

**State University System
Education and General
2020-2021 Legislative Budget Request
Form I**

University(s):	University of Florida
Issue Title:	Center for Application of Artificial Intelligence
Scheduled on agenda for UBOT approval on 9/6/2019	
Recurring Funds Requested:	\$1,780,688
Non-Recurring Funds Requested:	\$2,100,000
Total Funds Requested:	\$3,880,688
Please check the issue type below:	
Shared Services/System-Wide Issue for Fiscal Year 2020-2021	<input type="checkbox"/>
Unique Issue for Fiscal Year 2020-2021	<input type="checkbox"/>

I. Description -

The long-heralded impact of Artificial Intelligence (AI) is finally becoming not only a reality, but a business imperative for industry. Consider that McKinsey & Company found that the adoption of AI in businesses grew from 20% in 2017 to 47% in 2018. Accenture is now predicting that businesses that successfully apply AI could increase profitability by an average of 38% by 2035.

UF has both actively recruited faculty in this field and demonstrated national leadership in AI by recently launching the first NSF Industry/University Cooperative Research Center on Big Learning (the key driving force of the current AI movement) as the lead site in partnership with the University of Oregon and the University of Missouri. However, while several universities, including UF, have developed strong academic AI programs, as yet no individual state has created dedicated infrastructure to harness the power of AI to drive economic development.

Therefore, the LBR proposes to create the first Center for Application of Artificial Intelligence (CAAI), which will eventually be housed in the new Data Sciences & Information Technology building that will unite three of UF's leading colleges (College of Medicine, College of Engineering, and College of Pharmacy), along with a university-wide institute (Informatics Institute). Its mission will be to position Florida as a national leader in the application and

commercialization of AI through industry partnerships, education, innovative research, and community outreach. Hosted on the UF campus, the Center will establish a statewide resource that works with industry, the military, government, and the community to build Florida's AI economy and become a world leader in applied AI research, education, technology, and systems analysis. In so doing, the Center will:

- A. Coordinate and initiate increased collaborative interdisciplinary AI research between UF and industry.
- B. Assist in the creation and development of a Florida-based AI technology industry through efforts that would expedite commercialization of innovative AI technologies by taking advantage of the AI expertise at UF, high-technology incubators, entrepreneurs and the investment community, industrial parks, and industry-driven research centers.
- C. Provide a state resource for objective AI systems analysis.
- D. Develop education and outreach programs to prepare a qualified AI workforce and informed public.

The Center's leadership team and organizational structure will assure that truly leading-edge research and development of critical importance to the Florida and national economies are deployed, world-class students in multiple disciplines of AI are trained, and Florida industry reaps the full benefits of the Center's activities. The Center's leadership team will be comprised of highly experienced and successful innovators from the various AI related research fields, education, outreach, industrial collaboration, technology commercialization, and economic development. Its Director will be accountable for all mission activities of the Center and will be assisted in their efforts by a Steering Committee, and Associate Directors in Industrial Collaboration & Commercialization, Education & Outreach, and Program Development.

The Center will set a forward-looking Roadmap for AI development and deployment in Florida that brings together critical research, education, outreach and infrastructure assets to serve Florida industry. The Center will also serve in an advisory capacity to state leadership on key areas of AI development that are particularly impactful to the State of Florida.

Research

The Center will perform scholarly research and analysis of AI applications that contribute to a sustainable AI economy for Florida, supporting interdisciplinary teams of faculty to investigate AI technology and the societal and legal implications of its commercialization. The Center's Steering Committee will be comprised of industry, state and university representatives and will set a collaborative university research agenda that will focus on those areas that can most impact the State of Florida.

Impact of center research will be extended through the recruitment of five permanent research faculty who focus on developing applications and commercialization. The focus of their efforts will be on the application of AI across a host of industries and providing an interface for the private, state, and federal sectors. UF will match this investment with facilities and related costs to support proprietary and classified research and steadily grow complementary engineering expertise using funding from external sources such as industry or federal agencies.

Education and Workforce Development

Working closely with industry, the Center will develop standards for a workforce certification in applied AI. The Center will then develop content and programs to aide Florida workers to achieve certification and compete for new, AI-related high-wage jobs. An undergraduate certificate will also be developed, which will include 3 credits of AI industry experience via internships or coops. The Center will serve as a conduit to link students and companies utilizing the existing UF engineering extension network.

