venues such as conferences and publications.

III. **Budget Request for 2008-09 (detail information provided on the OB Form II):**

		2007-08 Budget for Issue (A)	**2008-09 State Funds Requested (B)**	2008-09 Anticipated Reallocation (C)		Budget for 2008-09 and Incremental Years (D)
a.	Recurring Funds:	$0	**$3,167,500**	$0		$3,167,500
b.	Non-recurring Funds:	$0	**$316,000**	$0		$316,000
c.	Total:	$0	**$3,483,500**	$0		$3,483,500

A. Identify 2007-08 funds (if not E&G funds, provide the source of the funds) that will be used to initiate this program (column A).
B. Identify the amount of funds requested for 2008-09 (column B).
C. Identify existing programs from which funds will be reallocated, if applicable (include for example, salaries from reallocated or dedicated personnel) (column C).
D. If this is a multi-year request, identify the incremental funds needed from the state for each future year, by year, for a maximum of five years (column D only includes column B plus each future year's need).

IV. **Facilities:**

A. Does this issue require an expansion or construction of a facility?

This project will identify existing space on campus to be renovated.

B. If yes, is the project identified on the Capital Improvement List? If so, identify the project, fiscal amount, year requested and priority number.

2008-2009 Legislative Budget Request
EDUCATIONAL AND GENERAL
POSITION AND FISCAL SUMMARY

Operating Budget Form II

University: **University of Florida**

Issue Title: **Interdisciplinary Program in Sustainability and a Healthy Environment**

	RECURRING	NON-RECURRING	TOTAL
Positions			
Faculty	24.00	0.00	24.00
Other (A&P/USPS)	8.00	0.00	8.00
Total	32.00	0.00	32.00
Salary Rate (for all positions noted above)			
Faculty	$1,434,000	$0	$1,434,000
Other (A&P/USPS)	$399,000	$0	$399,000
Total	$1,833,000	$0	$1,833,000
Salaries and Benefits	$2,425,500	$0	$2,425,500
Other Personal Services	$37,000	$0	$37,000
Expenses	$705,000	$316,000	$1,021,000
Operating Capital Outlay	$0	$0	$0
Electronic Data Processing	$0	$0	$0
Special Category (Specific)	$0	$0	$0
	$0	$0	$0
	$0	$0	$0
	$0	$0	$0
Total All Categories	$3,167,500	$316,000	$3,483,500

State University System of Florida
Educational and General
2008-2009 Legislative Operating Budget Issue
Form I

University:	**University of Florida**
Descriptive Issue Title:	**Nanoscience Institute for Medical and Engineering Technology (NIMET)**
University Priority Number:	**5**
Date Approved by Board of Trustees:	**6-15-2007**

Check **only one** of the following to indicate which SUS Strategic Plan Goal/Objective this issue will address:

☐ **Access to and Production of Degrees** *(Examples of issues that may be included under this goal would be new enrollment growth, outreach, recruitment, financial aid, academic tracking, advising, etc.)*
☐ **Meeting Statewide Professional and Workforce Needs** *(Examples of issues that may be included under this goal would be new or expanded targeted and/or educated citizenry / workforce programs, retention of students.).*
☒ **Building World-class Academic Programs and Research Capacity** *(Examples of issues that may be included under this goal would be new and/or expanded research initiatives, enhancements of certain academic programs or program implementation / expansion of non-targeted programs.)*
☐ **Meeting Community Needs and Fulfilling Unique Institutional Responsibilities** *(Examples could include issues important to a regional area or specific to an institution's mission.)*

I. **Needs Statement** *(What need will be addressed with the provision of funds for this issue. **The needs statement should be brief and succinct.**):*

Imagine a next-generation computer small enough to fit in your shirt pocket, orders of magnitude faster and more powerful, able to respond to your verbal commands, and operating on quantum mechanical logic that provides new functionality and much lower power consumption. Imagine a medical device small enough to be implanted in the body, powerful enough to diagnose disease and send real-time wireless vitals to a physician anywhere in the world. Imagine house paint that converts sunlight into electricity for the home; public buildings where single molecules of toxins are detected and eliminated. Imagine measuring the functions of a single brain cell with the resolution of individual molecules. These achievements may sound like science fiction, but are conceptually possible with the advent of nanoscale science and technology (NS&T).

Understanding and manipulating objects at the nanoscale is widely viewed as the most significant technological frontier currently being explored in science. The decision to master this length scale is not arbitrary; it represents a boundary where structures engineered by man are becoming limited by current technologies; it is the scale where biological molecules and living cells function and interact; and the interface where these like dimensions merge is the new frontier that

science, engineering and medicine must conquer to advance. When matter is controlled at the nanoscale, fundamental properties of things like temperature, electricity, magnetism, and chemical reactions can change completely. The laws of classical physics describe our cosmic universe; the motions of the planets, the trajectory of a baseball, and the behavior of things we experience everyday. But the laws of quantum mechanics apply in the nano-world. The operation of computer chips in present-day computers can be explained by the laws of classical electron flow; but when electrons are confined to nanoscale-dimension they behave according to the laws of quantum mechanics. The semiconductor industry currently utilizes electron and optical lithography techniques to fabricate integrated circuits with billions of features on 8-inch silicon wafers. But this fabrication technology has progressed about as far as it can. Now, utilizing nanotechnologies, scientists have learned to manipulate individual molecules or nanowires and connect them for information processing. Consequently, future chips made with nanoscale dimensions will process information based on quantum mechanical principles and lead to computers with new logic and functionality. These new nanoscale technologies offer significant promise for innovation in virtually every sector of society including health, electronics, transportation, materials, energy, the environment, and national security, and have been heralded as "the next industrial revolution."

The Nanoscience Institute for Medical and Engineering Technologies (NIMET) was recently established at the University of Florida (UF). The center piece of the NIMET is the newly constructed Nanoscale Research Center Facility in which nanosystems will be fabricated. The purpose of this request is to provide unique, world-class instrumentation and staff for this facility so that it can create research, education, and commercialization opportunities in nanoscale science and technology in the State of Florida.

Already the State of Florida has provided:

- ***$35 million through the Public Education Capital Outlay (PECO) fund in 2004-2005 to construct the new Nanoscale Research Facility (NRF) that provides some of the most advanced NS&T capabilities such as state-of-the-art Class 100 clean rooms and advanced imaging labs for nanofabrication and biotechnology.***
- ***$4 million in 2006-2007 for a Center of Excellence in Nano-Bio Sensors (CNBS) that will utilize NRF capabilities to develop and commercialize sensors for medical and homeland security applications.***

To fully accomplish this vision for the future the following will be needed:

- ***Instrumentation of the new Nanoscale Research Facility (NRF) building with key equipment essential for multidisciplinary research at the interfaces of engineering, physics, chemistry, biology, agriculture, and medicine; and consolidation of select existing facilities and staff at UF into NRF space***
- ***Recruitment of highly-trtained technical staff to operate the state-of-the-art nanotechnology equipment, train our students in its use as part of their education in nanotechnology, and assist our industrial collaborators in research leading to commercialization.***
- ***Attract exceptional faculty into the Colleges of Medicine, Liberal Arts and Sciences, and Engineering to catalyze research and development, educational activities, and entrepreneurship at the UF in the fields of NS&T through interdisciplinary collaborations.***

NIMET's Nanoscale Research Facility is a major State of Florida resource and to realize the full benefit the facility needs to be adequately staffed and instrumented. Thus additional non-recurring funding is requested to acquire specialized equipment to fabricate, visualize and manipulate nanoscale structures into useful devices and sensors for commercialization. Recurring funding is requested to hire highly-trained technical staff to operate this equipment and train our students in NS&T skills for jobs in this new industry. These new nanoscale technologies offer significant promise for innovation in virtually every sector of society including health, electronics, transportation, materials, energy, agriculture, the environment, and national security. These additional resources, along with existing capabilities of NIMET and UF in nanoscience, would instantly position the State of Florida as an international leader in nanotechnology research and education with capabilities that would rival those of any major research university in the U.S.

II. Justification

A. Description of service or program to be provided: *(Include whether this is a new or expanded service/program. If expanded, what has been accomplished with the current service/program?)*

NIMET

The Nanoscience Institute for Medical and Engineering Technologies serves as an umbrella support organization for UF's multimillion dollar NS&T research efforts across the campus. The University of Florida already has significant NS&T activities. Nano-related research contracts currently in place account for $40M-$50M in UF research funding, involves the research of over eighty faculty and staff, group consortia, multidisciplinary centers, and research facilities that span several colleges at the University. But competing in NS&T at the national level requires leading-edge equipment, facilities, and technical staff; and these can be provided through NRF.

The NRF Will Provide the Facilities for NIMET Research

The centerpiece of NIMET will be the $35 million, NRF building currently under construction on the UF campus just off Center Drive across from the New Engineering Building. The UF made a compelling case to the State of the need for NS&T research, and the State of Florida provided $35 million through the Public Education Capital Outlay (PECO) fund to construct the new Nanoscale Research Facility (NRF). The NRF will be a two-story building with seven functional areas essential for NS&T research:

1. Class 100-1000 cleanroom facilities for nanofabrication and bio processing.
2. Advanced electron, optical, and surface imaging laboratories.
3. Core research laboratories for synthesis, processing, characterization, assembly, testing, and integration of organic and inorganic nanoscale materials, devices and sensors.
4. General laboratory space for interdisciplinary research collaborations.
5. Offices for faculty, staff and users
6. Interactive spaces for conferences, informal gatherings, user administration, and surroundings conducive to multidisciplinary interactions.
7. Building support and utility handling areas.

The Class 100-1000 cleanroom facilities provide seven research bays that have highly controlled environments to filter virtually all particles from the air since even a dust particle could foul a device with nanometer features. A Bio/Nano research bay is specifically designed for bio processing with a separate air handling system that environmentally isolates it to avoid cross interaction with the other nanofabrication bays. The Advanced Electron Beam Imaging suites are constructed to achieve as low vibrations as possible, and to be free from electromagnetic interference (EMI). Such extreme conditions are essential requirements if one hopes to use highly sensitive instruments successfully for resolving objects with atomic resolution.

NIMET Science and Technology

It is truly mind-boggling to contemplate the potential impact of NS&T on future society. The emerging developments in nanoscience and nanoengineering are making it possible to manipulate matter at the most fundamental levels that control the way most everything functions. While there is still much to be learned, it is becoming possible for man to engineer systems at the nanoscale that rival or even improve on natural systems. Specific science and technology areas of research here at the University of Florida where advances in nanoscience and technology will have seminal impact are: **1)Nanomedicine, 2)Nanoelectronic Phenomenon, 3)Functional Microsystems, 4)Nano-biotechnology, and 5) Nano Plant and Food Science.**

- ***Nanomedicine***

Nanomedicine is utilizing nanotechnology phenomena to achieve highly selective medical intervention at the molecular level where biological molecules and living cells function. This is helping medical researchers selectively target and treat cancer and heart disease with minimal side effects. New prosthetic and medical implants are being engineered with molecular covers tailored to interact with the body in beneficial ways. Drugs are being processed with nanometer dimensions that greatly accelerate the reactivity and effectiveness of the drug in the body because of the increased surface area, or make it possible to be absorbed through the skin directly into the blood. Nanoparticles with tailored properties can be injected into the blood to selectively absorb and treat drug poisoning or overdoses.

- ***Nanoelectronic Phenonmenon***

Making electronic components smaller and smaller has already revolutionized consumer electronics, communications and computing. In 1970 semiconductor processing technology had made it possible to assemble about 4,000 transistors on a silicon chip; today it is possible to get 100,000,000 features on that same chip due to the industry's increasing ability to fabricate smaller and smaller feature sizes on silicon.

But engineers are reaching the limits of these manufacturing technologies, and if we are going to maintain this communication revolution it will be new nanoscale technologies that sustain the continued miniaturization. Today researchers are showing that single molecules properly configured can function as a transistor, and that nanotubes and nanowires fabricated from strings of molecules and atoms can be manipulated into configurations where they can be used to store and/or process information.

- ***Functional Microsystems***

Micro-electro-mechanical systems (MEMS) have proven that making things smaller, faster and cheaper is good business. Typically fabricated with micron dimensions (10^{-6} m), current day MEMS devices include air bag sensors, accelerometers, stress sensors, flow indicators, and microfluidic devices that can separate and analyze minute quantities of chemicals. Now with nanofabrication capabilities nano-electro-mechanical systems (NEMS) are being fabricated as mass detectors with the ability to weigh single molecules; as high-frequency resonators with sensitivities up to the GHz range; as ultra-fast, low-power switches; and as integrated microfluidic devices capable of separating, manipulating, and analyzing individual human cells. At the nanoscale, conventional interactions like surface tension, temperature and electrical properties change, and new forces like quantum friction and quantum elasticity bring new opportunities to the engineer's tool kit.

- ***Nano-Biotechnology***

Semiconductor engineers are also learning from their life science colleagues that biological molecules can be functionalized to serve as a template for arranging nanoscale circuit components in a regular fashion. DNA is a well known organic molecule that is versatile and stable, and has already been used to help fashion logic devices, chemical and biological sensors, and molecular transistors of nanoscale proportions. Even viruses have gotten into the act and in one application, researchers have utilized viruses and their proteins, doped with selected metals and wrapped around a single strand of DNA, to template wires and thin film structures used in battery electrodes.

- ***Nano Plant and Food Science***

The University of Florida is one of the leading research universities in the world in plant and food science, and many of the same concepts in NS&T that are proving so useful in medicine and biotechnology can and need to be applied in the areas of plant and food science. These range all the way from developing cheap, reliable, disposable nanosensors for ensuring the safety of our processed food supply; to developing nanoscale indicators that can track plant biology and disease origins.

B. **Description of current university initiatives, and their resources, that will strengthen the provision of this service/program**:

With the NRF facility fully instrumented with world-class state-of-the-art equipment, NIMET will facilitate collaborative activities through multi-disciplinary proposals with other faculty and research facilities here at UF. The Institute will lead efforts to establish the State of Florida Center of Excellence in Nano-Bio Sensors (CNBS). The Institute will closely coordinate resource development and programmatic direction with related research entities on campus, including CNBS, MAIC, PERC, the Genetics Institute, the Brain Institute, and IFAS. The University of Florida Nanofabrication Facilities (UFNF) will be moved from temporary space into the new NRF space. Key faculty support and appointments will be used to stimulate and focus research in NS&T targeted at new funding and entrepreneurship. The Institute will also seek to establish multiple federally-

funded multi-investigator Centers of Excellence to support the fundamental nanoscience research (through NSF MRSEC & NSEC), integrated functional microsystems (through DARPA, ARL, NSF-ERC, NSF-STC) and Nanomedicine (through NIH). Topics under active discussion for federally-funded Center proposals include Nanomedicine, Nanotechnology for Energy, and the Nanoscience of Single Quantum Events.

C. **Description of outcome anticipated:** *(Be specific. For example, if this issue focuses on improving retention rates, indicate the current retention rate and the expected increase in the retention rate.* In addition, identify the following, if applicable.)

<u>Summary</u>: We expect that the facilitation of NIMET will result in:

- **Generation over 5 years of $50-million in external grant/contract funding at the University of Florida**
- **Acquisition of at least one national nanoscale science and technology research and education center**
- **Support of the Center for Nano-Bio Sensors that will result in the transfer of nanotechnology and the creation of start-up companies within the state of Florida**
- **Recruitment of exceptional faculty attracted by NIMET's capabilities.**
- **Training of more than 150 graduate students in the interdisciplinary areas of nanotechnology**
- **Development of new research concepts, crop improvement, and manufacturing initiatives through collaborative interactions.**

Specific opportunity areas include the following:

1. Increased Federal Funding Opportunities. Nanoscale science and technology is a major focus of Federal funding agencies that has been increasingly supported in the U.S. The National Nanotechnology Initiative was launched in Fiscal Year 2001 and since then annual Federal funding has grown to more than one billion dollars; total research and development spending is about $3 billion annually; the technology has spawned numerous patents, publications, and start-up companies; and eleven Federal agencies now support various areas of nanotechnology and national coordination of research is managed through the Nanoscale Science, Engineering, and Technology (NSET) Subcommittee of the National Science and Technology Council (NSTC). The equipment and techniques developed in NS&T centers like NIMET NRF today will be used to educate the next generation workforce and develop the manufacturing tools that produce the consumer products of the future.

2. Increased Opportunities for Industrial Interactions and Intellectual Property. The economic impact of NS&T will attract industrial users interested in these next-generation technologies, and result in spin off industries, patents, and licensing of new technologies developed in NRF. As testament to the economic market impact of nanotechnology in general and NIMET potential in particular, it is estimated that over the next 10-15 years, nanotechnology-based industries will require a 2 million strong workforce. Nanotechnology will directly contribute over $200 B annually in goods and services to the world economy by 2007 and greater than $1 trillion annually within the next ten years.

By merging the scientific skill sets of critical interdisciplinary faculty with cutting edge nano-instrumentation contained within the dedicated NRF building, NIMET will act as the foundation to create an internationally renowned research program in translational nanotechnology that will spin off revolutionary applications in medicine, engineering, life sciences and physical sciences. Specific possibilities include: 1) medical applications including nano-therapeutics and nano-diagnostics, 2) energy, food and potable water production, 3) nano-scale electronics, photonics, magnetics, instrumentation and metrology, 4) remediation of environmental pollution, 5), homeland security applications, 7) modeling and simulation, and 8) knowledge of nanotoxicity.

3. Acquisition of Large Research Grants ($2-4 million per year)

The NRF capabilities, properly staffed and instrumented, will provide strong support and exceptional justification for major research grants from Federal funding agencies like NSF, DOD, NASA, NIH, DOE, etc. for a number of reasons:

- Large grants require exceptional facilities like those provided by NRF.
- The major funding agencies prefer to award large grants to centralized user facilities because:
    - They reach many users with only one large equipment purchase
    - The facilities are maintained and operated by a highly trained technical staff so equipment use is more efficient and stays in service much longer
    - There is continuity to the support of students and education in the use of forefront techniques

Virtually all large research grants to other universities are supported in some manner by major research facilities.

4. Improved Success on Individual Investigator Research Grants ($100,000 to 300,000 each)

Because NRF facilities will be centralized and open to all faculty, Individual Investigators can experience increased success rates for even small awards by proposing access to NRF facilities without including expensive equipment requests in their proposals.

5. Forge Multiple Strategic Research Partnerships

The capabilities of a fully instrumented NRF and the intellectual leadership of NIMET at UF will form the basis for strategic alliances with:

- Major federal funding agencies (e.g. NSF, DOD, NIH, etc.)
- National Laboratories (e.g. Sandia National Lab)
- Top tier academic institutions (e.g. Scripps Institute)
- Fortune 1000 companies interested in access to NIMET NRF research, students, and faculty (e.g. Intel Corp.)

6. NRF User Fee Income ($100,000 to 1,000,000 per year)

Since NRF is a general user facility fees can be charged for use of equipment. Fees charged to UF and external academic users would need to be moderate and commensurate with those charged at other universities; they would come from research grants. Fees charged to industrial users would be more substantial, priced to be equal to similar services available commercially. Depending on the fee structure, how fully NRF is instrumented, and the numbers of users income could range from a few hundred thousand to a million dollars.

7. Improved Faculty and Student Recruitment

Because of the national prominence and activity in NS&T research, some of the best researchers in the world are doing research in this area. In order to attract these faculty or their students to UF it is essential to have nanoscience facilities and a body of active colleagues in this field. Similarly, the best students will be attracted by the same opportunities.

8. Educational Benefits

The research at NIMET NRF and UF in NS&T can be used to create novel multidisciplinary undergraduate and graduate curricula to address the employment demands of the burgeoning multifaceted nanotechnology industry**.**

9. Nucleation of Multidisciplinary Interactions

Just as NS&T has become a focus area in Federal funding priorities, so has the emphasis on multidisciplinary research. The NIMET NRF building was conceived and built as a multidisciplinary project involving three colleges at UF (COE, CLAS, HSC). Furthermore, because it is a user facility open to all and because of its design that provides offices and interactive spaces for users, it will be a natural meeting place for faculty and students from many disciplines because that is where their research will be. This will do more to nucleate collaborative interactions than almost any other mechanism.