Industry Outreach

The Center will provide industry with access to cutting edge computing capabilities and world class expertise with the goal of accelerating the adoption of AI-enabled technology into the Florida economy. Such adoption is expected to greatly enhance the competitive position of Florida based industry.

User Facilities

Leveraging the existing High-Performance Computing infrastructure at UF, the Center will oversee the implementation of an AI user facility that will be available to SUS faculty and students along with companies in Florida. The computing resources will bring the power of AI to those individuals and enterprises which would otherwise not be able to harness the growing promise of AI. A \$2.1M non-recurring investment in the creation of a CPU/GPU based AI platform will provide a powerful tool for Florida R&D. It will operate as part of the existing High-Performance Computing facility at UF and housed in the UF Datacenter, which is already operationalized to serve users within and outside the SUS system, until the new Data Science & Information Technologies building is complete. No additional capital construction is required.

Impact on Strategic Plan

This effort not only strongly aligns with UF's strategic priorities and 2019 Accountability Plan, but it also supports the state's 2025 System Strategic Plan.

From UF's 2019 Accountability Plan, this effort will directly advance the first "Key Initiatives and Investments" and support UF's goal of becoming a Top 5 public

university. Long-term it will also be vital in fulfilling a host of both performance-based and preeminent research university funding metrics, such as the (A) Median Wages of Bachelor's Graduates Employed Full-time and (B) Science & Engineering Research Expenditures.

From *The Decade Ahead: UF Goals and Plan Forward*, this effort will help fulfill almost all UF Goals and Objectives. Examples include (A) Goal 2 Objectives 1, 3, and 4, (B) Goal 3 Objectives 1, 2, 3, and 4, (C) Goal 4 Objectives 1, 2, 3, and 4, (D) Goal 5 Objectives 1, 2, and 3, and (5) Goal 7 Objective 1.

As noted, this effort will simultaneously benefit industry and UF students and faculty. Industry will benefit from a nationally competitive STEM talent pipeline and access to modern training, facilities, and expertise. Faculty will benefit from more rapid exposure and advancement of their research into the marketplace, as well as new, stable, long-term funding opportunities. Students will benefit from unparalleled professional development experience in the innovation economy.

II. Return on Investment -

Creation of the center is expected to result in increased federal and industry support for research.

Strengthen the talent pipeline of students capable of working in AI-related fields who are already familiar with industry needs and practices.

Support the increasing number of jobs in the field of AI and profitability of this Florida industry.

Funding this LBR will also generate indirect economic benefits that are more difficult to quantify, but equally meaningful. The Center will provide Florida's AI industry with direct access to development and applied AI expertise. Such benefits will include joint opportunity pursuits with world-class faculty, the use of laboratory space and costly computing equipment, and direct guidance and support to address growing AI opportunities for and threats to industry.

III. Facilities -

Not requested.

**2020-2021 Legislative Budget Request
Education and General
Position and Fiscal Summary
Operating Budget Form II**

University: University of Florida

Issue Title: Center for Application of Artificial Intelligence (CAAI) in Florida

	<u>RECURRING</u>	<u>NON-RECURRING</u>	<u>TOTAL</u>
<u>Positions</u>			
Faculty	5.00	0.00	5.00
Other (A&P/USPS)	6.00	0.00	6.00
	-----	-----	-----
Total	11.00	0.00	11.00
	=====	=====	=====
<u>Salary Rate (for all positions noted above)</u>			
Faculty	\$620,000	\$0	\$620,000
Other (A&P/USPS)	\$511,811	\$0	\$511,811
	-----	-----	-----
Total	\$1,131,811	\$0	\$1,131,811
	=====	=====	=====
Salaries and Benefits	\$1,480,688	\$0	\$1,480,688
Other Personal Services	\$0	\$0	\$0
Expenses	\$300,000	\$0	\$300,000
Operating Capital Outlay	\$0	\$2,100,000	\$2,100,000
Electronic Data Processing	\$0	\$0	\$0
Special Category (Specific)	\$0	\$0	\$0
Interdisciplinary Research	\$0	\$0	\$0
Grants	\$0	\$0	\$0
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Total All Categories	\$1,780,688	\$2,100,000	\$3,880,688
	=====	=====	=====

**State University System
Education and General
2020-2021 Legislative Budget Request
Form I**

University(s):	
Issue Title:	iCoast: Coastal Monitoring for Action
Scheduled on agenda for UBOT approval on	9/6/2019
Recurring Funds Requested:	
Non-Recurring Funds Requested:	\$1,065,000
Total Funds Requested:	\$1,065,000
Please check the issue type below:	
Shared Services/System-Wide Issue for Fiscal Year 2020-2021	<input type="checkbox"/>
Unique Issue for Fiscal Year 2020-2021	<input checked="" type="checkbox"/>

I. Description –

In 2018, Whitney Laboratory for Marine Bioscience (“Whitney”)¹, a UF research and teaching facility, was selected to implement one of only eight university-wide “moonshots,” iCoast: Coastal Monitoring for Action. Moonshots are designed to address difficult societal problems and grand challenges through the collaboration of colleagues from key areas of the university, and iCoast will do just that.

Whitney, with its partners at the Herbert Wertheim College of Engineering, College of Liberal Arts and Sciences, College of Veterinary Medicine and Institute of Food and Agricultural Sciences (IFAS), will revolutionize the way researchers and the public monitor Florida’s coastline, allowing for coordinated, comprehensive environmental assessments of water quality and marine biodiversity that scientists can deploy to rapidly inform the public. iCoast will span biological, chemical, physical, weather-related and infrastructure indicators, allowing the real-time management of threats and the most comprehensive picture of the coastal environment to date—ensuring that local and state decision-makers are equipped to make informed choices regarding their vulnerable coastal environments.

Using advanced sensors, including new technology in development at UF, a multidisciplinary team will collect data and develop a comprehensive database that provides a picture of the health of coastal infrastructure and biological systems, from mangroves and aquatic creatures to bridges and piers. The sensors will detect early signs of infrastructure failure, contaminant release, and environmental and physiological

¹ Whitney is a significant player in coastal research, as well as molecular biology. Backed by the University of Florida, it is made up of 11 faculty-led research laboratories with 70 researchers and staff.

change, and the data generated will allow real-time management of threats to the natural and built environments of the coasts.

The University of Florida's Office of Research has provided initial seed money for the iCoast "moonshot" through a highly competitive University initiative. Whitney is also seeking extramural support for the project, including this request, to specifically strengthen and deepen the assessment and development of the pilot site. Funding is needed for equipment, project management and a vessel to expand iCoast to a second key location in Florida. The full scope of the pilot and expansion is close to \$2M.

Funds are requested for a site operations coordinator to manage the logistics of collecting from combined monitoring equipment, two technicians to help compile the significant amounts of data collection from both water and fish indicators, and a portion of a communications staff member to share results with the public. Whitney is also requesting \$300,000 for equipment and new technologies to be deployed along the Matanzas River corridor. The equipment will include water sondes, acoustical tagging for fish species, drones used to collect samples from the locations as well as engineering new technology that puts all of these tools together in at least 6 core sampling stations in the area. The pilot staff model will be replicated for another location in Florida with one operations coordinator and local liaison, one technician and one site coordinator to help with logistics. Overall, there are three teams assembling monitoring equipment with over 20 researchers involved, so site coordination and data support are essential for the project to be successful. Another critical portion of the request is to purchase a vessel for the assessment of sites, to place technology and transport researchers to and from collection sites.

In summary, iCoast will leverage the strengths across the State and UF to tackle some of the most important issues facing coastal communities. The strengths of the high-tech skill set and location of Whitney and the depth and breadth of scientists and engineers working on these problems make this an exciting project to impact Florida's future.

II. Return on Investment –

Development of a nationally, unprecedented coastal monitoring system, iCoast: Coastal Monitoring for Action.

The information gathered from the iCoast project will improve Florida's environmental response to threats by creating an advanced and nimble assessment and monitoring system, increasing the density of monitoring tools using advanced technology. At least six collection platforms will be placed at two locations.

A forecasting system for Florida's coasts and predictive water quality modeling system will be developed that can be applied to assess threats to Florida's ecosystem, better informing resource managers and coastal residents.

Data systems will inform researchers and policymakers the status of Florida’s coastal infrastructures and biological systems. The systems will be made available to the public and shared through Whitney’s website.

This pilot and expansion will allow communities to respond more preemptively to threats facing Florida’s well-being.