10. Increase Private Philanthropy to UF ($10,000,000 – 30,000,000)

The new NRF building, the high visibility of nanotechnology, and the longevity this field will have presents realistic expectations that a donor will want to contribute funds for support of NRF.

i. Number of Headcount Students receiving services or participating in the program by year, for the next five years:
ii. Number of FTE Students receiving services or participating in the program by year for the next five years. If these are new FTE Students are they included in the 5-year enrollment plan?
iii. Additional degrees, if any, produced as a result of this initiative *(Indicate the additional number of Bachelor, Master, Doctoral & Professional degrees produced by school year.)*
iv. Other outcomes:

III. Budget Request for 2008-09 (detail information provided on the OB Form II):

		2007-08 Budget for Issue (A)	**2008-09 State Funds Requested (B)**	2008-09 Anticipated Reallocation (C)		Budget for 2008-09 and Incremental Years (D)
a.	Recurring Funds:	$0	**$825,000**	$431,549		$1,775,000
b.	Non-recurring Funds:	$0	**$5,972,225**	$0		$13,972,225
c.	Total:	$0	**$6,797,225**	$431,549		$15,747,225

A. Identify 2007-08 funds (if not E&G funds, provide the source of the funds) that will be used to initiate this program (column A).

B. Identify the amount of funds requested for 2008-09 (column B).

C. Identify existing programs from which funds will be reallocated, if applicable (include for example, salaries from reallocated or dedicated personnel) (column C).

Existing equipment facilities from the University of Florida Nanofabrication Facility (UFNF) will be moved from temporary space into the NRF Cleanroom (estimated replacement value $2 million), and three technical personnel and their support funds will be transferred to NRF operations ($431,549).

D. If this is a multi-year request, identify the incremental funds needed from the state for each future year, by year, for a maximum of five years (column D only includes column B plus each future year's need).

Fiscal Year 2009-10

Request	***Recurring Funds***	***Non-recurring Funds***
Salaries and fringe for three faculty in the Colleges of Medicine, Liberal Arts and Sciences, and Engineering.	$600,000	
Key equipment for the NRF Cleanroom and Bio/Nano Bay, Advanced Imaging and Characterization Labs, Core Research Labs, and General Interdisciplinary Labs.		*$3,000,000*
Start-up packages for three new faculty lines.		*$3,000,000*
Salaries and fringe for technical staff to operate NRF facilities.	*$225,000*	
TOTALS	***$825,000***	***$6,000,000***

Fiscal Year 2010-11

Request	***Recurring Funds***	***Non-recurring Funds***
Salaries and fringe for faculty in the Colleges of Medicine, Liberal Arts and Sciences, and Engineering.	*$0*	
Key equipment for the NRF Cleanroom and Bio/Nano Bay, Advanced Imaging and Characterization Labs, Core Research Labs, and General Interdisciplinary Labs.		*$2,000,000*
Salaries and fringe for technical staff to operate NRF facilities.	*$125,000*	
TOTALS	***$125,000***	***$2,000,000***

This multi-year request includes a total of six faculty hired over three years; and one-time start-up funds for each faculty hired of $1million.

IV. **Facilities:**

A. Does this issue require an expansion or construction of a facility?
Yes.

B. If yes, is the project identified on the Capital Improvement List? If so, identify the project, fiscal amount, year requested and priority number.

	Facility Project Title	Fiscal Year	Amount Requested
1.	*NIMET Nanoscale Research Facility – UF 202 construction project*	*FY 04-FY 07*	5,922,300
2.			

Beginning in FY 2004-05 the State of Florida approved Public Education Capital Outlay (PECO) funds to construct the new Nanoscale Research Facility (NRF).

Public Education Capital Outlay 2004 – 2005	$6,496,000
Public Education Capital Outlay 2005 – 2006	$ 22,733,300
Public Education Capital Outlay 2006 – 2007	$ 5,922,300
Total	**$ 35,151,600**

2008-2009 Legislative Budget Request
EDUCATIONAL AND GENERAL
POSITION AND FISCAL SUMMARY

Operating Budget Form II

University: **University of Florida**

Issue Title: **Nanoscience Institute for Medical and Engineering Technologies (NIMET)**

	RECURRING	NON-RECURRING	TOTAL
Positions			
Faculty	3.00	0.00	3.00
Other (A&P/USPS)	2.00	0.00	2.00
Total	5.00	0.00	5.00
Salary Rate (for all positions noted above)			
Faculty	$450,000	$0	$450,000
Other (A&P/USPS)	$150,000	$0	$150,000
Total	$600,000	$0	$600,000
Salaries and Benefits	$825,000	$0	$825,000
Other Personal Services	$0	$750,000	$750,000
Expenses	$0	$250,000	$250,000
Operating Capital Outlay	$0	$4,972,225	$4,972,225
Electronic Data Processing	$0	$0	$0
Special Category (Specific)	$0	$0	$0
	$0	$0	$0
	$0	$0	$0
	$0	$0	$0
Total All Categories	$825,000	$5,972,225	$6,797,225

State University System of Florida
Educational and General
2008-2009 Legislative Operating Budget Issue
Form I

University:	**University of Florida**
Descriptive Issue Title:	Real-time Awareness, Decision-making and Response (RADAR) system: Enhanced Security for Florida Campus and Statewide Communities
University Priority Number:	**6**
Date Approved by Board of Trustees:	**6-15-2007**

Check **only one** of the following to indicate which SUS Strategic Plan Goal/Objective this issue will address:

☐ **Access to and Production of Degrees** *(Examples of issues that may be included under this goal would be new enrollment growth, outreach, recruitment, financial aid, academic tracking, advising, etc.)*

☐ **Meeting Statewide Professional and Workforce Needs** *(Examples of issues that may be included under this goal would be new or expanded targeted and/or educated citizenry / workforce programs, retention of students.).*

☐ **Building World-class Academic Programs and Research Capacity** *(Examples of issues that may be included under this goal would be new and/or expanded research initiatives, enhancements of certain academic programs or program implementation / expansion of non-targeted programs.)*

☒ **Meeting Community Needs and Fulfilling Unique Institutional Responsibilities** (Examples could include issues important to a regional area or specific to an institution's mission.)

I. Needs Statement: *(What need will be addressed with the provision of funds for this issue?)*

The State of Florida is particularly vulnerable to large-scale threats from a number of external sources including natural disasters, agricultural damage and international terrorism and even recent examples of campus domestic terrorism. At present the typical PC-based systems used to monitor and respond to these events are at best a patchwork of incompatible and non-integrated proprietary systems. The University of Florida (UF) has already filed a provisional patent for the Integrated Situational Awareness System (ISAS) technologies that provides the core platform of the **Real-time Awareness, Decision-making And Response (RADAR) system** proposed in this document.

UF has a unique depth of expertise in multiple areas required to create and transfer this technologically robust Awareness, Decision and Response system. The RADAR system will provide integrated (1) **real-time monitoring** of large-scale areas and infrastructure (2) **augmenting informed decision-making** with timely access to data integrated from trusted sources and (3) **coordination of swift and effective response** to a wide variety of unforeseen situations. These situations range from typically routine occurrences (i.e. urban hazard and rescue or rural fires and flooding) to campus and community monitoring, and response to large-scale events including disaster preparation/relief, agricultural infestations, and biological, conventional or unconventional terrorist attempts.

This RADAR system would be designed (and potentially manufactured exclusively) in Florida. The skilled operators required for this system would be trained exclusively in Florida. It is not unreasonable to project that each of the 67 counties in the State would implement at least one of these systems for both routine and special situations. These local area systems would form a statewide network that could be readily connected to one or more central administrations

in times of crisis. A secondary but significant benefit would be the demand for these integrated Florida-built systems by numerous Federal agencies and every State in the Union.

II. Justification

A. **Description of service or program to be provided:** *(Include whether this is a new or expanded initiative. If expanded, what has been accomplished with the current service/program?)*

This proposal builds upon a current multi-faceted research and development initiative undertaken across multiple colleges and departments at UF. UF has already filed a provisional patent for the Integrated Situational Awareness System (ISAS) technologies that will form the core platform to enable swift response and deployment of both human and machine-based resources in the **Real-time Awareness, Decision-making And Response (RADAR) system** proposed in this document.

A fully developed **RADAR** system will enable high-level decision makers (ranging from campus and local law enforcement officials to the Office of the Governor) to make functionally-enhanced decisions in times of stress and potential crisis. The ISAS research team has already succeeded in bringing together Interactive Media Systems Designers with Agricultural and Biological engineers, Mechanical and Aerospace engineers, Urban Planners and other faculty from the College of Design, Construction and Planning. The original ISAS concept was being developed to augment critical decision-making by our nation's military and security forces. But as a result of working with various UF researchers in the initial development phase, Digital Worlds realized that an integrated interactive media system could also be applied effectively to a much broader scope of activities including campus and community security.

This proposal seeks to specifically expand the capabilities of the ISAS technologies to create a RADAR system to the benefit of Florida communities statewide. RADAR applications range from enhanced campus security and response to local fires and car accidents all the way up to coordinating multiple agency efforts and response during widespread natural disasters or large-scale terrorist attempts. This RADAR system is interoperable with current equipment already in place (i.e. surveillance cameras, environmental sensors, existing databases) and next generation resources (i.e. autonomous and unmanned ground, air and water vehicles, advanced agricultural, biological and environmental sensors, satellite imagery and telemetry, etc.). The results of integrating these various systems into a coherent visualization will vastly increase the speed and effectiveness decision-makers in times of stress and potential crisis.

B. **Description of current university initiatives, and their resources, that will strengthen the provision of this service/program**:

A. **Description of outcome anticipated** *(Be specific).*

By undertaking a concerted multi-year initiative to develop a functionally effective RADAR system at the University of Florida, the security, prosperity and safety of our students and citizens will be enhanced significantly. A variety of existing and emerging technologies are currently being integrated into a flexible system that will provide a number of significant benefits to the citizens of the State of Florida. These interactive media systems can be deployed in communities across the

state. They can be readily connected to regional and State government offices in times of need. With adequate support, it is anticipated that this system could be available for technology transfer, manufacturing and deployment as early as 2010.

Primary benefits to Florida campuses and communities include:

1) **Effective coordination of information between local, county and State agencies for both routine and exceptional circumstances.** This benefit ranges from situations including:
    A) Coordinating the monitoring and mitigation of forest and rural fires throughout the State with an effectively integrated system to critical planning, coordination and effective decision-making during unforeseen events involving large numbers of citizens:
        a) Advance simulation and planning for potential hurricane scenarios
        b) Coordinated and informed response **during** natural disasters
        c) Advanced simulation and planning for terrorist threats (whether agricultural, biological, nuclear, conventional or unconventional weapons)
        d) Concerted response to any unforeseen event, ranging from a fire in a crowded stadium to an unexplained explosion or sickness at one or more Florida tourist attractions.
    B) Monitoring campus communities to ensure the highest level of security and response to potential danger situations
    C) Effectively coordinating traffic lights on the most expeditious route for fire and rescue vehicles to arrive on the scene during rush hour in a medium-to-large urban community
    D) Lives and property saved by eliminating the need for high-speed car chases by using the integrated airborne, mobile and fixed sensor arrays to track and apprehend wrongdoers

2) **Our leaders and decision-makers will be provided with functionally-enhanced decision making capabilities.** Humans tend to become overwhelmed during times of stress and crisis. Coupled with inaccurate or missing information, these factors can lead to wrong decisions and tragic consequences. RADAR systems deployed throughout the State will create an effective network that will not only monitor important rural and urban areas, but actually correlate and display vast quantities of relevant data to decision-makers in an intuitive visualization. The capability to rapidly link multiple RADAR nodes together to create a real-time information network will enhance the decision-making capabilities of our leaders exponentially, especially when it is needed the most.

    Beyond the safety and security features, **additional benefits** include:

    A) **The potential for the exclusive manufacture of RADAR systems in Florida for both internal and external users, creating significant economic opportunities.** Placing just one system in every county in Florida would require 67 systems. According to the National

Association of Counties and the 2000 US Census, the continental US averages 64 counties per state. If 20 states deployed only one of these systems in each of their counties, the demand would be for 1,280 systems. By extension, there are dozens of Federal Agencies that would have a great interest in acquiring integrated situational awareness systems.

B) **The training of young people as RADAR system operators for each county in Florida.** Staffing an individual system 24/7 would require a minimum base of 4-5 trained Operators per county. The operational model for these systems may be thought of as a "virtuoso video game" where the Operators "plays the data" to quickly correlate and display it for the decision-makers. Thousands of young people currently display extraordinary motor skills and cognitive dexterity in the use of video games for entertainment. Their increasing interest and skill with interactive media systems represents a vast potential to be channeled into a productive pursuit that can ultimately result in career placement and advancement.

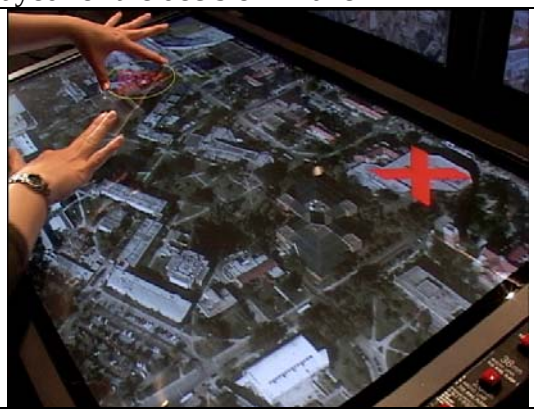
C) **The economic impact of ongoing training for RADAR system operators from other States.** If only 20 States deployed these systems in each of their counties (an average of 64 counties per state with 5 trained operators in each county = 320 operators x 20) 6,400 operators would be required. Federal and other State agencies would also require ongoing training for system operators, expanding the training needs. By offering beginning, advanced and continuing education through the institution that designed the RADAR system, UF and the State University System would realize a significant number of student credit hours, either on-campus or through distance education programs.

C. Additional information to justify request:

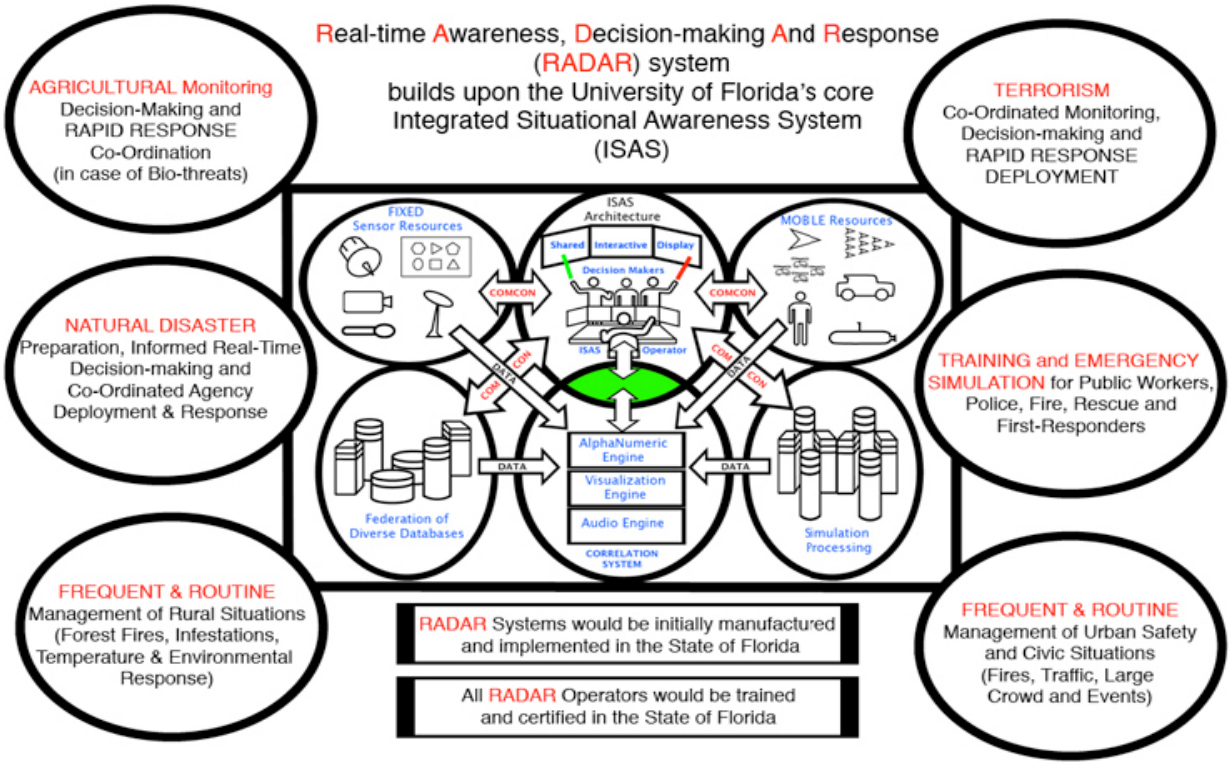
Florida has established itself as a national leader in high-tech initiatives. A 21st Century system as described in this proposal is needed at not only the State level, but at the Federal level as well.

The University of Florida has the unique combination of faculty and researchers to effectively create, refine and transfer this integrated technology system to industry for manufacturing and export. Most current monitoring and response systems still use PC-based standard keyboard/mouse interfaces to gather and display information. The current status of UF's ISAS system is already based in next-generation visualization and user-interfaces, representing a substantial improvement in intuitive usage and response.

The images below will help convey the sense of how a skilled ISAS operator interacts with multiple streams of data to provide decision-makers with the information they need to correctly access complex and dynamic situations.

	
Command center with ISAS and integrate data displayed for informed decision-making	Operator correlates data into visual imagery to be displayed for the decision- maker
	
Operator selects sources of information to be displayed and correlated as required	Polyphonic touch-display created at UF allows Operator to quickly select target areas
	
Multiple mobile resources can be rapidly deployed to respond to any number of routine or emergenc situations	Polyphonic interaction surface eliminates the need for PC keyboard-based commands and instead uses shapes and gestures

A short movie demonstrating a campus security application of the ISAS system can be found at http://www.digitalworlds.ufl.edu/projects/isas



A diagram of the RADAR System Configuration and potential application scenarios shows how this system will build upon the core ISAS technologies already being developed at the University of Florida by adding the integration into existing and new infrastructure at the local, county and statewide levels.

III. **Budget Request for 2008-09 (detail information provided on the OB Form II):**

		2007-08 Budget for Issue (A)	**2008-09 State Funds Requested (B)**	2008-09 Anticipated Reallocation (C)		Incremental Year 2009-10
a.	Recurring Funds:	$150,000	**$1,510,474**	$160,000		**$3,510,474**
b.	Non-recurring Funds:	$125,000	**$2,439,526**	$140,000		**$3,789,526**
c.	Total:	$275,000	**$3,950,000**	$300,000		**$6,800,000**

A. Identify 2007-08 funds (if not E&G funds, provide the source of the funds) that will be used to initiate this program (column A)
Digital Worlds Institute resources and startup funds received from the Opportunity Seed Initiative and Office of Technology Licensing laid the groundwork of the ISAS developments in 2006-2007. Currently venture capital and other federal sources are being actively pursued. With Legislative support for 2008-09, campus-wide R&D for the RADAR system would commence in a major concerted effort. Additional funds will be sought for completion of the research phase in 2009-10, with anticipated technology transfer as early as 2010.

B. Identify the amount of funds requested for 2008-09 (column B)

C. Identify existing programs from which funds will be reallocated, if applicable (include for example, salaries from reallocated or dedicated personnel) (column C).
UF Digital Worlds Institute's affiliated faculty, researchers and graduate students would form the core of dedicated and reallocated FTEs. Digital Worlds (DW) affiliates already working in the underlying ISAS technologies come from across the campus including IFAS areas (Agricultural Engineering, Sensors and Database Development), Engineering areas (Mechanical and Aerospace, Biomedical, Computer Science and Engineering), Medicine & Health Science areas (McKnight Brain Institute, Neurology and Imaging) Design, Construction and Planning (GIS and Regional & Urban Planning) and Fine Arts areas (Digital Media, Interaction Design). Additional TEAMS and OPS personnel would be retained for the concerted R&D during the 2008-09 year with a reduced force for final development in 2009-10.

D. If this is a multi-year request, identify the incremental funds needed from the state for each future year, by year, for a maximum of five years. (column D only includes column B plus each future year's need).
Request is for two years' support: $3,950,000 in 2008-09; $2,850,000 for 2009-10.

IV. **Facilities:**

A. Does this issue require an expansion or construction of a facility?
No

2008-2009 Legislative Budget Request
EDUCATIONAL AND GENERAL
POSITION AND FISCAL SUMMARY

Operating Budget Form II

University: **University of Florida**

Issue Title: **Real-time Awareness, Decision-making And Response (RADAR) system: Enhanced Security for Florida Campus and Statewide**

	RECURRING	NON-RECURRING	TOTAL
Positions			
Faculty	5.10	0.00	5.10
Other (A&P/USPS)	2.20	11.00	13.20
Total	7.30	11.00	18.30
Salary Rate (for all positions noted above)			
Faculty	$552,500	$0	$552,500
Other (A&P/USPS)	$115,000	$1,250,000	$1,365,000
Total	$667,500	$1,250,000	$1,917,500
Salaries and Benefits	$926,806	$1,588,526	$2,515,332
Other Personal Services	$348,668	$127,500	$476,168
Expenses	$45,000	$13,500	$58,500
Operating Capital Outlay	$190,000	$660,000	$850,000
Electronic Data Processing	$0	$50,000	$50,000
Special Category (Specific)	$0	$0	$0
	$0	$0	$0
	$0	$0	$0
	$0	$0	$0
Total All Categories	$1,510,474	$2,439,526	$3,950,000

State University System of Florida
Educational and General
2008-2009 Legislative Operating Budget Issue
Form I

University:	**University of Florida**
Descriptive Issue Title:	Solutions for Water Resources Sustainability
University Priority Number:	**7**
Date Approved by Board of Trustees:	**6-15-2007**

Check **only one** of the following to indicate which SUS Strategic Plan Goal/Objective this issue will address:

☐ **Access to and Production of Degrees** *(Examples of issues that may be included under this goal would be new enrollment growth, outreach, recruitment, financial aid, academic tracking, advising, etc.)*
☐ **Meeting Statewide Professional and Workforce Needs** *(Examples of issues that may be included under this goal would be new or expanded targeted and/or educated citizenry / workforce programs, retention of students.).*
☒ **Building World-class Academic Programs and Research Capacity** *(Examples of issues that may be included under this goal would be new and/or expanded research initiatives, enhancements of certain academic programs or program implementation / expansion of non-targeted programs.)*
☐ **Meeting Community Needs and Fulfilling Unique Institutional Responsibilities** *(Examples could include issues important to a regional area or specific to an institution's mission.)*

I. **Needs Statement** *(What need will be addressed with the provision of funds for this issue. **The needs statement should be brief and succinct.**):*

Florida's economic and social development over the past several decades has been fueled by its climate and abundant water resources. Increased population, rapid urban development, large agricultural water demands, and the need to protect natural resources, however, have led to water resource problems in many parts of the State. Florida's population is expected to increase from 16 million at present to 22 million by the year 2020. Furthermore, per capita water use remains high (174 gallons per day in 2000) despite increasing emphasis on conservation. Florida agriculture and public water supply constitute the vast majority Florida's current freshwater usage (48% and 32% respectively), and both increased approximately 20% between 1995 and 2000. Thus freshwater withdrawals in Florida are expected to grow from approximately 8.2 billion gallons per day (bgd) in 2000 to more than 9.3 bgd in 2020, with the obvious potential to produce further conflict between urban, agricultural, industrial, and natural system water users.

Mining, industrial, urban, and agricultural land uses not only consume large quantities of water, but can also compromise water quality and lead to human health and ecological concerns. In addition to supplying Florida's citizens with drinking water and Florida's agriculture with irrigation water, adequate clean water is needed to protect Florida's world-class natural resources such as the Everglades and its abundant springs. Degrading water quality in lakes (e.g. Lake Okeechobee), rivers (e.g., Lower St. Johns), springs (e.g., Wakulla), and coastal areas (e.g., red tide outbreaks) provide dramatic evidence of degradation of water supplies. Natural disasters, such as the recent hurricane activity, highlight the vulnerability of Florida's water supplies in coastal areas, as well as inland areas protected by aging levee systems.

These complex problems require long-term, multidisciplinary scientific research and education programs aimed at developing technologies and sustainable solutions across natural and man-made threats to Florida's water resources if our state is going to continue to prosper.

II. Justification

A. Description of service or program to be provided: *(Include whether this is a new or expanded service/program. If expanded, what has been accomplished with the current service/program?)*

This proposal will develop a long-term, interdisciplinary research, education and technology transfer program aimed at developing technologies and sustainable solutions across natural and man-made threats to Florida's water resources. The initiative builds on the recently established UF Water Institute (which integrates the expertise of existing faculty in the UF Colleges of Agricultural and Life Sciences, Business, Design Construction and Planning, Engineering, Liberal Arts and Sciences, and Law) by adding 8 new faculty and support staff in key unrepresented areas.

In addition to building faculty and staff expertise, funding is requested to continue to build the UF Water Systems Collaboratory (advanced distributed interdisciplinary laboratories, field facilities, pilot scale test facilities etc.). In 2007-08 the Florida Legislature allocated $500,000 in non-recurring funds to begin to building the UF Water Systems Collaboratory. The Water Systems Collaboratory will provide Florida with a comparative advantage for a wide variety of competitive major research funds, educational opportunities for Florida's future leaders, and commercialization opportunities that will enhance Florida's economy. These synergistic facilities will maximize the benefits of integrated efforts of diverse researchers addressing important interdisciplinary water issues.

B. Description of current university initiatives, and their resources, that will strengthen the provision of this service/program:

In 2006 The University of Florida established a campus-wide Water Institute to coordinate and manage interdisciplinary research and education to support solutions

to water resource issues and thus serve the needs of all stakeholders in the State of Florida. The Water Institute will coordinate and manage the development and operation of the Solutions for Water Resources Sustainability Program.

The University of Florida has dedicated existing recurring funds for the Water Institute Director's salary and existing non-recurring funds for program start-up expenses. Approximately $4Million in private endowment funds have been pledged for continuing Water Institute program expenses. Funds from this Legislative Budget Request will guarantee the long term stability and success of the Water Institute, and provide much needed funds for new faculty and staff expertise to solve critical water resource problems.

C. **Description of outcome anticipated:** *(Be specific. For example, if this issue focuses on improving retention rates, indicate the current retention rate and the expected increase in the retention rate.* In addition, identify the following, if applicable.

The outcome of this effort will be world-class research, education and technology transfer programs that will develop, demonstrate, and deliver solutions to state agencies, cities, agriculture, industry and private citizens facing water-related problems. Innovative interdisciplinary experiential educational programs will increase the pool of well-trained water-related scientists, engineers, planners, and policy-makers in Florida by at least 60 students per year.

Examples of water issues that UF Water Institute faculty will use the Water Systems Collaboratory to develop and test solutions for include:

- Development of Alternative Water Supplies and Treatment Technologies
- Improved Methodologies and Incentives for Water Conservation
- Effective Land-use Planning to Protect Water Recharge Areas, Spring-sheds, Wetlands and Watersheds while Allowing Continued Economic Development
- Methods to Develop and Allocate total maximum daily load (TMDL) for Springs, Rivers, Lakes, Estuaries and Groundwaters
- Provide Objective Science for Resource Management Agencies to Support Establishment of Minimum Flows and Levels (MFLs) for Rivers, Lakes and Groundwaters
- Development, Implementation and Evaluation of Urban and Agricultural Best Management Practices (BMPs)
- Remediation and Restoration of Water Supplies, Wetlands and Ecosystems
- Improved Management of Stormwater and other Sources of Pollution for Coastal Zone Protection
- Improved Water Legislation, Policy, Management and Pricing Strategies

New knowledge, and new engineering, policy and legal solutions developed in Florida will provide a model for others to follow both nationally and internationally. Thus we envision a program committed to addressing Florida issues, but recognized nationally and internationally as providing global solutions to water resource problems.

III. **Budget Request for 2008-09 (detail information provided on the OB Form II):**

		2007-08 Budget for Issue (A)	**2008-09 State Funds Requested (B)**	2008-09 Anticipated Reallocation (C)		Budget for 2008-09 and Incremental Years (D)
a.	Recurring Funds:	$0	**$1,500,000**	$0		$1,500,000
b.	Non-recurring Funds:	$500,000[1]		$0		$0
c.	Total:	$500,000	**$1,500,000**	$0		$1,500,000

[1] State Appropriated non-recurring LBR funds for UF Water Systems Collaboratory

A. Identify 2007-08 funds (if not E&G funds, provide the source of the funds) that will be used to initiate this program (column A).
B. Identify the amount of funds requested for 2008-09 (column B).
C. Identify existing programs from which funds will be reallocated, if applicable (include for example, salaries from reallocated or dedicated personnel) (column C).
D. If this is a multi-year request, identify the incremental funds needed from the state for each future year, by year, for a maximum of five years (column D only includes column B plus each future year's need).

IV. **Facilities:**

A. Does this issue require an expansion or construction of a facility?

No. Adequate buildings and associated laboratories already exist at UF for the research and education activities described in this proposal.

B. If yes, is the project identified on the Capital Improvement List? If so, identify the project, fiscal amount, year requested and priority number.

	Facility Project Title	Fiscal Year	Amount Requested
1.			

2008-2009 Legislative Budget Request
EDUCATIONAL AND GENERAL
POSITION AND FISCAL SUMMARY
Operating Budget Form II

University: **University of Florida**
Issue Title: **Solutions for Water Resources Sustainability**

	RECURRING	NON-RECURRING	TOTAL
Positions			
Faculty	8.00	0.00	8.00
Other (A&P/USPS)	5.00	0.00	5.00
Total	13.00	0.00	13.00
Salary Rate (for all positions noted above)			
Faculty	$800,000	$0	$800,000
Other (A&P/USPS)	$280,000	$0	$280,000
Total	$1,080,000	$0	$1,080,000
Salaries and Benefits	$1,300,000	$0	$1,300,000
Other Personal Services		$0	$0
Expenses	$200,000	$0	$200,000
Operating Capital Outlay	$0	$0	$0
Electronic Data Processing	$0	$0	$0
Special Category (Specific)	$0	$0	$0
	$0	$0	$0
	$0	$0	$0
	$0	$0	$0
Total All Categories	$1,500,000	$0	$1,500,000

State University System of Florida
Educational and General
2008-2009 Legislative Operating Budget Issue
Form I

University:	**University of Florida**
Issue Title:	**Florida High Tech Corridor Council Program**
University Priority Number:	**8**
Date Approved by Board of Trustees:	**6-15-2007**

Check **only one** of the following to indicate which SUS Strategic Plan Goal/Objective this issue will address:

☐ **Access to and Production of Degrees** *(Examples of issues that may be included under this goal would be new enrollment growth, outreach, recruitment, financial aid, academic tracking, advising, etc.)*
☐ **Meeting Statewide Professional and Workforce Needs** *(Examples of issues that may be included under this goal would be new or expanded targeted and/or educated citizenry / workforce programs, retention of students.).*
☒ **Building World-class Academic Programs and Research Capacity** *(Examples of issues that may be included under this goal would be new and/or expanded research initiatives, enhancements of certain academic programs or program implementation / expansion of non-targeted programs.)*
☐ **Meeting Community Needs and Fulfilling Unique Institutional Responsibilities** *(Examples could include issues important to a regional area or specific to an institution's mission.)*

I. **Needs Statement** *(What need will be addressed with the provision of funds for this issue?* : Florida needs to retain, provide growth opportunities, and attach more high technology companies to the Florida High Tech Corridor (23 counties in central and north central Florida). In conjunction with this is the need to provide more research and educational opportunities for the faculty and students in the partner universities and community colleges. In addition, funds for this initiative will train a high technology workforce which will be needed by the high technology companies to allow their expansion and retention.

II. **Justification**

A. **Description of service or program to be provided** *(include whether this is a new or expanded initiative; if expanded what has been accomplished with the current service/program):* This program is an expansion of the existing Florida High Technology Corridor initiative at the University of Florida. The University of Florida entered into this program in FY2005-2006 and is seeking an increase in funding to support program growth. The program is to provide research opportunities between Florida high technology companies and universities as well

as to give graduate students training that can be used by these high technology companies.

B. **Description of current university initiatives, and their resources, that will strengthen the provision of this service/program**:

Beginning in 2005, the University of Florida has been providing companies in the 23 county Corridor with unique access to UF's over $500M in research in virtually all areas of health science, agriculture, engineering, physical sciences, and many other disciplines. In FY2006-2007, UF approved approximately $700K in collaborative research matching grants for this program and the need is expected to rise substantially in the next few years as the program grows at UF.

FHTCC matching funds from the University of Florida of up to $150k, per project are awarded on a monthly basis to excellent collaborative research proposals that provide industry partners with proven benefits including:

Supplementing company internal R&D with over $500M of cutting edge research at the University of Florida

Leveraging company external research investments with FHTCC matching funds free of overhead

Building world-class R&D teams to respond to joint federally funded opportunities or other future collaborative work

Filling a company recruiting pipeline with top-notch students with industrial research experience

C. **Description of outcome anticipated** *(Be specific).*

FHTCC's primary focus is to foster applied research between the partner universities and their high tech industry partners in these counties. During its first ten years, FHTCC and its industry partners have provided more than $150M to research and development projects that benefited 250 companies in support of more than 700 research projects engaging 1,400 graduate and doctoral students and research assistants and 400 faculty members in side-by-side research with company scientists and engineers. In FY2006-2007, UF approved research grants of over $700k in FHTCC funds to match over $1M in industry cash funds and over $1M in industry in-kind support for seven collaborative research projects. Collectively, these funds were dedicated to support 26 faculty and graduate students at UF. Between FY2005-2006 and FY2006-2007, the program has supported 24 faculty and 57 graduate students with almost $1.5M of UF FHTC matching funds, over $2M of industry funds, and over $2M of industry in-kind support.

The budget request of $2M for FY2008-2009 will allow UF to expand the Matching Grants Program by supporting 15-30 research projects in the fiscal year

with $2M of the request. All of these activities support the core mission of the Corridor to attract, retain, and grow high tech industry and to help develop the workforce to support those industries.

D. **Additional information to justify request:**

The Florida High Tech Corridor Council (FHTCC) was established by the Florida Legislature in 1996 to attract, retain and grow high tech industry and to help develop the workforce to support those industries in the service areas of the University of Central Florida and the University of South Florida. In 2005, the FHTCC was expanded to include the University of Florida (UF) as the third partner of this unique economic development initiative, merging the strengths of three world-class universities and bringing the number of Corridor counties to 23 including Alachua, Putnam, Levy, Marion, Flagler, Citrus, Sumter, Lake, Volusia, Seminole, Brevard, Orange, Osceola, Polk, Hernando, Pasco, Hillsborough, Pinellas, Manatee, Sarasota, De Soto, Hardee, and Highlands.

III. **Budget Request for 2008-09 (detail information provided on the OB Form II):**

		2007-08 Budget for Issue (A)	**2008-09 State Funds Requested (B)**	2008-09 Anticipated Reallocation (C)		Budget for 2008-09 and Incremental Years (D)
a.	Recurring Funds:	$0	**$2,000,000**	$0		$2,000,000
b.	Non-recurring Funds:	$1,000,000	**$0**	$0		$0
c.	Total:	$1,000,000	**$2,000,000**	$0		$2,000,000

A. Identify 2007-08 funds (if not E&G funds, provide the source of the funds) that will be used to initiate this program (column A).

B. Identify the amount of funds requested for 2008-09.

C. Identify existing programs from which funds will be reallocated, if applicable (include for example, salaries from reallocated or dedicated personnel).

D. If this is a multi-year request, identify the incremental funds needed from the state for each future year, by year, for a maximum of five years.

IV. **Facilities:**

A. Does this issue require an expansion or construction of a facility?
No

B. If yes, is the project identified on the Capital Improvement List? If so, identify the project, fiscal amount, and year requested.

	Facility Project Title	Fiscal Year	Amount Requested
1.			
2.			

2008-2009 Legislative Budget Request
EDUCATIONAL AND GENERAL
POSITION AND FISCAL SUMMARY
Operating Budget Form II

University: **University of Florida**

Issue Title: **Florida High Tech Corridor Council Program**

	RECURRING	NON-RECURRING	TOTAL
Positions			
Faculty	10.00	0.00	10.00
Other (TEAMS/USPS)	3.00	0.00	3.00
Total	13.00	0.00	13.00
Salary Rate			
Faculty	$950,000	$0	$950,000
Other (TEAMS/USPS)	$144,000	$0	$144,000
Total	$1,094,000	$0	$1,094,000
Salaries and Benefits	$1,367,500	$0	$1,367,500
Other Personal Services	$286,000	$0	$286,000
Expenses	$152,500	$0	$152,500
Operating Capital Outlay	$194,000	$0	$194,000
Electronic Data Processing	$0	$0	$0
Special Category (Specific)	$0	$0	$0
	$0	$0	$0
	$0	$0	$0
	$0	$0	$0
Total All Categories	$2,000,000	$0	$2,000,000

State University System of Florida
Educational and General
2008-2009 Legislative Operating Budget Issue
Form I

University:	**University of Florida**
Descriptive Issue Title:	**Translational Imaging Technology and Applications**
Priority:	**9**
Date Approved by Board of Trustees:	**6-15-2007**

Check **only one** of the following to indicate which SUS Strategic Plan Goal/Objective this issue will address:

☐ **Access to and Production of Degrees** *(Examples of issues that may be included under this goal would be new enrollment growth, outreach, recruitment, financial aid, academic tracking, advising, etc.)*
☐ **Meeting Statewide Professional and Workforce Needs** *(Examples of issues that may be included under this goal would be new or expanded targeted and/or educated citizenry / workforce programs, retention of students.).*
☒ **Building World-class Academic Programs and Research Capacity** *(Examples of issues that may be included under this goal would be new and/or expanded research initiatives, enhancements of certain academic programs or program implementation / expansion of non-targeted programs.)*
☐ **Meeting Community Needs and Fulfilling Unique Institutional Responsibilities** *(Examples could include issues important to a regional area or specific to an institution's mission.)*

I. **Needs Statement** *(What need will be addressed with the provision of funds for this issue. **The needs statement should be brief and succinct.**):*

The needs addressed with this provision of funds are immediate and critical to enhancing the health of the citizens of the state of Florida. We will utilize the funds to combine and expand imaging research and enhance its transition, in both the short and long terms, into the clinic and marketplace while providing the faculty, staff and imaging infrastructure to rapidly expand and advance research and technology development in imaging for the enhancement of human health. It will also contribute towards the future of engineering and medicine through state of the art real world focused academic initiatives. To maximize the effectiveness of the resources we will also be leveraging research and development with close cooperation with existing initiatives in imaging (such as the McKnight Brain Institute, the Cancer/Genetics Centers, Emerging Pathogens Institute and the Advanced Magnetic Resonance Imaging and Spectroscopy facilities).

II. Justification

A. Description of service or program to be provided:

Imaging is an essential component of virtually every area of modern biomedical research and clinical medicine. Magnetic resonance imaging (MRI) is in every major hospital and is often the primary method to non-invasively examine tissues for human diseases such as cancer, stroke, traumatic brain and spinal cord injuries, muscular degeneration and injury, and many problems associated with aging. More recently, functional MRI (fMRI) has now been approved as a clinical technique to non-invasively monitor human brain activity as part of many neurological procedures. Several other imaging modalities such as magnetoencephalography (MEG), ultrasound, positron emission tomography (PET), optical, X-ray computed tomography (CT), and others all have provided major impacts in clinical health care and biomedical research.

Modern medical imaging was created by decades of basic science technology development in physics, engineering, chemistry, computer science, mathematics, and biology. The highly interdisciplinary nature of imaging has required scientists from all of these areas to work together to solve major problems in human health. The University of Florida is uniquely positioned to make major new contributions to biomedical imaging:

- The Health Science Center (HSC) at UF is home to dozens of basic science and clinical departments, the new Clinical and Translational Research Institute (CTSI), the McKnight Brain Institute, the Cancer Center, and Shands Healthcare, the largest healthcare provider in the Southeast United States.
- The College of Engineering has initiated a major new research and technology thrust through the creation of the new Biomedical Engineering Department (BME) as well as significant bioengineering (BE) initiatives across the entire college of Engineering. A significant enhancement of the infrastructure (The NanoTechnology, Emerging Pathogens and Biosciences buildings) and faculty in biomedical engineering is fostering new efforts in technology development in areas that include imaging, nanoscience, nanoengineering, computer modeling, and biomaterials development. In particular, Bioimaging is a primary thrust area of BME in collaboration with the HSC. UF, already a known leader in Bioimaging is poised to become an internationally recognized hub of innovation in imaging.
- The National High Magnetic Field Laboratory (NHMFL) has been widely recognized by several national reviews and a National Academy of Sciences Blue Ribbon panel report as the leading magnet laboratory in the world. To quote from the NSF site review report from Jan, 2007: “It [the NHMFL] is truly a jewel in the crown of US science.”
- The University of Florida’s Advanced Magnetic Resonance Imaging and Spectroscopy (AMRIS) facility in the McKnight Brain Institute is the biological arm of the NHMFL. With seven major instruments, an electronics laboratory, and about a dozen support staff, AMRIS provides resources to scientists throughout the world for studies in chemical identification, tissue microimaging, animal imaging, and human imaging. AMRIS currently provides imaging and

spectroscopy support for over $14 million dollars per year of federal grants, including several program project grants, to UF investigators.

These groups will work together to create the next generation of imaging technologies and expand and improve existing applications. The research groups in COE and the technological efforts of the NHMFL will combine with basic biomedical scientists and clinical investigators at UF to develop new imaging methods and more effective ways to exploit existing imaging modalities. These will have an immediate positive impact on major existing programs at UF and will facilitate new extramural funding opportunities. Through the CTSI, these new imaging technologies will be transitioned into the clinic through in house collaborations with Shands as well as through startup industries that are already emerging from the intellectual incubator that exists through the close cooperation and collaboration between groups in the COE, COM and CTSI that has arisen over the last several years. It is a given that the expansion and encouragement of this collaboration will enhance the health of Floridians as well as create new economic opportunities and growth.

B. **Description of current university initiatives, and their resources, that will strengthen the provision of this service/program**:

- ***J. Crayton Pruitt Family Department of Biomedical Engineering Department***
  Founded in the College of Engineering in 2002, the rapid expansion of the biomedical engineering department complements and enhances the ongoing efforts to initiate and facilitate the formation of multidisciplinary teams to rapidly take laboratory discovery into the clinic and marketplace. Having grown to 10 full time faculty, 50-affiliate faculty (from medicine, engineering and the life and physical sciences) and over 80 graduate students, the department is rapidly taking its place as a research and technology and educational development hub. Set to move into state of the art research facilities in the $94 M Biosciences building under construction (opening January, 2009) in the health sciences complex, it represents one of only a handful of engineering departments so integrated into a College of Medicine and Health Sciences Center. Anticipated continued rapid growth is focused upon enhancing and accelerating research, technology and 21st century solutions to improving human health through rapid and innovative progress in imaging techniques and technology. It is anticipated that the department will continue to grow to twice its current size over the next several years. Aided by a $20M private endowment (the first named department at UF) and extensive funding from the National Institutes of Health, National Science Foundation and the Department of Defense, the Biomedical Engineering Department has the mission to develop and transition all aspects of biomedical discovery into better human health solutions and higher quality of life. http://www.bme.ufl.edu

- ***Cancer-Genetics Complex***
  The Cancer & Genetics Research Complex is designed to maximize collaborations among different groups of researchers and to convert scientific ideas into innovative cancer therapies and other beneficial technologies. A five-story research wing of the UF Shands Cancer Center and a six-story Genetics Institute wing are contained in the facility, which opened in 2006. Also included

are the Interdisciplinary Center for Biotechnology Research, which provides support services to scientists, and the C.A. Pound Human Identification Laboratory, a premiere forensic anthropology laboratory. www.ufscc.ufl.edu

- ***McKnight Brain Institute***
  The McKnight Brain Institute of the University of Florida is one of the nation's most comprehensive and technologically advanced centers devoted to neuroscience. Today the MBI-UF's collaborative spirit is alive and growing and is represented by over 300 faculty from 51 academic departments and ten colleges and entails research and educational programs in nearly all aspects of basic, clinical and translational neuroscience. Additional collaborators around the world expand this into an international effort. To the best of our knowledge, there is no other academic program anywhere with this breadth and magnitude of multidisciplinary talent focused on the nervous system. With a design theme of beyond the-state-of-the-art, the conceptual mission of the extramurally funded, $60 million, 210,000 gsf MBI-UF building that serves as a catalyst and focal point for widely diverse, but synergistically interacting multidisciplinary research programs. Thus, in addition to an obvious emphasis on high technology, the strategic design of the new building includes a strong emphasis on multi-user core facilities and a full digital integration of these and all other systems through high speed networks and state-of-the-art computer systems. www.mbi.ufl.edu

- ***Emerging Pathogens***
  Emerging Pathogens Institute (EPI) by fusing signature disciplines at the University of Florida and creating opportunities for novel scientific interaction. Develop the research capability to be prepared to prevent and contain outbreaks of new diseases that threaten Florida. Develop the teaching capability to train the next generation of scientists who will keep these pathogens at bay in the future. Develop the outreach capability to educate the people of Florida on steps they can take to avoid human diseases as well as help our private sector avoid diseases that affect plants and animals. http://epi.ufl.edu/

- ***Nanoscience Institute for Medical and Engineering Technologies***
  The Nanoscience Institute for Medical and Engineering Technology (NIMET) is an umbrella organization that focuses and coordinates research and educational activities at the University of Florida in the fields of nanoscale science and nanotechnology (NS&T). Research in nanoscience and related fields at UF has developed in several colleges and now involves the research of over eighty faculty and staff in physics, chemistry, biology, medicine, engineering, and materials science. http://www.nimet.ufl.edu/

- ***Advanced Magnetic Resonance Imaging and Spectroscopy Facility***
  AMRIS is a state-of-the-art NMR facility for high-resolution solution NMR, solid-state NMR, microimaging, animal imaging, and human imaging. AMRIS currently has six spectrometer systems, including a 750 MHz wide bore, the most sensitive instrument for molecular analysis in the world, an 11 T/40 cm bore horizontal animal imaging magnet, and a 3T human system. All of our systems are available to University of Florida and external academic and industrial

scientists. AMRIS is a facility in the McKnight Brain Institute of the University of Florida and was developed, in part, through a grant from the Department of Defense. AMRIS is the facility for the biological investigations in the National High Magnetic Field Laboratory as supported by the National Science Foundation. http://www.mbi.ufl.edu/facilities/amris/

These and other UF and statewide biosciences initiatives are the foundation upon which the state of Florida is emerging as preeminent location for innovation in the biosciences and medicine (as recently reported the most prestigious scientific magazine *Nature* in the article "Bioscience in the Sun" vol. 446, pp1112-3, April 2007).

C. **Description of outcome anticipated:**

Several existing needs in imaging at UF will be addressed with new faculty and staff hires as part of this proposed initiative:

- Functional Magnetic Resonance Imaging (fMRI) is an indispensable tool for mapping human brain function for both basic science and clinical procedures. The Univeristy of Florida has several groups who use fMRI in their research, and we recently invested in a state-of-the art human scanner in the Advanced Magnetic Resonance Imaging and Spectroscopy Facility (AMRIS, http://www.mbi.ufl.edu/facilities/amris/) that can support fMRI. However, UF lacks key faculty groups in fMRI technology development, fMRI data processing, and associated engineering technology development. Three faculty recruits and addition of technical support staff in these areas will stimulate extensive new research opportunities through the CTSI and other UF initiatives.
- Through the NHMFL and AMRIS, UF has established world leadership in animal models using advanced techniques such as diffusion tensor imaging (DTI) to trace nerve and muscle fibers in living tissues and *in vivo* spectroscopy to probe metabolism. To translate these technologies into humans and ultimately into clinical practice will require two faculty hires to bridge the animal and human imaging developments at UF.
- The most significant advances in the next generation of imaging will be made through the combination of different imaging technologies, each with its own unique strengths. For example, MRI can provide exquisite anatomical detail but limited information on physiology and biochemistry of living animals and humans. PET provides very low-resolution anatomical detail but very specific biochemical information. Other imaging modalities currently being pursued include optical coherence tomography (OCT) and electrical impedance tomography (EIT) for breast cancer imaging as well as optical imaging for imaging of the brain and the heart. By recruiting additional faculty to work on the combination of multiple imaging techniques, more complete information can be obtained and used for improved patient care. The close collaboration between COE and COM through CTSI will be one of the primary engines driving biomedical translational and clinical research in the state of Florida

- Molecular imaging has the potential to significantly improve the diagnosis, and perhaps the treatment, of human disease by probing the chemistry and physiology of living animals and humans. Significantly, molecular imaging is being developed at UF to monitor the results of gene and stem cell therapy. This requires advanced imaging techniques, specialized nanoparticle design and synthesis, and sophisticated computer software development. UF and the NHMFL have built the foundation for this work in cells, tissue, and animals. Additional faculty recruits will be required to translate these important advances into human clinical research.
- Finally, discoveries at the molecular level often form the foundation of important new treatments for human disease. In the past six months at least two patents have been filed by UF investigators for discoveries of new molecules from natural sources that kill cancer cells in culture. These discoveries are important both for the potential as new human drugs but also for the positive economic impact they can provide to the state of Florida. The CTSI will provide an excellent way for these compounds to be tested and developed, and we seek an additional faculty recruit to add to this growing team of investigators.

The extensive collaborative efforts to realize the potential described here require not only world-class facilities and infrastructure but world-class faculty as well. The critical limitation to enhancing and accelerating the pace of translational biomedical imaging research is the shortage of faculty and researchers. Only the most outstanding investigators who have a demonstrated ability to work in an interdisciplinary collaborative team will be hired into this effort. Junior faculty will be hired based on their potential to be leading researchers and teachers. Senior faculty recruited will be hired on the basis of the following expectations:

- World class researcher (a given)
- Strong interest or track record in innovation as evidenced by patents and translational research metrics such as transition into pre clinical and clinical environments either directly or through industry
- An interest (or track record) of getting inventions out of the lab as evidenced by metrics including licensing of inventions, startup companies and involvement with clinical or industrial entities.
- Talent in training the next generation of Florida researchers, clinicians and technical personnel.

In particular we will be seeking faculty that can lead and enable multidisciplinary research collaborations in biomedical imaging across the research community centered at UF, as needed in following the NIH Roadmap to advancing clinical and translational science research We will recruit talented faculty who can foster and participate in pertinent collaborations across the state, nation and the world and advance the theory and practice of biomedical imaging by continuing a vibrant personal research agenda based on extramural funding.

The proposed new faculty recruits and technical support staff will significantly add to the existing infrastructure and talent at UF and the state of Florida and will contribute to new

extramural funding opportunities, new major program project grants, new shared instrumentation grants, and new student education and training opportunities at UF. Additionally it is expected that they will contribute both to the overall health of the human population and towards the expansion of the biomedical research and technology base in industry in Florida. With the critical collaborations with the CTSI, these new opportunities will translate into improved human health and economic opportunities to the citizens of Florida.

III. **Budget Request for 2008-09 (detail information provided on the OB Form II):**

		2007-08 Budget for Issue (A)	**2008-09 State Funds Requested (B)**	2008-09 Anticipated Reallocation (C)		Budget for 2008-09 and Incremental Years (D)
a.	Recurring Funds:	$	**$2,362,500**	$		$2,362,500
b.	Non-recurring Funds:	$	**$4,000,000**	$		$4,000,000
c.	Total:	$	**$6,362,500**	$		$6,362,500

A. Identify 2007-08 funds (if not E&G funds, provide the source of the funds) that will be used to initiate this program (column A).
B. Identify the amount of funds requested for 2008-09 (column B).
C. Identify existing programs from which funds will be reallocated, if applicable (include for example, salaries from reallocated or dedicated personnel) (column C).
D. If this is a multi-year request, identify the incremental funds needed from the state for each future year, by year, for a maximum of five years (column D only includes column B plus each future year's need).

IV. **Facilities:**

A. Does this issue require an expansion or construction of a facility?

This program does not require funds for expansion or construction of facilities.

B. If yes, is the project identified on the Capital Improvement List? If so,identify the project, fiscal amount, and year requested.

	Facility Project Title	Fiscal Year	Amount Requested
1.			
2.			

2008-2009 Legislative Budget Request
EDUCATIONAL AND GENERAL
POSITION AND FISCAL SUMMARY
Operating Budget Form II

University: **University of Florida**
Issue Title: **Translational Imaging Technology and Applications**

	RECURRING	NON-RECURRING	TOTAL
Positions			
Faculty	10.00	0.00	10.00
Other (A&P/USPS)	6.00	0.00	6.00
Total	16.00	0.00	16.00
Salary Rate (for all positions noted above)			
Faculty	$1,730,000	$0	$1,730,000
Other (A&P/USPS)	$300,000	$0	$300,000
Total	$2,030,000	$0	$2,030,000
Salaries and Benefits	$2,162,500	$0	$2,162,500
Other Personal Services	$0	$0	$0
Expenses	$200,000	$0	$200,000
Operating Capital Outlay	$0	$4,000,000	$4,000,000
Electronic Data Processing	$0	$0	$0
Special Category (Specific)	$0	$0	$0
	$0	$0	$0
	$0	$0	$0
	$0	$0	$0
Total All Categories	$2,362,500	$4,000,000	$6,362,500

State University System of Florida
Educational and General
2008-2009 Legislative Operating Budget Issue
Form I

University:	**University of Florida, University of South Florida, Florida International University**
Descriptive Issue Title:	**Florida Public Health Consortium**
University Priority Number:	**10**
Date Approved by Board of Trustees:	**June 15, 2007**

Check **only one** of the following to indicate which SUS Strategic Plan Goal/Objective this issue will address:

☐ **Access to and Production of Degrees** *(Examples of issues that may be included under this goal would be new enrollment growth, outreach, recruitment, financial aid, academic tracking, advising, etc.)*
☒ **Meeting Statewide Professional and Workforce Needs** *(Examples of issues that may be included under this goal would be new or expanded targeted and/or educated citizenry / workforce programs, retention of students.).*
☐ **Building World-class Academic Programs and Research Capacity** *(Examples of issues that may be included under this goal would be new and/or expanded research initiatives, enhancements of certain academic programs or program implementation / expansion of non-targeted programs.)*
☐ **Meeting Community Needs and Fulfilling Unique Institutional Responsibilities** *(Examples could include issues important to a regional area or specific to an institution's mission.)*

I. **Needs Statement** *(What need will be addressed with the provision of funds for this issue. **The needs statement should be brief and succinct.**):*

The importance of public health has never been more tangible to the American public. National catastrophes such as hurricanes, terrorism events such as the attacks on the World Trade Towers in 2001, and growing concerns with obesity, Avian flu, and health risks, demonstrate the importance of a strong public health system in our daily lives. As a large peninsula with thousands of miles of coastline Florida faces extraordinary risks for natural disasters and terrorism events. As a mecca for millions of tourists, Florida's economy depends on a healthy workforce. As such, Florida's need for an educated and effective public health workforce has never been greater. Unfortunately, in Florida, like in other states, only a small minority of the total public workforce has received formal public health training. The Centers for Disease Control and Prevention has estimated that 80% of public health workers in the United States lack basic training in public health.

Training in public health falls to the nation's schools of public health. In the state of Florida, the University of South Florida has been an accredited school of public health for more than twenty years and has prepared many of the states public health professionals. In recent years, Florida International University, and the University of Florida, have each sought similar accreditation by the Council for Education on Public Health. Together, these universities provide an important resource for the education of Florida's public health workforce. Geographically disparate and committed to public health education, these universities offer the state critical resources that can assure appropriate knowledge of both basic and advanced public health concepts. Florida's local departments of health have unique educational needs, particularly in areas of environmental health and business management. Moreover, the graying of the workforce in Florida has created a need for substantial numbers of formally educated individuals to assume leadership positions in public health over the next decade.

The three colleges of public health in the state of Florida have committed to identify ways to effectively collaborate in the current and future education of the public health workforce in the state. The three universities have come together to form the Florida Public Health Consortium. The Consortium will enhance the education and technical assistance provided to state and local departments of health. Because of the geographical distribution of the three universities, it is possible for the Consortium to serve the entire state of Florida and for each of the three universities to offer their expertise and resources to the Department of Health and to the education of all health professions in the respective campuses and throughout the state.

Each university will establish a technical assistance center to coordinate educational programs and provide technical assistance. Educational needs will be identified by local public health departments and faculty on each campus. Topics which have already been identified by a number of health departments and faculty are environmental health, risk reduction, and business management. By staffing these technical assistance offices with faculty and public health experts, we will create a resource that will enhance the public health capacity in Florida. In addition, the Centers will reach out to all the health professions on each campus, including medicine, nursing health professions, dentistry, and veterinary medicine. These programs will educate the entire next generation of health care providers for the state of Florida and provide renewal for the public health workforce.

The Centers will increase the size and competence of the public health workforce. Faculty will provide resources to tackle difficult and, possibly, unforeseen problems in the public health arena. The Consortium will work with the Florida Department of Health, local health departments and the broad university community to respond to identified needs and to help identify other areas of opportunity for work. By providing resources to the colleges of public health, the Legislature will assure professional education of the public health workforce, timely responsiveness to emerging public health problems, and routine continuing education in areas of local health department need and health professions.

The discipline of public health is broad and interdisciplinary by nature. It includes complex, interacting components that address individual behaviors, psychosocial factors, community issues, cultural issues, social, economic, environmental, and policy factors. By tapping into the broad array of competence available in public health colleges, the state will assure a myriad of expertise is available.

Each university will establish a technical assistance center with core staff and faculty in the five core areas of public health: epidemiology, biostatistics, social and behavioral sciences, environmental health, and health services administration. In addition, each technical assistance center will have scholarships for MPH students and ten interdisciplinary Ph.D. students that can be awarded to students who are willing to commit to working in health departments for specified periods.

II. Justification

A. **Description of service or program to be provided:** *(Include whether this is a new or expanded service/program. If expanded, what has been accomplished with the current service/program?)*

Each of the three universities in the Florida Public Health Consortium will establish a technical assistance center. The three centers will be distinct programs and will manage the overall effort through a tri-college leadership team. Each center will have a director and be integrated into the university through the utilization of college faculty and resources. The Center director will be charged with meeting with local Department of Health leaders and college faculty to establish needs and develop programs to address perceived needs. In addition, no less than yearly, the Consortium will arrange to meet with the leadership of the Florida Department of Health to discuss their needs. Consortium members will share programs to increase the wealth of information and educational offerings.

Each of the centers will serve three areas:

- Short courses on topics that the State Department of Health and local health departments have identified as needs
- Work with the State Department of Health and local health departments, and within the universities, to identify individuals interested in obtaining a master's in public health. Individuals receiving scholarships through the Consortium will be expected to make three year commitments to work within local health departments once they have achieved an MPH.
- Technical assistance to the State Department of Health and local departments of health on problems that require specific expertise. Each Center will identify faculty with the expertise to respond to stated needs where possible. Needs that cross multiple agencies will be addressed collectively.
- Technical assistance and education to all health disciplines at the respective universities.

B. **Description of current university initiatives, and their resources, that will strengthen the provision of this service/program**:

The resources needed to create a college of public health are significant. To be accredited, a college must have five faculty in each of the five core areas of public health and offer at least three doctoral programs. The expertise required to develop these programs is costly and difficult to find. Through the consortium and the technical assistance center this broad array of resources will be available to local departments of health and the State Department of Health. Each of the three universities has made huge commitments to public health education. The umbrella programs existing in each university will provide considerable resources and additional expertise beyond the affiliated faculty.

C. **Description of outcome anticipated:** *(Be specific. For example, if this issue focuses on improving retention rates, indicate the current retention rate and the expected increase in the retention rate.* In addition, identify the following, if applicable.)

Each of the three universities (UF, FIU, and USF) will enroll ten additional MPH students through each Center. Once the program reaches maturity, thirty new master's of public health prepared individuals will be available to work in local health departments each year. Each Center will enroll ten Ph.D. students to facilitate material development and teaching of courses.

In addition, each technical assistance center will offer no less than four short courses per year to local health department employees and to health professionals interested in gaining more knowledge of public health issues and will respond to a minimum of four technical assistance requests each year.

i. Number of FTE Students receiving services or participating in the program by year for the next five years:

We anticipate enrolling ten additional students through each Center. Once the program reaches maturity, this will result in thirty new master's of public health prepared individuals working within local health departments each year.

In addition, each technical assistance center will offer no less than four short courses per year to local health department employees and to others interested in gaining more knowledge of public health issues and will respond to a minimum of four technical assistance requests each year.

ii. Number of Headcount Students receiving services or participating in the program by year, for the next five years:

Ten per year.

iii. Number of FTE Students receiving services or participating in the program by year for the next five years.

Year 1 – 7.5 FTE, Years 2 forward – 15 FTE

If these are new FTE Students are they included in the 5-year enrollment plan? No.

iv. Additional degrees, if any, produced as a result of this initiative *(Indicate the additional number of Bachelor, Master, Doctoral & Professional degrees produced by school year.)*

v. Other outcomes:

Type of student	**2008-2009**	**2009-2010**	**2010-2011**	**2011-2012**	**2012 – 2013**
MPH (FTE)	44.8	44.8	44.8	44.8	44.8
Certificate (PH)	200 heads	200 heads	200 heads	200 heads	200 heads
Certificate (Health Professions)	200	200	200	200	200

III. **Budget Request for 2008-09 (detail information provided on the OB Form II):**

		2007-08 Budget for Issue (A)	**2008-09 State Funds Requested (B)**	2008-09 Anticipated Reallocation (C)		Budget for 2008-09 and Incremental Years (D)
a.	Recurring Funds:	$0	**$ 1,500,000**	$ 0		$ 1,500,000
b.	Non-recurring Funds:	$0	**$ 0**	$0		$0
c.	Total:	$0	**1,500,000**	0		$ 1,500,000

A. Identify 2007-08 funds (if not E&G funds, provide the source of the funds) that will be used to initiate this program (column A).
B. Identify the amount of funds requested for 2008-09 (column B).
C. Identify existing programs from which funds will be reallocated, if applicable (include for example, salaries from reallocated or dedicated personnel) (column C).

D. If this is a multi-year request, identify the incremental funds needed from the state for each future year, by year, for a maximum of five years (column D only includes column B plus each future year's need).

IV. **Facilities:**

A. Does this issue require an expansion or construction of a facility?

No.

2008-2009 Legislative Budget Request
EDUCATIONAL AND GENERAL
POSITION AND FISCAL SUMMARY
Operating Budget Form II

University: **University of Florida**
Issue Title: **Florida Public Health Consortium**

	RECURRING	NON-RECURRING	TOTAL
Positions			
Faculty	8.00	-	8.00
Other (A&P/USPS)	1.00	-	1.00
Total	9.00	0.00	9.00
Salary Rate (for all positions noted above)			
Faculty	$724,000	$0	$724,000
Other (A&P/USPS)	$45,200	$0	$45,200
Total	$769,200	$0	$769,200
Salaries and Benefits	$1,001,820	$0	$1,001,820
Other Personal Services	$327,720	$0	$327,720
Expenses	$107,460	$0	$107,460
Operating Capital Outlay	$63,000	$0	$63,000
Electronic Data Processing	$0	$0	$0
Special Category (Specific)		$0	$0
	$0	$0	$0
	$0	$0	$0
	$0	$0	$0
Total All Categories	$1,500,000	$0	$1,500,000

Priority #11

Clinical and Translational Research Institute

Combined LBR with UF-Health Science Center

OBI Narrative

See Page 74-80

Priority #11

Clinical and Translational Research Institute

Combined LBR with UF-Health Science Center

OBII Fiscal Information

See Page 81

Priority #12

Florida Partnership for Climate and Society (PCS)

Combined LBR with UF-IFAS

OBI Narrative

See Page 110-114

Priority #12

Florida Partnership for Climate and Society (PCS)

Combined LBR with UF-IFAS

OBII Fiscal Information

See Page 115

State University System of Florida
Educational and General
2008-2009 Legislative Operating Budget Issue
Form I

University:	**University of Florida (E&G and Health Science Center Collaborated Effort)**
Descriptive Issue Title:	**Clinical and Translational Research Institute (CTSI)**
University Priority Number:	**E&G #11; HSC #1**
Date Approved by Board of Trustees:	**6/15/2007**

Check **only one** of the following to indicate which SUS Strategic Plan Goal/Objective this issue will address:

☐ **Access to and Production of Degrees** *(Examples of issues that may be included under this goal would be new enrollment growth, outreach, recruitment, financial aid, academic tracking, advising, etc.)*
☐ **Meeting Statewide Professional and Workforce Needs** *(Examples of issues that may be included under this goal would be new or expanded targeted and/or educated citizenry / workforce programs, retention of students.).*
☒ **Building World-class Academic Programs and Research Capacity** *(Examples of issues that may be included under this goal would be new and/or expanded research initiatives, enhancements of certain academic programs or program implementation / expansion of non-targeted programs.)*
☐ **Meeting Community Needs and Fulfilling Unique Institutional Responsibilities** *(Examples could include issues important to a regional area or specific to an institution's mission.)*

I. **Needs Statement** *(What need will be addressed with the provision of funds for this issue. **The needs statement should be brief and succinct.**):*

The State of Florida and the Nation in general, face a critical shortage of skilled clinical investigators capable of translating basic science discoveries into new therapies for the diagnosis, prevention, treatment and cure of human disease. Recognizing this crisis in research and health care delivery, the National Institutes of Health (NIH) has created a major new funding initiative, called the Clinical and Translational Science Award (CTSA). The CTSA provides a mechanism by which the federal government partners with research-oriented universities and their academic health center to cost-share the development of the infrastructure necessary to accomplish three principal goals: 1) to speed the process of translating biomedical research discoveries into improvements in medical therapies and health care delivery, 2) to

increase the success of technology transfer from UF discoveries to Florida's developing technology industry and 3) to effectively train the next generation of multidisciplinary clinical and translational scientists. This document summarizes the University of Florida's strategy to position itself and the State of Florida to be national leaders in clinical and translational research and training.

II. Justification

A. Description of service or program to be provided: *(Include whether this is a new or expanded service/program. If expanded, what has been accomplished with the current service/program?)*

To accomplish its goals, UF will create a Clinical and Translational Science Institute (CTSI) that will serve as the "academic home" for activities encompassing those supported, in part, by the CTSA and the State of Florida. The Institute will enable UF to bring necessary personnel and resources together under one roof, including space for education and training, clinical trials coordination, biostatistics, epidemiology, biomedical informatics, bioethics, study design, regulatory support, community health and health policy research. This coalescence of clinical and translational investigators, ancillary personnel and infrastructure in one facility will enable the CTSI to serve as a magnet for industry, foundation and federal grants and as an important state-wide resource for public health policy-makers, advocates and community organizations.

The CTSI will accelerate the approval of new drugs and devices and their entry into the marketplace, with better proof of value of the products. In addition, the Institute will train multidisciplinary teams of young scientists and practitioners in the skills required to continue these advances, in academic health centers, in industry and in the community. In turn, the success of these activities will result in more industry partnerships and startup companies based on faculty inventions and will increase the value of UF's technology portfolio and economic impact throughout the State.

Clinical research, health education and healthcare delivery will be facilitated by the CTSI through partnership with Shands Healthcare (the largest healthcare system in the Southeast), the North Florida/South Georgia Veterans Administration healthcare system (the second largest VA healthcare system in the country) and the Extension program of UF's Institute for Food and Agricultural Sciences (IFAS), which has health education and health care delivery facilities in every county in Florida. Few, if any, other CTSA applicant institutions nationwide will be able to match UF's depth and diversity of interdisciplinary science and its capacity for positively impacting the health of such a broad, state-wide, constituency. Thus, an overarching commitment of the CTSI will be to minimize bureaucracy and optimize

fluidity in the translation of UF basic science discoveries to applications for improving the health of the citizens of this state.

To accomplish the broad mission of the CTSI requires strong clinical and translational research informatics to 1) link data from various sources (e.g., genomic, metabolomics, clinical, and environmental data; and 2) facilitate interdisciplinary research team collaboration across multiple sites and disciplines (e.g., physicians, geneticists and health outcomes researchers). Novel data linkages and interdisciplinary collaborations are essential to 1) develop new prevention, diagnostic, and treatment strategies targeted toward specific patient needs; 2) evaluate patient outcomes associated with the new interventions; and 3) address critical public health issues, such as racial and ethnic disparities in health and health care. To make these advances available to the citizens of Florida, clinical and translational informatics capabilities at UF must be strengthened and expanded. However, currently UF lacks sufficient expert personnel and a computing infrastructure to address the informatics needs of its investigators and trainees and the patients they serve.

Therefore, the CTSI will create a Clinical and Translational Research Informatics Program (CTRIP). CTRIP will not duplicate the computing and computational facilities that exist in other health-related programs, such as the General Clinical Research Center (GCRC), the Genetics Institute or the Interdisciplinary Center for Biotechnology Research. Rather, CTRIP will link and store data from these different entities, only as required, based on investigators' scientific protocols, as one of its key functions. In addition, CTRIP will offer advanced clinical and translational informatics support that includes study participant identification and tracking; multi-site, web-based data capture; research portals to allow research teams to collaborate in real time or separately, regardless of geographic location, in a secure and compliant manner and documentation and standardization of data, where possible, to facilitate novel collaborations across projects and study sites. CTRIP will provide a truly unique resource for the CTSI and will be essential to its mission to foster clinical and translational research.

Other new programs to be developed under the auspices of the CTSI include:

a. Metabolomics, meaning the identification and quantification of biomarkers of disease, drug efficacy and drug toxicity, would become a major new core resource for CTSI investigators and would position UF at the forefront of this existing new field. The Metabolomics core would build upon internationally recognized strengths at UF in mass spectrometry from the Department of Chemistry and nuclear magnetic resonance imaging resources housed in the McKnight Brain Institute.
b. UF scientists have a sterling record of discovering naturally occurring or synthetic molecules with medicinal potential, yet these discoveries often languish because of a lack of resources to "scale-up" the synthesis of these compounds in amounts sufficient for animal testing prior to human trials. The

CTSI will launch a Preclinical Drug Development Program that will provide a facile pathway from drug discovery to scale-up synthesis and testing, that will meet the highest standards of determining safety and efficacy of new compounds before their administration to humans.

c. A major new thrust of the CTSI is to strengthen UF's commitment to Community Education and Participatory Community Research throughout the State of Florida. We will utilize resources available through the Shands and VA hospitals and clinical and the Extension Program directed by IFAS both to partner with citizens in conducting patient research and to 'give back' to the communities new knowledge gained about improved health education and healthcare delivery.

d. New interdisciplinary opportunities for Training and Career Development will be a central mission of the CTSI, as it removes barriers to communication among diverse colleges on campus and fosters a multidisciplinary "team" approach toward problem solving. A new PhD degree program in Clinical and Translational Science will become available to graduate students throughout UF and will emphasize mentoring by established scientists in complimentary disciplines.

Thus, we envision the CTSI to be transforming for UF, in that it is designed to integrate and synthesize from diverse programs a unified effort directed towards the study and treatment of human disease. The Institute will serve as a crucible from which new knowledge will be gained and the next generation of clinical and translational scientists will evolve. Undergraduates, graduate students, postdoctoral trainees and junior faculty will be able to be crossed-trained in both laboratory-oriented and patient-oriented techniques of hypothesis testing, and become knowledgeable about the design and implementation of ethically and scientifically rigorous translational science, including clinical trials and participatory community research.

B. Description of current university initiatives, and their resources, that will strengthen the provision of this service/program:

The CTSI would provide the new intellectual home for clinical and translational research and training at UF, integrating and synergizing the scientific and educational activities of 11 colleges, 5 institutes, 19 centers, 11 hospitals, numerous outpatient clinics and the 67 counties in the State of Florida. The colleges participating in planning for the CTSI include Agriculture and Life Sciences, Dentistry, Engineering, Fine Arts, Health and Human Performance, Liberal Arts and Sciences, Medicine, Nursing, Pharmacy, Public Health and Health Professions and Veterinary Medicine. Collectively, these colleges comprise 82 percent of the total faculty and 72 percent of the total undergraduate and graduate student body of the University. They enjoy substantial institution-wide support and benefit from the University's financial investments and space allocations toward building multidisciplinary research teams and mentoring programs in the health

sciences. The University's goals are therefore entirely congruent with those expressed by the NIH CTSA initiative.

The principal existing UF resource from which the CTSI will evolve is the General Clinical Research Center (GCRC), located in Shands Hospital. The GCRC has been continuously funded by the NIH since 1962 and has repeatedly received "Outstanding" reviews from the NIH for its scientific and training programs. UF has the only GCRC in the State of Florida. During the last five years, the Center leveraged over $117 million dollars in extramural awards to over 100 UF faculty representing six colleges on campus to conduct cutting-edge clinical and translational research and training. Consequently, UF will be the only institution in this state capable of both submitting a competitive CTSA application and realizing the full benefits such an award can provide its faculty and trainees.

C. Description of outcome anticipated: *(Be specific. For example, if this issue focuses on improving retention rates, indicate the current retention rate and the expected increase in the retention rate.* In addition, identify the following, if applicable.)

The overriding goal is to knit related, but poorly interacting, programs throughout the University into a central focus and provide a core program and environment for these activities through the CTSI. By so doing research teams will be eligible for new, complex federal and industry grants and partnerships not currently existing on campus or capable of being pursued by UF faculty, owing to a lack of existing core infrastructure. Our confidence in being able to leverage additional extramural dollars through the CTSI is supported by the long success of the GCRC in accomplishing this goal. Since 2000, the GCRC has leveraged over $117M in federal, foundation and industry grant support to UF. The additional resources provided by the CTIP will also enhance the acquisition of grants to UF in two primary ways. First, faculty members hired as part of the CTRIP are expected to obtain extramural funding. There are several federal Program Announcements and Requests for Applications for national data coordinating centers for a variety of diseases/populations. CTRIP faculty would be competitive in applying for these awards. Second, investigators using the CTRIP services are expected to include the costs of those services in their grant applications. We estimate conservatively that the annual return on investment from both of these revenue streams will be approximately $3.5M to $4M per year if the CTSA request is funded.

We also expect to generate considerable new revenue from the CTSI's other new programs, particularly through the Metabolomics core and the program in Preclinical Drug Development. Both resources will play major roles in establishing a new funding stream through scientific and licensing partnerships with other academic health centers and pharmaceutical companies.

New knowledge gained from the scientific endeavors at UF will be translated into improved healthcare research and delivery throughout the state, principally through the Shands and North Florida/South Georgia healthcare systems and through the IFAS Extension program. Thus, virtually every area of the State of Florida will be impacted continuously by scientific activities facilitated through the CTSI.

Additional information to justify request:
a. The program fosters interdisciplinary research, a goal of both the NIH and the University of Florida.
b. The integration of many diverse and separate programs will foster multifaceted training opportunities in undergraduate, graduate and postgraduate education in clinical and translational science.
c. To be successful UF will need to develop methodology to circumvent traditional cross-college barriers. This accomplishment will benefit virtually all programs at the University.
d. The CTSI designed and discussed here as a prototypic example of an NIH CTSA initiative.
e. Improved healthcare research and healthcare delivery through the CTSI has both positive health and economic impact, the dollars amount of which is hard to estimate.

III. **Budget Request for 2008-09 (detail information provided on the OB II):**

		2007-08 Budget for Issue (A)	**2008-09 State Funds Requested (B)**	2008-09 Anticipated Reallocation (C)		Budget for 2008-09 and Incremental Years (D)
a.	Recurring Funds:	$	**$4,000,000**	$		$4,000,000
b.	Non-recurring Funds:	$		$		
c.	Total:	$	**$4,000,000**	$		$4,000,000

A. Identify 2007-08 funds (if not E&G funds, provide the source of the funds) that will be used to initiate this program (column A).
B. Identify the amount of funds requested for 2008-09 (column B).

These funds are requested in both the E&G and Health Science Center budgets. We are requesting $2,000,000 in E&G and $2,000,000 in HSC.

C. Identify existing programs from which funds will be reallocated, if applicable (include for example, salaries from reallocated or dedicated personnel) (column C).
D. If this is a multi-year request, identify the incremental funds needed from the state for each future year, by year, for a maximum of five years (column D only includes column B plus each future year's need).

IV. **Facilities:**

A. Does this issue require an expansion or construction of a facility?
No

B. If yes, is the project identified on the Capital Improvement List? If so, identify the project, fiscal amount, year requested and priority number.

	Facility Project Title	Fiscal Year	Amount Requested
1.			
2.			

2008-2009 Legislative Budget Request
EDUCATIONAL AND GENERAL
POSITION AND FISCAL SUMMARY
Operating Budget Form II

University: **University of Florida**
Issue Title: **Clinical and Translational Research Institute (CTSI)**

	RECURRING	NON-RECURRING	TOTAL
Positions			
Faculty	6	0	6
Other (A&P/USPS)	8	0	8
Total	14	0	14
Salary Rate (for all positions noted above)			
Faculty	$1,064,706	$0	$1,064,706
Other (A&P/USPS)	$578,952	$0	$578,952
Total	$1,643,658	$0	$1,643,658
Salaries and Benefits	$1,997,042	$0	$1,997,042
Other Personal Services	$0	$0	$0
Expenses	$0	$0	$0
Operating Capital Outlay	$1,000,000	$0	$1,000,000
Electronic Data Processing	$0	$0	$0
Special Category (Specific)	$0	$0	$0
Pilot Projects - Junior Faculty	$750,000	$0	$750,000
Undergraduate/Graduate Stipends in	$0	$0	$0
Clinical and Translational Research	$252,958	$0	$252,958
Total All Categories	$4,000,000	$0	$4,000,000

State University System of Florida
Educational and General
2008-2009 Legislative Operating Budget Issue
Form I

University:	**University of Florida**
Descriptive Issue Title:	**Florida Veterinary Workforce Expansion Initiative**
University Priority Number:	**HSC #2** **IFAS #7**
Date Approved by Board of Trustees:	**6-15-2007**

Check **only one** of the following to indicate which SUS Strategic Plan Goal/Objective this issue will address:

☐ **Access to and Production of Degrees** *(Examples of issues that may be included under this goal would be new enrollment growth, outreach, recruitment, financial aid, academic tracking, advising, etc.)*
☒ **Meeting Statewide Professional and Workforce Needs** *(Examples of issues that may be included under this goal would be new or expanded targeted and/or educated citizenry / workforce programs, retention of students.).*
☐ **Building World-class Academic Programs and Research Capacity** *(Examples of issues that may be included under this goal would be new and/or expanded research initiatives, enhancements of certain academic programs or program implementation / expansion of non-targeted programs.)*
☐ **Meeting Community Needs and Fulfilling Unique Institutional Responsibilities** *(Examples could include issues important to a regional area or specific to an institution's mission.)*

I. **Needs Statement** *(What need will be addressed with the provision of funds for this issue. **The needs statement should be brief and succinct.**):*

Currently the only College of Veterinary Medicine (CVM) in the state of Florida is located at the University of Florida. The CVM, which graduated its first class in 1980, is designed for a maximum capacity of 88 students in each class of the four year professional degree (DVM) program. In comparison with veterinary colleges in other states, this class size is quite small in proportion to the Florida's large population. As a result, approximately 900 qualified students apply for the 88 seats available in Florida each year, and many well-qualified Florida residents are therefore unable to gain admission. Further, there is a critical shortage of veterinarians nationally that is especially acute in Florida. This proposal is to better meet these needs and better serve Florida by a significant expansion of veterinary student enrollment.

II. **Justification**

A. **Description of service or program to be provided:** *(Include whether this is a new or expanded service/program. If expanded, what has been accomplished with the current service/program?)*

DVM students graduate from the University of Florida College of Veterinary Medicine with a reputation for having a high quality education. The CVM is a highly ranked program, which contributes to the demand both for admission and for employment of its graduates. Our graduates pass the national board veterinary examination at a rate well above the national average. Each graduate has multiple job offers, with Florida having among the best employment opportunities in the nation.

Nationally there is a clear shortage of veterinarians in all areas of professional endeavor. Recent studies (NAS, KSU, AAVMC) document these critical needs. There is an immediate need for over 500 veterinarians in public health practice, based primarily in state and federal agencies. These positions, best filled by veterinarians, are focused on protecting public health by preventing diseases of animals that are capable of infecting humans such as rabies, avian influenza, mad cow disease, and many others. Some of these veterinarians focus on keeping our animal-based food supply free of infectious agents such as E. coli or chemical contaminants. Veterinarians are also needed in the FDA, USDA, Homeland Security, U.S. Army, CDC, NIH, as well as numerous Florida State agencies where regulation and control of animal disease, emergency preparedness and environmental protection are paramount.

Veterinarians are also needed to fulfill the need for basic biomedical research in academia, industry, agencies and institutes. Veterinarians educated in research bring perspectives regarding animal diseases within the concept of "one medicine" that is extremely valuable. There are also shortages of veterinarians to serve the pharmaceutical and other industries in research and technical support, in veterinary pathology, laboratory animal medicine and other specialties.

The CVM Office of Student Affairs regularly receives requests from practicing veterinarians in Florida desperate to employ a graduate and facing fierce competition for the few that are still available. Rural practice, with primary focus on food producing animals (now termed Food System Veterinary Medicine by some), is experiencing the most extreme manpower shortages. This need has been extensively studied by the profession and was highlighted in a recent edition of the *New York Times*. Florida is experiencing this shortage to a greater degree than many other states.

Florida's modest veterinary class size (88) in proportion to the state's large population (18 million) places it near the bottom of population-enrollment ratios compared to other states with veterinary schools. Therefore, each year the CVM has the unpleasant task of notifying all but 88 of the 900 qualified applicants that they

were denied admission to the UF College of Veterinary Medicine. These students and their families come to the realization that they must choose a different career, or pursue a veterinary education at an institution located outside of Florida. There are only 28 veterinary schools in the United States, so the opportunities available to these students are limited. Many Florida students will attend foreign veterinary schools because they cannot gain admission to the CVM, which adds cost to their education, and these students face additional U.S. licensure hurdles once graduated.

The UF College of Veterinary Medicine proposes to provide more educational opportunity to the students and families of Florida as well as meet Florida's need for more veterinarians.

Specifically this initiative will:

1) Expand enrollment in the UF College of Veterinary Medicine by 50%. We will admit 44 more students to each entering class, thus when all four classes are filled to this number the total enrollment increase will be 176 students. We have sufficient applicants to accept this additional number with no drop in student qualifications.

2) To better meet the needs of Florida and the nation:

   a) We will recruit approximately 15% of these added students from applicants committed to pursue careers in Food System Veterinary Medicine. We will collaborate with the UF Department of Animal Sciences to identify and admit these students.

   b) We will recruit approximately 30% of these added students from applicants committed to pursue careers in Veterinary Public Health. We will fully implement the joint DVM/MPH program we have developed in conjunction with the UF College of Public Health and Health Professions. These students will receive both degrees simultaneously at the completion of their veterinary program by adding the public health courses during the four year DVM degree program.

3) The UF College of Veterinary Medicine also wishes to establish regional campus programs in communities outside Gainesville to better meet the educational experiences of veterinary students. These locations would allow the College and its various programs to better serve the diverse geographic areas of Florida. This goal will greatly enhance implementation of this proposal, but the proposal can be fully implemented without these regional campus locations.

B. **Description of current university initiatives, and their resources, that will strengthen the provision of this service/program**:

The UF College of Veterinary Medicine was physically designed approximately 30 years ago to accommodate a maximum of 80 veterinary students, although enrollment was subsequently increased to the present 88 during the 1990s. This design limitation

included the lecture rooms, teaching laboratories, seminar rooms, and teaching hospital. The costs of further increasing student capacity are significant. However, the CVM has recently made major progress in increasing its capacity with the approval of the Veterinary Medical Education and Research Facility (2007 PECO). This was the most costly portion of infrastructure needed to accommodate an increased enrollment. As a result, the CVM is now in position to complete the expansion of facilities to accommodate increased enrollment through renovation and reconfiguration of existing lecture halls and teaching laboratories — a substantially less expensive proposition than adding a new building. The one remaining significant cost is that of the faculty and staff, which are also sized to classes of 88. If educational quality is to be maintained, the faculty and staff will have to be substantially increased.

C. **Description of outcome anticipated:** *(Be specific. For example, if this issue focuses on improving retention rates, indicate the current retention rate and the expected increase in the retention rate.* In addition, identify the following, if applicable.)

This initiative will increase the number of new veterinarians graduating from the UF CVM by 50% — an increase from 84 to 126 new graduates per year. An additional headcount of 12 MPH graduate per year will result from those students expected to enroll in the dual degree option. Finally, graduate enrollment will be increased by 15 PhD students as a result of the new graduate teaching assistant positions created to assist with the expanded laboratory course enrollment.

i. Number of Headcount Students receiving services or participating in the program by year, for the next five years:

Academic Year	Headcount (DVM)	Headcount (MPH)	Headcount (PhD)
2008-2009:	342*	0	0
2009-2010:	386	12	8
2010-2011:	428**	24	15
2011-2012:	470	36	15
2012-2013:	512***	48	15

*One year will be needed following approval of this LBR by the Florida Legislature for the CVM to hire additional faculty and staff as well as adjust the instructional infrastructure to accommodate the additional students, hence the head count remains at current levels for Academic Year 2008-2009.

**Assumes same proportion of first year attrition rate among the added students as with present class size of 88 students (42 of the added students continue for their second year and subsequently complete the program).

*** Total enrollment stabilizes at this number in subsequent years.

ii. Number of FTE Students receiving services or participating in the program by year for the next five years. If these are new FTE Students are they included in the 5-year enrollment plan?

Academic Year	FTE (Professional)	FTE (MPH)	FTE (PhD)*
2008-2009:	342**	0	0
2009-2010:	386	3.4	6
2010-2011:	428***	6.8	11.25
2011-2012:	470	10.9	11.25
2012-2013:	512****	12.0*****	11.25

*Each graduate teaching assistant generates 0.75 FTE enrollment.

**One year will be needed following approval of this LBR by the Florida Legislature for the CVM to hire additional faculty and staff as well as install the infrastructure required to accommodate the additional students, hence the Total FTE remains at current levels for Academic Year 2008-2009.

***Assumes same proportion of first year attrition rate among the added students as with present class size of 88 students (42 of the added students continue for their second year and subsequently complete the program).

**** Total FTE stabilizes at this number in subsequent years.

*****Combined degree students take 9 MPH credits during their first year, 9 their second year, 11 their third year and 7 their fourth year.

iii. Additional degrees, if any, produced as a result of this initiative *(Indicate the additional number of Bachelor, Master, Doctoral & Professional degrees produced by school year*.)

Year	DVM	MPH	PhD
2008-2009:	0	0	0
2009-2010:	0	0	0
2010-2011:	0	0	0
2011-2012:	0	0	0
2012-2013:	42	12*	15*

* First class having increased enrollment graduates in spring of 2013. The 42 additional DVM degrees per year assumes same attrition rate among the added students as with present class size of 88 students. The 12 additional MPH degrees per year (awarded by the College of Public Health and Health Professions) are from the combined DVM/MPH program. The 15 PhD degrees are indirectly generated as a result of the new graduate teaching assistantship positions needed to support increased laboratory class sizes. Annual degree production stabilizes at this increased level in subsequent years.

iv. Other outcomes:

The College will make major progress in meeting critical veterinary needs of Florida and the nation in the currently underserved areas of rural practice

(primarily food animal), public health, companion animal and pathology. We will make progress in meeting these needs by:

A. Providing professional educational opportunities for a larger portion of applicants seeking the DVM degree from Florida. Currently, a great many of veterinary college applicants from the state of Florida must leave the state to receive a veterinary education.
B. More adequately serving the veterinary educational needs of geographic areas of Florida beyond Gainesville.
C. Building teaching and research infrastructure including teaching labs, animal simulation laboratories, instructional resources and information.
D. Enhancing scholarship and research in the CVM by adding new faculty and graduate teaching assistants to implement the new teaching and outreach obligations of this initiative. Much of the new faculty FTE will focus on teaching, clinical practice, research and scholarship activities associated with the expanded class size.

III. **Budget Request for 2008-09 (detail information provided on the OB Form II):**

		2007-08 Budget for Issue (A)	**2008-09 State Funds Requested (B)**	2008-09 Anticipated Reallocation (C)	Budget for 2008-09 and Incremental Years (D)
a.	Recurring Funds:	$0	**$9,910,958**	$0	$9,910,958
b.	Non-recurring Funds:	$0	**$0**	$0	$0
c.	Total:	$0	**$9,910,958**	$0	$9,910,958

A. Identify 2007-08 funds (if not E&G funds, provide the source of the funds) that will be used to initiate this program (column A)

None.

B. Identify the amount of funds requested for 2008-09 (column B).

The funds requested are recurring funds needed to expand the faculty and staff. The enrollment will expand by 50% and to meet the educational requirements of these students as well as to staff the new teaching hospital, the faculty, staff and graduate teaching assistants will be expanded by a corresponding 50%. New faculty will be placed in both basic and clinical sciences departments, primarily for those classes and laboratories where instructor-intensive small group learning, typical of all medical education, is needed. These faculty, staff and teaching assistants will be particularly needed to teach laboratories in anatomy, physiology, pharmacology, toxicology, histology, pathology, parasitology, and

microbiology/virology. They will also be needed to teach the clinical laboratories in clinical pathology, medical techniques, surgery laboratories, necropsy, foods animal practice, zoological medicine, and shelter medicine. In addition, the new hospital will expand the veterinary specialties with a concurrent development of new teaching assignments. There is corresponding staff required in the form of technical teaching support, hospital clinical staff support, and administrative staff to support the added personnel requirements.

The numbers of faculty requested in this proposal have been compared to those of benchmark veterinary schools at other comparable institutions. This proposal adding 48 faculty and associated staff would place our total state funded faculty at 131, which is roughly the mean faculty size of our peer institutions with similar ranking and class size.

The CVM currently receives recurring State funding of $24M. The requested increase of $10M provides for the 50% enrollment increase. The resulting $34M annual recurring budget is still $10M per year less than that of the CVM's peer group of US veterinary colleges at $44M. Therefore this request keeps costs well below that of veterinary medical education at similar high quality, accredited veterinary schools in other states.

C. Identify existing programs from which funds will be reallocated, if applicable (include for example, salaries from reallocated or dedicated personnel) (column C).

This proposal assumes the three-year PECO commitment (2007-2009) approved in 2007 by the Florida Legislature to fully fund the Veterinary Medical Education and Research Facility over the next three years will not be withdrawn or reduced in amount. No existing funds are available for reallocation.

D. If this is a multi-year request, identify the incremental funds needed from the state for each future year, by year, for a maximum of five years (column D only includes column B plus each future year's need).

This proposal requests the entire budget to be allocated in the first year. Funds must be available immediately because renovations must be completed and faculty employed prior to acceptance of the first expanded class. We propose accepting that class in the shortest timeframe possible.

IV. **Facilities:**

A. Does this issue require an expansion or construction of a facility?

This proposal only requires renovation and minor expansion of existing facilities.

B. If yes, is the project identified on the Capital Improvement List? If so, identify the project, fiscal amount, year requested and priority number.

It currently is not a part of a capital improvements list.

	Facility Project Title	Fiscal Year	Amount Requested
1.	--		
2.	--		

2008-2009 Legislative Budget Request
EDUCATIONAL AND GENERAL
POSITION AND FISCAL SUMMARY
Operating Budget Form II

University: **University of Florida**
Issue Title: **Florida Veterinary Workforce Expansion Initiative**

	RECURRING	NON-RECURRING	TOTAL
Positions			
Faculty	48.00	0.00	48.00
Other (A&P/USPS)	48.00	0.00	48.00
Total	96.00	0.00	96.00
Salary Rate (for all positions noted above)			
Faculty	$4,800,000	$0	$4,800,000
Other (A&P/USPS)	$1,808,016	$0	$1,808,016
Total	$6,608,016	$0	$6,608,016
Salaries and Benefits	$8,260,000	$0	$8,260,000
Other Personal Services	$428,000	$0	$428,000
Expenses	$668,000	$0	$668,000
Operating Capital Outlay	$500,000	$0	$500,000
Electronic Data Processing	$54,958	$0	$54,958
Special Category (Specific)	$0	$0	$0
	$0	$0	$0
	$0	$0	$0
	$0	$0	$0
Total All Categories	$9,910,958	$0	$9,910,958

State University System of Florida
Educational and General
2008-2009 Legislative Operating Budget Issue
Form I

University:	**University of Florida- IFAS**
Descriptive Issue Title:	**Promoting Healthy, Sustainable Animal Systems**
University Priority Number:	**1**
Date Approved by Board of Trustees:	**6-15-2007**

Check **only one** of the following to indicate which SUS Strategic Plan Goal/Objective this issue will address:

☐ **Access to and Production of Degrees** *(Examples of issues that may be included under this goal would be new enrollment growth, outreach, recruitment, financial aid, academic tracking, advising, etc.)*
☐ **Meeting Statewide Professional and Workforce Needs** *(Examples of issues that may be included under this goal would be new or expanded targeted and/or educated citizenry / workforce programs, retention of students.).*
☒ **Building World-class Academic Programs and Research Capacity** *(Examples of issues that may be included under this goal would be new and/or expanded research initiatives, enhancements of certain academic programs or program implementation / expansion of non-targeted programs.)*
☐ **Meeting Community Needs and Fulfilling Unique Institutional Responsibilities** *(Examples could include issues important to a regional area or specific to an institution's mission.)*

I. Needs Statement *(What need will be addressed with the provision of funds for this issue. **The needs statement should be brief and succinct.**):*

Animals and animal agriculture continue to hold places of great economic, environmental, and societal significance in Florida. In our ever-changing world from predominately rural, farm-based, and community-centered to primarily urban and global in scope, the interaction between animals and people and the interface between their environments evolve in concert. The legislative budget initiative, "Promoting healthy, sustainable animal systems" is designed to produce new, science-based information and transfer the information to Florida's livestock industries, animal owners, and public to be applied in every county in Florida.

II. Justification

A. **Description of service or program to be provided:** *(Include whether this is a new or expanded service/program. If expanded, what has been accomplished with the current service/program?)*

Considering the breadth of impact of animal agriculture, it is clear that sustaining the industry is critical to the health and welfare of all Floridians, now and in the future. But there are challenges to sustaining the Florida livestock industry. Because profitability is the foundation of a sustainable industry, solutions to problems must be economically viable. Yet business decision support tools for the livestock industry are limited currently and require constant revision to remain relevant. New potential revenue streams, such as incentives for maintaining open space, must be evaluated and included in economic models to ensure that societal benefits beyond food production are appropriately compensated. Sustainability also depends on a well-trained work force, including professional managers, veterinarians, and allied industry personnel to support livestock enterprises. The University of Florida plays a critical role in educating the next generation of that professional work force, and recruitment to the UF/IFAS often begins long before a student reaches Gainesville through exposure to youth outreach programs, e.g. 4-H and FFA. These vital linkages must be maintained and strengthened for animal agriculture to thrive.

The tropical/subtropical environment of Florida creates unique advantages and challenges for commercial livestock operations. For example, the climate offers an opportunity for year round forage production, and thus favors forage consuming species such as cattle and horses. However, research is needed to determine optimal forage species for varying climates and specific animal production cycles. Beyond the animal's ability to utilize forages, the capacity for different plant species to recycle nitrogen, phosphorus and other byproducts of animal production is essential knowledge to develop sustainable production systems. Because Florida's environment is not replicated in any other area in the US, we must generate data specific to this setting and evaluate the impact of this environment on animal performance and well-being. In the broader perspective, the data generated in Florida has application on an international scale and brings that global dimension to our activities, an important factor in today's interconnected world.

A final facet of sustainability is applying modern technologies to selection of animals that can best perform under the challenging conditions found in Florida. What type of animal can we breed that is best adapted to the environment here in FL? Can we select animals that are better suited to resist pathogens? Are there behavioral traits that improve an animal's performance in the tropical/subtropical environment? Not only is this type of knowledge critical to Florida producers, but there are collateral benefits for consumers. For example, improved pathogen resistance should allow for reduced used of antibiotics to treat disease.

Consumers increasingly embrace animal products that are free from exogenous inputs, and increased knowledge of genetic mechanisms will lead to new opportunities to manage animals in more sustainable, systematic ways.

B. Description of current university initiatives, and their resources, that will strengthen the provision of this service/program:

This new initiative, developed in collaboration with the Florida beef, dairy and horse industries, will expand our capacity to conduct basic and translational research, and adopt new outreach methods to deliver that information to improve the well-being and performance of Florida's livestock industry, its individual animals, the people providing care for and interacting with animals, and their environment. With this initiative, UF/IFAS will continue to build world class academic and outreach programs and research capacity to address the needs of livestock producers and their animals. This program will draw upon the resources and strengths of the faculty and facilities associated with the IFAS Department of Animal Sciences; IFAS Range Cattle REC at Ona, Florida; the College of Vetinerary Medicine; and the IFAS Beef Cattle Feed Efficiency Unit at Marianna.

The Florida Cooperative Extension Service animal science program will be a key to the success of the program because, research generated but not disseminated is of little value to the citizens of Florida. But, the ever-increasing population of our suburban-rural interface creates pressure on our traditional outreach programs. Increasing the capacity to serve these emerging stakeholder groups is an important component of this initiative, especially in the equine industry. Further, as the non-farm population grows, there is a greater need to provide scientifically sound, unbiased information to consumers regarding animal production practices and the sustainability of those practices. Investment has been made in infrastructure to deliver programming over the internet, and a large proportion of Floridians are ready to use this approach. We must expand our use of web-based delivery to remain relevant and sustain our presence as the source of unbiased, scientifically sound information.

C. Description of outcome anticipated:

Under this initiative we will increase our knowledge about livestock and equine production and economics with focus on forage production and quality, animal production efficiency, animal health, and economics. For example we will: a) conduct genetic research on new forage species and crops for livestock feed and grazing systems, b) conduct research on beef/forage integrated production systems, c) conduct basic research on genetics and physiology of animal feed conversion and nutrition to increase production efficiency, d) conduct economic studies on livestock production systems, e) conduct research on livestock and equine nutrition and health, f) conduct research and education programs on livestock waste management, and g) expand education programs, especially for youth, on livestock and equine care, management, and health.

III. **Budget Request for 2008-09 (detail information provided on the OB Form II):**

		2007-08 Budget for Issue (A)	**2008-09 State Funds Requested (B)**	2008-09 Anticipated Reallocation (C)		Budget for 2008-09 and Incremental Years (D)
a.	Recurring Funds:	$0	**$2,240,000**	$0		$2,240,000
b.	Non-recurring Funds:	$0	**$0**	$0		$0
c.	Total:	$0	**$2,240,000**	$0		$2,240,000

A. Identify 2007-08 funds (if not E&G funds, provide the source of the funds) that will be used to initiate this program (column A).
B. Identify the amount of funds requested for 2008-09 (column B).
C. Identify existing programs from which funds will be reallocated, if applicable (include for example, salaries from reallocated or dedicated personnel) (column C).
D. If this is a multi-year request, identify the incremental funds needed from the state for each future year, by year, for a maximum of five years (column D only includes column B plus each future year's need).

IV. **Facilities:**

A. Does this issue require an expansion or construction of a facility?
No.

B. If yes, is the project identified on the Capital Improvement List? If so, identify the project, fiscal amount, year requested and priority number.

	Facility Project Title	Fiscal Year	Amount Requested
1.			
2.			

2008-2009 Legislative Budget Request
EDUCATIONAL AND GENERAL
POSITION AND FISCAL SUMMARY

Operating Budget Form II

University: **IFAS, University of Florida**
Issue Title: **Promoting Healthy, Sustainable Animal Systems**

	RECURRING	NON-RECURRING	TOTAL
Positions			
Faculty	15.00	0.00	15.00
Other (A&P/USPS)	14.00	0.00	14.00
	---	---	---
Total	29.00	0.00	29.00
	==========	==========	==========
Salary Rate (for all positions noted above)			
Faculty	$1,095,000	$0	$1,095,000
Other (A&P/USPS)	$611,100	$0	$611,100
	---	---	---
Total	$1,706,100	$0	$1,706,100
	==========	==========	==========
Salaries and Benefits	$2,217,930	$0	$2,217,930
Other Personal Services	$0	$0	$0
Expenses	$22,070	$0	$22,070
Operating Capital Outlay	$0	$0	$0
Electronic Data Processing	$0	$0	$0
Special Category (Specific)	$0	$0	$0
	$0	$0	$0
	$0	$0	$0
	$0	$0	$0
	---	---	---
Total All Categories	$2,240,000	$0	$2,240,000
	==========	==========	==========

State University System of Florida
Educational and General
2008-2009 Legislative Operating Budget Issue
Form I

University:	**University of Florida - IFAS**
Descriptive Issue Title:	**Development of Disease Resistant Citrus Cultivars**
University Priority Number:	**2**
Date Approved by Board of Trustees:	**6-15-2007**

Check **only one** of the following to indicate which SUS Strategic Plan Goal/Objective this issue will address:

☐ **Access to and Production of Degrees** *(Examples of issues that may be included under this goal would be new enrollment growth, outreach, recruitment, financial aid, academic tracking, advising, etc.)*
☐ **Meeting Statewide Professional and Workforce Needs** *(Examples of issues that may be included under this goal would be new or expanded targeted and/or educated citizenry / workforce programs, retention of students.).*
☒ **Building World-class Academic Programs and Research Capacity** *(Examples of issues that may be included under this goal would be new and/or expanded research initiatives, enhancements of certain academic programs or program implementation / expansion of non-targeted programs.)*
☐ **Meeting Community Needs and Fulfilling Unique Institutional Responsibilities** *(Examples could include issues important to a regional area or specific to an institution's mission.)*

I. Needs Statement*: (What need will be addressed with the provision of funds for this issue.* ***The needs statement should be brief and succinct.****):*

Exotic citrus pests and diseases continue to threaten US agriculture, and in Florida citrus the rate of occurrence and impact is reaching crisis levels. Science based solutions coming from research point to the need for development, testing, and deployment of new citrus plant cultivars with reduced susceptibility to current as well as future threats. Invasions of citrus canker, citrus greening and several insect pests in the past decade create challenges for pest management that cannot be overcome with increased pesticide use, and thus, permanent genetic solutions are indicated. Combining traditional plant breeding and plant microbiology with new molecular tools will lead to increased understanding of the disease/plant cycles and will point to opportunities for the development and evaluation of new plant cultivars that can better withstand the attack of exotic disease organisms. Directing current scientific capability to this set of issues will not only address the critical challenges of today's diseases, but the knowledge generated will accelerate

efforts to address new disease and pest challenges as they materialize in the future.

II. **Justification**

A. **Description of service or program to be provided: :** *(Include whether this is a new or expanded service/program. If expanded, what has been accomplished with the current service/program?)* Florida's $9.0 billion annual economic impact citrus industry is in great peril due to the introduction and spread of citrus canker and citrus greening. Commitment of additional resources to enhance the development, screening, evaluation and ultimate deployment of citrus cultivars containing resistance to these invasive diseases that will have direct positive impact on the Florida industry. Funding in the amount of $1.4 million recurring funds is requested to accelerate the development and deployment of genetic solutions to current challenges, as well as to advance the technology necessary to address future challenges.

B. Description of current university initiatives, and their resources, that will strengthen the provision of this service/program: UF-IFAS maintains among the strongest research and extension teams in the world dedicated to citrus plant production and associated management systems. The success of the Florida citrus industry and its contribution to the State's economy can be attributed largely to a long history of responsive solutions being developed through engineering, biological sciences and economics. Significant current state institutional resources are in play to provide the personnel and infrastructure, and this commitment of the state will enable the proposed work to leverage existing capability for the most timely response.

C. Description of outcome anticipated: : *(Be specific. For example, if this issue focuses on improving retention rates, indicate the current retention rate and the expected increase in the retention rate.* In addition, identify the following, if applicable.)While genetic solutions on a perennial plant like citrus encompass longer term considerations, the search for genetic resistance mechanisms already is underway. Within 2-3 years, candidate resistance genes and mechanisms can be identified and preliminarily tested within citrus plant tissues. An additional period of several years will be required to integrate candidate genes into citrus plant material and test effectiveness under laboratory and greenhouse conditions. Plants showing promise for their ability to resist canker or greening infection at this level then will undergo more extensive field testing, including evaluating the stability of the resistance and characterizing the levels of defense offered under field conditions.

III. **Budget Request for 2008-09 (detail information provided on the OB Form II):**

		2007-08 Budget for Issue (A)	**2008-09 State Funds Requested (B)**	2008-09 Anticipated Reallocation (C)		Budget for 2008-09 and Incremental Years (D)
a.	Recurring Funds:	$	**$1,400,608**	$		$1,400,608
b.	Non-recurring Funds:	$	**$**	$		$
c.	Total:	$	**$1,400,608**	$		$1,400,608

A. Identify 2007-08 funds (if not E&G funds, provide the source of the funds) that will be used to initiate this program (column A).
B. Identify the amount of funds requested for 2008-09 (column B).
C. Identify existing programs from which funds will be reallocated, if applicable (include for example, salaries from reallocated or dedicated personnel) (column C).
D. If this is a multi-year request, identify the incremental funds needed from the state for each future year, by year, for a maximum of five years (column D only includes column B plus each future year's need).

I. Facilities:

A. Does this issue require an expansion or construction of a facility? No

B. If yes, is the project identified on the Capital Improvement List? If so, identify the project, fiscal amount, year requested and priority number.

	Facility Project Title	Fiscal Year	Amount Requested
1.			
2.			

2008-2009 Legislative Budget Request
EDUCATIONAL AND GENERAL
POSITION AND FISCAL SUMMARY

Operating Budget Form II

University: **IFAS, University of Florida**
Issue Title: **Development of Disease Resistant Citrus**

	RECURRING	NON-RECURRING	TOTAL
Positions			
Faculty	4.00	0.00	4.00
Other (A&P/USPS)	3.00	0.00	3.00
Total	7.00	0.00	7.00
Salary Rate (for all positions noted above)			
Faculty	$300,000	$0	$300,000
Other (A&P/USPS)	$130,950	$0	$130,950
Total	$430,950	$0	$430,950
Salaries and Benefits	$560,235	$0	$560,235
Other Personal Services	$222,373	$0	$222,373
Expenses	$618,000		$618,000
Operating Capital Outlay	$0	$0	$0
Electronic Data Processing	$0	$0	$0
Special Category (Specific)	$0	$0	$0
	$0	$0	$0
	$0	$0	$0
	$0	$0	$0
Total All Categories	$1,400,608	$0	$1,400,608

State University System of Florida
Educational and General
2008-2009 Legislative Operating Budget Issue
Form I

University:	**University of Florida - IFAS**
Descriptive Issue Title:	**Bioenergy Systems and Feedstocks**
University Priority Number:	**3**
Date Approved by Board of Trustees:	**6-15-2007**

Check **only one** of the following to indicate which SUS Strategic Plan Goal/Objective this issue will address:

☐ **Access to and Production of Degrees** *(Examples of issues that may be included under this goal would be new enrollment growth, outreach, recruitment, financial aid, academic tracking, advising, etc.)*
☐ **Meeting Statewide Professional and Workforce Needs** *(Examples of issues that may be included under this goal would be new or expanded targeted and/or educated citizenry / workforce programs, retention of students.).*
☒ **Building World-class Academic Programs and Research Capacity** *(Examples of issues that may be included under this goal would be new and/or expanded research initiatives, enhancements of certain academic programs or program implementation / expansion of non-targeted programs.)*
☐ **Meeting Community Needs and Fulfilling Unique Institutional Responsibilities** *(Examples could include issues important to a regional area or specific to an institution's mission.)*

I. **Needs Statement** *(What need will be addressed with the provision of funds for this issue. **The needs statement should be brief and succinct.**):*

Florida ranks 5th nationally in energy consumed per capita, 3rd in total energy consumption, and 1st in biomass production. Florida's future economy, quality of life, and security rely on access to affordable energy sources. Recent hurricanes have shown our vulnerability to reduced fuel supplies. Florida has enormous potential to grow and manufacture bioenergy from biomass. While the high productivity of agronomic crops has been demonstrated and the production systems for production of current commodities are well-defined, production of agronomic crops for bioenergy presents numerous new and intriguing challenges and barriers that must be overcome. Research is needed to maximize the amount of biomass produced per acre, maintain sustainability while minimizing inputs and reducing costs of production, and maximize the amount of bioenergy produced per unit of biomass.

A research and development team will be funded to provide the research bases needed to maximize bioenergy crop production and to optimize ethanol production at the UF cellulosic ethanol plant funded during the 2007 legislative

session. Additional faculty and staff are needed to accelerate the commercial development of bioenergy industries in Florida. Florida can become the technology center for the development, demonstration, and commercialization of ethanol. We propose a research and extension program to bring Florida into the lead in renewable energy production.

II. Justification

A. Description of service or program to be provided: *(Include whether this is a new or expanded service/program. If expanded, what has been accomplished with the current service/program?)*

This new initiative will provide the platform for bioenergy crop and ethanol production research to provide the knowledge necessary to build a vibrant biofuels industry in Florida. Research will identify bioenergy crops and management conditions that are best suited for Florida. Emphasis will be placed on maximizing the amount of biomass produced per acre, minimizing inputs and reducing costs of production, and maximizing the amount of bioenergy produced per unit of biomass. Ethanol production steps (feedstock handling and storage, pretreatment technologies, enzymes to solubilize carbohydrates, and improvements in biocatalysts for ethanol production) will be further developed and perfected. This research and development initiative will accelerate commercial development of bioenergy production in Florida. It will also serve as a platform for the University to train the experts (engineers and operations staff) needed for Florida's emerging renewable energy industry.

In addition, scientists in this program will drive the economically efficient production of the next generation of biofuels beyond ethanol, such as butanol. Butanol has virtually the same energy content as gasoline and does not require any vehicle modifications for use in today's cars. The new Research and Demonstration Cellulosic Ethanol Plant could be used to produce butanol as well.

B. Description of current university initiatives, and their resources, that will strengthen the provision of this service/program:

Construction planning of the Research and Demonstration Cellulosic Ethanol Plant funded in 2007 is underway and the Center for Excellence funding from 2006 is currently being allocated to a pilot plant in Gainesville. UF/IFAS has ongoing programs in biomass energy and conservation that can make a difference in Florida's energy plans. UF/IFAS has scientists and extension faculty working in biomass and renewable energy who are equipped to respond to future needs in four critical research and extension areas: (1) Development of energy crops; (2) Industrial research and development; (3) Environmental assessment of energy systems; and (4) Energy conservation and renewable energy extension. Additional expertise and expansion is needed in the areas of industrial and microbial engineering, economics and

policy making for bioenergy, energy crop development, and environmental assessment. As part of the State's energy plan, projects in the four critical areas (listed above) could be a part of the solution for energy sustainability and, at the same time, provide a means to help maintain viable agricultural and forest enterprises and lands.

A. **Description of outcome anticipated:** *(Be specific. For example, if this issue focuses on improving retention rates, indicate the current retention rate and the expected increase in the retention rate.* In addition, identify the following, if applicable.)

i. This initiative in bioenergy will build a base for research funding from federal and private sources. This state research and development investment will develop bioenergy crops, perfect and refine the processes and production steps, and at the same time demonstrate commercial viability of bioenergy production. The outcome will be realized in new private investment in commercial plant facilities and their accompanying economic development in Florida.
ii. With Florida's capacity to grow biomass due to its agricultural and forestry land base and favorable climate, we can become the leading state in the nation in bioenergy production. Investment in this research and extension initiative will result in economic development based on these new energy production technologies. The new information will benefit those stakeholders who are considering converting their farmland to bioenergy plant production will be improved.
iii. Approaches to maximize crop production and waste management for biofuels production will be developed.
iv. Production systems for the next generation of biofuels will be developed.
v. The proposed inititative will play a key role in the successful production of dedicated biomass energy plants in Florida by providing science-based information to existing and potential bioenergy producers and investors.

III. **Budget Request for 2008-09 (detail information provided on the OB Form II):**

		2007-08 Budget for Issue (A)	**2008-09 State Funds Requested (B)**	2008-09 Anticipated Reallocation (C)		Budget for 2008-09 and Incremental Years (D)
a.	Recurring Funds:	$0	**$1,250,000**	$0		$1,250,000 2008-09 $1,250,000 2009-10
b.	Non-recurring Funds:	$0	**$0**	$0		$0
c.	Total:	$0	**$1,250,000**	$0		$2,500,000

A. Identify 2007-08 funds (if not E&G funds, provide the source of the funds) that will be used to initiate this program (column A).
B. Identify the amount of funds requested for 2008-09 (column B).
C. Identify existing programs from which funds will be reallocated, if applicable (include for example, salaries from reallocated or dedicated personnel) (column C).
D. If this is a multi-year request, identify the incremental funds needed from the state for each future year, by year, for a maximum of five years (column D only includes column B plus each future year's need).

IV. Facilities

A. Does this issue require an expansion or construction of a facility? No
B. If yes, is the project identified on the Capital Improvement List? If so, identify the project, fiscal amount, year requested and priority number.

	Facility Project Title	Fiscal Year	Amount Requested
1.			
2.			

2008-2009 Legislative Budget Request
EDUCATIONAL AND GENERAL
POSITION AND FISCAL SUMMARY

Operating Budget Form II

University: **IFAS, University of Florida**
Issue Title: **Bioenergy System and Bioenergy Feedstocks**

	RECURRING	NON-RECURRING	TOTAL
Positions			
Faculty	8.00	0.00	8.00
Other (A&P/USPS)	2.50	0.00	2.50
Total	10.50	0.00	10.50
Salary Rate (for all positions noted above)			
Faculty	$750,000	$0	$750,000
Other (A&P/USPS)	$109,125	$0	$109,125
Total	$859,125	$0	$859,125
Salaries and Benefits	$1,116,863	$0	$1,116,863
Other Personal Services	$133,137	$0	$133,137
Expenses	$0		$0
Operating Capital Outlay	$0	$0	$0
Electronic Data Processing	$0	$0	$0
Special Category (Specific)	$0	$0	$0
	$0		$0
	$0		$0
	$0	$0	$0
Total All Categories	$1,250,000	$0	$1,250,000

State University System of Florida
Educational and General
2008-2009 Legislative Operating Budget Issue
Form I

University:	**University of Florida - IFAS**
Descriptive Issue Title:	**Diversified Specialty Crop Agrisystems**
University Priority Number:	**4**
Date Approved by Board of Trustees:	**6-15-2007**

Check **only one** of the following to indicate which SUS Strategic Plan Goal/Objective this issue will address:

☐ **Access to and Production of Degrees** *(Examples of issues that may be included under this goal would be new enrollment growth, outreach, recruitment, financial aid, academic tracking, advising, etc.)*
☐ **Meeting Statewide Professional and Workforce Needs** *(Examples of issues that may be included under this goal would be new or expanded targeted and/or educated citizenry / workforce programs, retention of students.).*
☒ **Building World-class Academic Programs and Research Capacity** *(Examples of issues that may be included under this goal would be new and/or expanded research initiatives, enhancements of certain academic programs or program implementation / expansion of non-targeted programs.)*
☐ **Meeting Community Needs and Fulfilling Unique Institutional Responsibilities** *(Examples could include issues important to a regional area or specific to an institution's mission.)*

I. Needs Statement *(What need will be addressed with the provision of funds for this issue. **The needs statement should be brief and succinct.**):*

The Florida agriculture industry is uniquely diverse and fills many specialty niche markets. This is particularly true in south Florida where high cash value crops are grown on high value lands. Examples which sustain a strong agricultural industry are orchids and bromeliads in Miami, blueberries, watermelons and organic vegetables in Immokalee, and turf, sweet corn, radishes and lettuce in Palm Beach County. In addition, our South Florida IFAS research centers (EREC, SWFREC, and TREC) that focus on these crops collaborate with similar specialty crop industries in northwest Florida (WFREC) where unique vegetables and cut flowers are being grown under glass. The Florida industry, particularly horticulture and floriculture crops, is experiencing increasing foreign competition due to cheaper labor, less stringent foreign environmental regulations and cheaper foreign land costs. Additionally, food grown within U.S. borders provides a reduced risk for food security concerns. Coordinating a major initiative to develop high value crops and enterprises to diversify Florida's Ag industry and find alternative use for our existing specialty crops (buy local buy fresh) will help sustain thousands of direct and indirect agriculture related jobs.

In addition, our unique sugarcane agro-ecosystem in the central south Florida region needs research and education support to address means of improving profitability, sustainability and protection of the environment. This in turn, will increase the longevity of agriculture in the landscape.

II. Justification

A. Description of service or program to be provided: *(Include whether this is a new or expanded service/program. If expanded, what has been accomplished with the current service/program?)*

Agricultural lands in the south central and northwestern regions encompass over 2.5 million acres. The market value of agricultural products exceeds $3.2 billion annually and more than 50,000 people in the region depend on agriculture for their jobs. Agriculture in south central and northwestern Florida provides Florida and the nation with safe, fresh affordable food. This program will allow the identification of specialty crops that will be marketable and of high value. This program will also allow agriculture and natural resource industries to increase their multi-billion dollar economic impact on Florida in these regions through research and extension activities.

Responsible farming including agricultural Best Management Practices preserve the green spaces of the South Florida Ecosystem by conserving water resources and reducing nutrients in storm water runoff, thus improving water quality. Additionally, cover cropping and water table management helps decrease soil subsidence. Agriculture is extremely compatible with Florida's ecosystem, providing natural habitats for wildlife; and unspoiled and natural venues for birders and other nature enthusiasts.

A number of research and education priorities have been identified by stakeholders to sustain this important industry and they are:

- Research profitability and sustainability of alternative production practices, such as harvesting sugarcane green (without burning).
- Assess the profitability of converting sugarcane and other crops as well as crop residue such as citrus byproducts to ethanol as a gasoline substitute.
- Accelerate, expand and modify the current agricultural crop breeding programs, with a particular emphasis on sugarcane, to improve performance in the unique south central Florida agro-ecosystem in order to compete in the rapidly changing markets. For example, we will breed and select sugarcane cultivars that have characteristics which maximize the production of ethanol, as well as cultivars that are productive on the sandlands.
- Improve efficiency in fertilizer and irrigation water usage.
- Develop methods to improve and preserve soil organic matter in the sensitive south central Florida agro-ecosystem so that we can obtain higher yields with fewer fertilizers and better water control.
- Develop and use advanced computer programs to analyze the precise application of pesticides, herbicides and fertilizers in both organic and sandy soil production areas to reduce over usage.

- Expand ecological and bio-diversity studies to quantify the importance of the agro-ecosystem to wildlife in south central Florida.
- Update and develop critical laboratory spaces: Sugar, Juice & Sugarcane Quality Lab, Soil Nutrient Analysis Lab

B. **Description of current university initiatives, and their resources, that will strengthen the provision of this service/program**:

Existing research and extension programs in Gainesville and Research and Education Centers in Belle Glade, Immokalee, Jay, and Homestead will be expanded and enhanced by this proposal. These existing programs and locations contain the necessary infrastructure, support faculty, and cooperators. The additional resources will expand existing program capabilities to meet new and unmet markets, environmental, and pest pressures.

C. **Description of outcome anticipated:** *(Be specific. For example, if this issue focuses on improving retention rates, indicate the current retention rate and the expected increase in the retention rate.* In addition, identify the following, if applicable.)

Global Competitiveness: Increase industry efficiencies and global competitiveness through economic, agricultural, and technological research for our specialty corps and sustain our sugarcane industry.

Improvements and identification of high cash value vegetable, fruit and floriculture crops with an emphasis on pest management, and production and marketing techniques will enhance IFAS's ability to attract additional funds from state, regional and national funding sources.

Improved Sustainability: Preserve and enhance soil, air, and water resources, while producing profits on the crops targeted.

Environmental: Target all agricultural chemical inputs appropriately and recommend the use of new harvest systems such as the green sugarcane harvesting to ensure agriculture profitability and to lessen environmental impacts.

Viability: Increase the number of years of viable production in the EAA and the "Sandlands" by conserving and adding to the organic matter.

Structural: Provide upgraded and remodeled facilities to support clientele needs.

III. Budget Request for 2008-09 (detail information provided on the OB Form II):

		2007-08 Budget for Issue (A)	**2008-09 State Funds Requested (B)**	2008-09 Anticipated Reallocation (C)		Budget for 2008-09 and Incremental Years (D)
a.	Recurring Funds:	$0	**$925,000**	$0		$925,000
b.	Non-recurring Funds:	$0	**$417,000**	$0		$417,000
c.	Total:	$0	**$1,342,000**	$0		$1,342,000

A. Identify 2007-08 funds (if not E&G funds, provide the source of the funds) that will be used to initiate this program (column A).
B. Identify the amount of funds requested for 2008-09 (column B).
C. Identify existing programs from which funds will be reallocated, if applicable (include for example, salaries from reallocated or dedicated personnel) (column C).
D. If this is a multi-year request, identify the incremental funds needed from the state for each future year, by year, for a maximum of five years (column D only includes column B plus each future year's need).

IV. F**acilities:**

A. Does this issue require an expansion or construction of a facility?
No
B. If yes, is the project identified on the Capital Improvement List? If so, identify the project, fiscal amount, year requested and priority number.

	Facility Project Title	Fiscal Year	Amount Requested
1.			
2.			

2008-2009 Legislative Budget Request
EDUCATIONAL AND GENERAL
POSITION AND FISCAL SUMMARY
Operating Budget Form II

University: **IFAS, University of Florida**
Issue Title: **Diversified Specialty Crop Agrisystems**

	RECURRING	NON-RECURRING	TOTAL
Positions			
Faculty	4.00	0.00	4.00
Other (A&P/USPS)	10.00	0.00	10.00
Total	14.00	0.00	14.00
Salary Rate (for all positions noted above)			
Faculty	$300,000	$0	$300,000
Other (A&P/USPS)	$250,000	$0	$250,000
Total	$550,000	$0	$550,000
Salaries and Benefits	$715,000	$0	$715,000
Other Personal Services	$100,000	$125,000	$225,000
Expenses	$85,000	$142,000	$227,000
Operating Capital Outlay	$25,000	$150,000	$175,000
Electronic Data Processing	$0	$0	$0
Special Category (Specific)	$0	$0	$0
	$0	$0	$0
	$0	$0	$0
	$0	$0	$0
Total	$925,000	$417,000	$1,342,000
Total ALL	$925,000	$417,000	$1,342,000

State University System of Florida
Educational and General
2008-2009 Legislative Operating Budget Issue
Form I

University:	**University of Florida – IFAS and CLAS (Florida State University has a companion LBR)**
Descriptive Issue Title:	**Florida Partnership for Climate and Society (PCS)**
University Priority Number:	**IFAS – #5** **E&G – #12**
Date Approved by Board of Trustees:	**6-15-2007**

Check **only one** of the following to indicate which SUS Strategic Plan Goal/Objective this issue will address:

☐ **Access to and Production of Degrees** *(Examples of issues that may be included under this goal would be new enrollment growth, outreach, recruitment, financial aid, academic tracking, advising, etc.)*
☐ **Meeting Statewide Professional and Workforce Needs** *(Examples of issues that may be included under this goal would be new or expanded targeted and/or educated citizenry / workforce programs, retention of students.).*
☒ **Building World-class Academic Programs and Research Capacity** *(Examples of issues that may be included under this goal would be new and/or expanded research initiatives, enhancements of certain academic programs or program implementation / expansion of non-targeted programs.)*
☐ **Meeting Community Needs and Fulfilling Unique Institutional Responsibilities** *(Examples could include issues important to a regional area or specific to an institution's mission.)*

I. **Needs Statement** *(What need will be addressed with the provision of funds for this issue. **The needs statement should be brief and succinct.**):*

The February 2007 report by the Intergovernmental Panel on Climate Change (IPCC) concluded that Earth is experiencing elevated mean global temperatures and other changes in climate patterns, more than likely due to increased atmospheric greenhouse gas concentrations. Florida Governor Charlie Crist in his 2007 "State of the State" address acknowledged that global climate change is one of the most important issues we face in Florida. Given its subtropical climate, low elevation and extensive coastline, Florida is particularly vulnerable to the consequences of the anticipated climate change, such as more frequent and intense hurricanes, as well as coastal inundation associated with sea level rise. Climate change will directly affect diverse aspects of Florida's environment and economy through changing rainfall patterns (quantity and timing) and wind conditions. In turn, these changes will influence forest fire frequency, crop production, potable water availability and quality, coral reef health, beach erosion, saltwater intrusion into groundwater supplies, and the spread of invasive species and pathogens. Social impacts of these climate changes are difficult to predict without firmer estimates of the rates and consequences of climate change. Resource-based economic losses will be widespread and will affect all aspects of the state's economy, from agriculture and fisheries, to health care and insurance, to recreation and

tourism. A better understanding of the nature and time-scale for the manifestation of climate change in Florida is urgently needed for policy makers and government officials to craft sensible responses that minimize the societal and ecological impacts of looming change. Research questions that will be addressed in this program are: (1) how can patterns of past climate change help us anticipate the magnitude and rate of future climate change, (2) what are the most accurate measures of changing climate in Florida and how will these changes be manifested in Florida, and (3) what can Floridians do to prevent or cope with these changes?

II. **Justification:**

A. Description of service or program to be provided: (*Include whether this is a new or expanded service/program. If expanded, what has been accomplished with the current service/program?*)

The Florida PCS will organize, acquire, and analyze scientific information in order to understand the causes, consequences and rates of climate-induced changes in our State. The goal is to disseminate relevant and reliable information that will meet the needs of citizens and government agencies in Florida and around the world, thereby putting the state of Florida in the international spotlight as a leader in research on climate change.

To achieve world-class status, PCS will need to hire additional faculty at UF and FSU with expertise in key areas. In UF/IFAS, the faculty requests are for: 1) a coordinator with expertise in the application of climate information to agricultural and water resources management; 2) an agro meteorologist with background in crop modeling, drought, and interdisciplinary research; 3) an aero-biologist to study and model the effects of climate on movement of organisms in the atmosphere and corresponding disease outbreaks and spread of invasive species; 4) a natural resource economist to analyze tradeoffs and opportunities for financial gain; 5) an agricultural education and extension specialist to lead extension/outreach activities; 6) an agronomist or horticulturalist for impact studies on crops; and 7) a hurricane housing development specialist.

For UF/CLAS, faculty requests are: 1) a climate analysis scientist; 2) a paleoclimatologist to study past perturbations of the climate system, some of which are analogous to those we confront today, and their consequences; 3) a coastal processes scientist to study the responses of Florida's 2200 miles of dynamic coastline; 4) a coastal and land use ecologist to study sea level rise, changes in mangrove and salt marsh ecosystems, saltwater intrusion into coastal aquifers, and impacts on near-shore forest ecosystems; 5) an organism and population scientist to evaluate the biological consequences of climate change through understanding how individual organisms adapt to environmental perturbations; and 6) an environmental social scientist who can evaluate potential impacts of climate change on institutions (e.g., health care, housing, education, transportation), and on Florida's population, which is diverse with respect to age, gender, ethnicity, and economic status.

For FSU, faculty requests needed to complement existing expertise are: 1) two specialists in coupled global climate models to accelerate the development of relevant climate impact research already underway; 2) a climatologist for research on the impacts of climate variability using historical climate and ocean data; 3) a physical coastal oceanographer to study the effects of storm surge and other open ocean connections with estuaries and harbors; 4) a biological coastal oceanographer to study climate impacts on algal blooms, invasive species, and other threats; 5) a beach shore geographer to study the interactions between climate and human modifications, such as piers and breakwaters, as they affect Florida

shores; 6) a coordinator to facilitate collaboration among FSU faculty members and with UF.

A coordinator on each of the FSU and UF campuses will facilitate and coordinate research within PCS, organize conferences/seminars, coordinate education for the general public through county extension offices, Florida Museum of Natural History, and other outlets, and develop new partnerships with external funding agencies, and appropriate federal and state agencies concerned with climate and society.

B. Description of current university initiatives, and their resources, that will strengthen the provision of this service/program:

At UF, several academic departments within CLAS (Geological Sciences, Geography, Botany, Zoology, Anthropology, Sociology) and UF/IFAS (Agricultural & Biological Engineering, Agronomy, Food & Resource Economics) already have leading researchers in climate and environmental sciences. Similarly, several departments in the college of Arts and Sciences at FSU have recognized strength in climate-related research (Oceanography, Geological Sciences, Biological Sciences, Meteorology), as well as the Center for Ocean-Atmospheric Prediction Studies.

This program will combine efforts in research, teaching, and outreach to provide scientific information on Florida climate change and variability that will provide critical information to guide decisions and policies. This will be accomplished by establishing a consortium called the Florida Partnership for Climate and Society (PCS) that will bring together research and educational efforts from the University of Florida (UF) and Florida State University (FSU). It will combine strengths at FSU on global and regional climate, ocean modeling, oceanography, hurricane forecasting, climate information education, and seasonal-to-annual climate forecasting, with strengths at UF on the geological and biological aspects of climate changes, climate impacts on agriculture, forestry, and natural resources, and outreach through extension offices in all counties. The program will have four components: 1) research on the causes of climate variability and change, 2) potential impacts on Florida and Floridians, 3) adaptation and mitigation, and 4) education and outreach. Overall, the program will integrate climate, agriculture, and natural resource sciences to provide reliable information on climate change, options for managing risks of climate variability and change, and options for economic benefit by contributing to national and global efforts to develop alternative energy strategies and reduce or offset carbon dioxide emissions.

C. Description of outcome anticipated: (*Be specific. For example, if this issue focuses on improving retention rates, indicate the current retention rate and the expected increase in the retention rate. In addition, identify the following, if applicable.*)

The outcomes of this effort will be:

- Methods and information to help Floridians recognize and adapt to climate variability and change. Costs of hurricanes, increased drought and fire, and increased pressure from invasive species and disease outbreaks will likely be substantial. Application of current climate information and forecasts has the potential to prevent losses of from $100 to $500 million annually in Florida in the agricultural sector alone. This initiative will provide the local and statewide

information needed to identify climate-related risks and options for reducing losses or increasing income.

- Models of climate, agriculture, coastal processes, ecosystems, and hydrology will be developed and/or adapted for Florida conditions that provide research tools for updating results in support of what must be a continuous process of adaptation as climate and other changes occur in Florida in the immediate future.
- Options for Floridians to generate income for mitigation of climate change, such as participating in carbon trading markets and producing biomass for fuel to reduce fossil fuel use, will be developed. This includes analyses of tradeoffs between economic and ecological/environmental goals associated with land use changes and mitigation practices.
- Greater capacity for developing sustainable solutions that address current and future climate related issues in Florida through cooperation between two major universities in the state (University of Florida and Florida State University). This outcome will build upon a successful relationship that is currently funded by federal research grants and will lead to an increase in federally funded research at UF and FSU.
- An outreach program that engages Floridians both to provide them with reliable information and to help guide the research process. This outreach will make use of existing mechanisms, primarily through the Florida Cooperative Extension Service and the Florida Museum of Natural History of the University of Florida, and the State Climatology Office located at the Center for Ocean-Atmospheric Prediction Studies at FSU. An internet-based decision support system will be developed for use by Floridians and by the outreach institutions. The outreach program will also obtain information from Floridians on needs for additional information and research.
- An extensive graduate student training program at both universities to provide Florida with the climate leaders of the future as well as a climate-knowledgeable electorate.
- A greater understanding of global Earth systems that affect Florida's climate, including the dynamic exchanges between the solid Earth and the atmosphere, biosphere, and hydrosphere.
- Finally, an overall outcome will be world-class research and education programs in climate change science for society. This research will benefit state agencies, cities, agriculture, industry and private citizens facing climate-related hazards. Innovative interdisciplinary experiential educational programs will increase the pool of well-trained climate-related scientists, engineers, planners, and policy-makers in Florida. PCS will provide a competitive advantage in opportunities for attracting major external research funding, for education of Florida's future leaders, and for commercial development that will enhance Florida's economy.

III. **Budget Request for 2008-09 (detail information provided on the OB Form II):**

		2007-08 Budget for Issue (A)	**2008-09 State Funds Requested (B)**	2008-09 Anticipated Reallocation (C)		Budget for 2008-09 and Incremental Years (D)
a.	Recurring Funds:	$0	**$2,100,000**[1]	$0		$2,100,000 2008-09 $ 600,000 2009-10
b.	Non-recurring Funds:	$0	**$0**	$0		$0
c.	Total:	$0	**$2,100,000**	$0		$2,700,000

A. Identify 2007-08 funds (if not E&G funds, provide the source of the funds) that will be used to initiate this program (column A).
B. Identify the amount of funds requested for 2008-09 (column B).
C. Identify existing programs from which funds will be reallocated, if applicable (include for example, salaries from reallocated or dedicated personnel) (column C).
D. If this is a multi-year request, identify the incremental funds needed from the state for each future year, by year, for a maximum of five years (column D only includes column B plus each future year's need). This is a phase in of a two-year request, and additional $$600,000 will be requested next year.

IV. Facilities:

A. Does this issue require an expansion or construction of a facility? No

B. If yes, is the project identified on the Capital Improvement List? If so, identify the project, fiscal amount, year requested and priority number.

	Facility Project Title	Fiscal Year	Amount Requested
1.			
2.			

[1] $600,000 million for IFAS and $1.5 million for E&G, FSU is requesting $1.2 million under a similar LBR

2008-2009 Legislative Budget Request
EDUCATIONAL AND GENERAL
POSITION AND FISCAL SUMMARY

Operating Budget Form II

University: **IFAS, University of Florida (IFAS and E&G)**
Issue Title: **Florida Partnership for Climate and Society**

	RECURRING	NON-RECURRING	TOTAL
Positions			
Faculty	13.00	0.00	13.00
Other (A&P/USPS)	4.00	0.00	4.00
Total	17.00	0.00	17.00
Salary Rate (for all positions noted above)			
Faculty	$925,000	$0	$925,000
Other (A&P/USPS)	$160,000	$0	$160,000
Total	$1,085,000	$0	$1,085,000
Salaries and Benefits	$1,410,500	$0	$1,410,500
Other Personal Services (Post Doc/OPS)	$300,000	$0	$300,000
Expenses	$172,500	$0	$172,500
Operating Capital Outlay	$0	$217,000	$217,000
Electronic Data Processing	$0	$0	$0
Special Category (Specific)	$0	$0	$0
	$0	$0	$0
	$0	$0	$0
	$0	$0	$0
Total All Categories	$1,883,000	$217,000	$2,100,000

State University System of Florida
Educational and General
2008-2009 Legislative Operating Budget Issue
Form I

University:	**University of Florida - IFAS**
Descriptive Issue Title:	**Sustaining Florida's Fisheries and Coastal Resources**
University Priority Number:	**6**
Date Approved by Board of Trustees:	**6-15-2007**

Check **only one** of the following to indicate which SUS Strategic Plan Goal/Objective this issue will address:

☐ **Access to and Production of Degrees** *(Examples of issues that may be included under this goal would be new enrollment growth, outreach, recruitment, financial aid, academic tracking, advising, etc.)*
☐ **Meeting Statewide Professional and Workforce Needs** *(Examples of issues that may be included under this goal would be new or expanded targeted and/or educated citizenry / workforce programs, retention of students.).*
☐ **Building World-class Academic Programs and Research Capacity** *(Examples of issues that may be included under this goal would be new and/or expanded research initiatives, enhancements of certain academic programs or program implementation / expansion of non-targeted programs.)*
☒ **Meeting Community Needs and Fulfilling Unique Institutional Responsibilities** *(Examples could include issues important to a regional area or specific to an institution's mission.)*

I. Needs Statement: *(What need will be addressed with the provision of funds for this issue. **The needs statement should be brief and succinct.**):*

The long-term economic sustainability of Florida's recreational and commercial fisheries and water-dependent marine industries is threatened. The combined annual economic impact of the fisheries, aquaculture, and boating/marina related industries is about $20 billion. Florida is one of the top-ranked states in the nation in fishing, when the recreational and commercial uses of the resources are combined. There are over 1 million boats registered in Florida and most depend on marinas and waterways for public access to coastal waters. The demand for both seafood and ornamental fish for the hobby trade is growing, and Florida's small aquaculture industry needs research and development assistance to grow. Florida's 17 million residents (80% live in the 35 coastal counties) and 78 million visitors utilize these coastal resources. By 2025, the state's population is predicted to reach 24 million, meaning an additional 5 million people will live in the coastal counties; they will fish, use coastal waterways and create additional economic activity.

While this unprecedented population growth is creating additional economic activity, it is also causing increased fishing pressure on Florida's fisheries, more demand for seafood and water – dependent industries are facing intensive competition for their ability to provide public access to

the coast. Population growth is also causing loss of critical estuarine habitats, creating conflicts over coastal development, contributing to impaired water quality and associated harmful algal blooms and the deterioration of the natural and environmental assets upon which coastal economies are based.

New strategies are needed for using fisheries and coastal resources in a manner that is compatible with their long-term economic and environmental sustainability. This initiative will provide science-based alternatives to industry and resource managers and develop community-based educational programs that will address issues including habitat loss, fishing pressure, and water-dependent coastal issues including impacts of rapid development and environmental quality issues.

II. Justification

A. **Description of service or program to be provided:** *(Include whether this is a new or expanded service/program. If expanded, what has been accomplished with the current service/program?)*

This initiative will establish an integrative program to address critical issues affecting the health and long-term survival of Florida's marine and freshwater fisheries industries, the growing aquaculture industry and the water-dependent marine industries that are critical to Florida's future. The framework is an integrated state-wide network of fisheries, aquaculture and waterway research and extension faculty linked to an academic core in Gainesville. Currently only 27 of 35 coastal counties have marine extension agents; this initiative would cost share with local government to fill this void in cooperation with the Florida Sea Grant Program.

B. **Description of current university initiatives, and their resources, that will strengthen the provision of this service/program.**

The UF/IFAS Department of Fisheries and Aquatic Sciences (FAS) has faculty who work on Gulf of Mexico and Atlantic coastal fisheries, freshwater fisheries, aquatic animal health and aquaculture. FAS has a 20-year history of working closely with state and federal fisheries management agencies and the private sector on issues affecting fisheries sustainability including water quality, toxic algae, fishing pressure, freshwater flow, and habitat loss. However, FAS lacks critical expertise in marine fisheries, marine aquaculture and coastal water quality and habitats. The Florida Sea Grant Program (FSG) conducts programs in fisheries, seafood safety, aquaculture, waterway management, coastal water quality and coastal storms and hazards that relate to this initiative. However, FSG lacks expertise in key areas proposed in this initiative and there are eight highly-populated counties where FSG educational programs are not currently being provided. FSG is considered a model program for the nation and is ranked in the top quartile of all 32 Sea Grant programs nationally based on an external national review process. UF is the host for FSG (a State of Florida Center for the Board of Education, Division of Colleges and Universities) that includes participation by all of Florida's universities. This expansion will bring closer program integration to provide broader service to the state, and new expertise in such areas as ecosystem-based fisheries management, fisheries economics, marinas and boating, seafood safety, aquaculture, and bilingual marine education and communication. Both state and federal fisheries management agencies have indicated that bi-lingual education for fishers is a critical need.

C. Description of outcome anticipated: *(Be specific. For example, if this issue focuses on improving retention rates, indicate the current retention rate and the expected increase in the retention rate.* In addition, identify the following, if applicable.)

This initiative will provide the following outcomes:

1. Sustainable Fisheries: Scientific solutions and educational efforts will (a) contribute to making fisheries sustainable through ecosystem-based management; b) provide fisheries managers with science-based alternatives for management, and (c) inform citizens about the need to conserve and protect habitat, water quality and the fish communities they support.
2. Aquaculture: This sector of Florida's economy will benefit from (a) enhanced shellfish production and product safety; and (b) industry development through a reduction in both technical and non-technical barriers.
3. Marinas/Boating/Waterways: The water-dependent marine industries, the public and the resource managers will be provided science-based alternatives to (a) maintain the economic and environmental sustainability of this resource use, (b) create decision support tools to guide public policy to support coastal management; c) assist in developing a non-regulatory framework that maintains the environment while enhancing waterfront communities and business growth and (d) recommending ways to mitigate and prepare for coastal storms in order to minimize economic and environmental losses.
4. Academic Enhancement and Marine Education: The next generation of professionals for the both the private sector and resource managers will be trained and citizens will be educated through extension and outreach programs.

III. Budget Request for 2008-09:

		2007-08 Budget for Issue (A)	**2008-09 State Funds Requested (B)**	2008-09 Anticipated Reallocation (C)		Budget for 2008-09 and Incremental Years (D)
a.	Recurring Funds:	$0	**$644,000**	$0		$644,000 2008-09 $644,000 2009-10
b.	Non-recurring Funds:	$0	**$0**	$0		$0
c.	Total:	$0	**$644,000**	$0		$1,288,000

A. Identify 2007-08 funds (if not E&G funds, provide the source of the funds) that will be used to initiate this program (column A).
B. Identify the amount of funds requested for 2008-09 (column B).
C. Identify existing programs from which funds will be reallocated, if applicable (include for example, salaries from reallocated or dedicated personnel) (column C).
D. If this is a multi-year request, identify the incremental funds needed from the state for each future year, by year, for a maximum of five years (column D only includes column B plus each future year's need).

II. **Facilities:**

A. Does this issue require an expansion or construction of a facility?
No

B. If yes, is the project identified on the Capital Improvement List? If so, identify the project, fiscal amount, year requested and priority number.

	Facility Project Title	Fiscal Year	Amount Requested
1.			
2.			

2008-2009 Legislative Budget Request
EDUCATIONAL AND GENERAL
POSITION AND FISCAL SUMMARY

Operating Budget Form II

University: **IFAS, University of Florida**
Issue Title: **Sustaining Fisheries and Coastal Resources**

	RECURRING	NON-RECURRING	TOTAL
Positions			
Faculty	5.00	0.00	5.00
Other (A&P/USPS)	2.00	0.00	2.00
Total	7.00	0.00	7.00
Salary Rate (for all positions noted above)			
Faculty	$375,000	$0	$375,000
Other (A&P/USPS)	$80,000	$0	$80,000
Total	$455,000	$0	$455,000
Salaries and Benefits	$591,500	$0	$591,500
Other Personal Services	$0	$0	$0
Expenses	$52,500	$0	$52,500
Operating Capital Outlay	$0	$0	$0
Electronic Data Processing	$0	$0	$0
Special Category (Specific)	$0	$0	$0
	$0	$0	$0
	$0	$0	$0
	$0	$0	$0
Total All Categories	$644,000	$0	$644,000

Priority #7

Florida Veterinary Workforce Expansion Initiative

Combined LBR with UF-Health Science Center

OBI Narrative

See Page 82-89

Priority #7

Florida Veterinary Workforce Expansion Initiative

Combined LBR with UF-Health Science Center

OBII Fiscal Information

See Page 90