III. Facilities *(If this issue requires an expansion or construction of a facility, please complete the following table.):*

	Facility Project Title	Fiscal Year	Amount Requested	Priority Number
1.	n/a			
2.				

2020-2021 Legislative Budget Request
Education and General
Position and Fiscal Summary
Operating Budget Form II
(to be completed for each issue)

University: University of Florida
Issue Title: iCoast: Coastal Monitoring for Action

	<u>RECURRING</u>	<u>NON- RECURRING</u>	<u>TOTAL</u>
<u>Positions</u>			
Faculty	0.00	0.00	0.00
Other (A&P/USPS)	0.00	6.15	6.15
	-----	-----	-----
Total	0.00	6.15	6.15
	=====	=====	=====
<u>Salary Rate (for all positions noted above)</u>			
Faculty	\$0	\$0	\$0
Other (A&P/USPS)	\$0	\$252,000	\$252,000
	-----	-----	-----
Total	\$0	\$252,000	\$252,000
	=====	=====	=====
Salaries and Benefits	\$0	\$326,572	\$326,572
Other Personal Services	\$0	\$0	\$0
Expenses	\$0	\$373,428	\$373,428
Operating Capital Outlay	\$0	\$300,000	\$300,000
Electronic Data Processing	\$0	\$0	\$0
Special Category (Specific)	\$0	\$0	\$0
Research Vessle	\$0	\$65,000	\$65,000
<hr/>	\$0	\$0	\$0
<hr/>	\$0	\$0	\$0
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Total All Categories	\$0	\$1,065,000	\$1,065,000
	=====	=====	=====

**State University System
Education and General
2020-2021 Legislative Budget Request
Form I**

University(s):	University of Florida
Issue Title:	UF- Top 5 National Ranking Operating Support
Scheduled on agenda for UBOT approval on 9/6/2019	
Recurring Funds Requested:	\$50M
Non-Recurring Funds Requested:	
Total Funds Requested:	\$50M
Please check the issue type below:	
Shared Services/System-Wide Issue for Fiscal Year 2020-2021	<input type="checkbox"/>
Unique Issue for Fiscal Year 2020-2021	<input type="checkbox"/>

I. Description – 1. Describe the service or program to be provided and how this issue aligns with the goals and objectives of the strategic priorities and the 2019 University Accountability Plan established by your institution (include whether this is a new or expanded service/program). If expanded, what has been accomplished with the current service/program? 2. Describe any projected impact on academic programs, student enrollments, and student services.

Since 1853, the University of Florida has been committed to increasing its level of excellence to provide students and Florida with opportunities to succeed that are unique in Florida. This commitment stems from recognizing Florida’s challenges are evolving and talented researchers, entrepreneurs, doctors, engineers and many more professionals will be necessary to identify sustainable solutions that will maintain Florida’s reputation as an economic diver and leader across many industries and other areas of society. And over the last 6 years, this commitment has never been taken more seriously. UF moved from being the #17 public university to being ranked #14, #9 and #8 as of last year. But UF will not stop there.

To maintain UF’s momentum, UF leadership recently launched an initiative to upgrade campus to a 21st-century living and learning environment that maximizes student achievement, faculty discovery and staff satisfaction. These expenditures, privately and publicly funded, will complement all continued investments to make UF a top 5 public university and support UF’s ability to fulfill its missions of impactful research, academic excellence and public service and to improve accessibility.

Additionally, this specific request builds on the University of Florida’s over-arching goal, established by the UF Board of Trustees in partnership with the Board of Governors, to become one of the nation’s top 5 public universities as recognized by U.S. World & News Report. UF

has already demonstrated remarkable, sustained progress towards this goal and remains focused on executing this mission. This pursuit, however, to become a top 5 public university, requires a significant investment of new public and private funds.

A sustained partnership with the State will support UF's continued goal of hiring world-class faculty that secure research contracts and grants and improve the student experience. UF has 28 graduate programs ranked among our nation's top 30, public or private. This is where much of world-changing innovation happens. From a research perspective, increased expenditures equate to advancing the State's knowledge and understanding of diseases, new technologies that enhance businesses and create new economies, security threats, and challenges that impact communities on a regular basis. This request allows UF to continue to improve the quality of life for Floridians by creating, attracting and supporting economic development initiatives. For example, the incubators and economic hubs that UF Innovate¹ organizes have generated more than \$6.4B in private investments, launched more than 2,000 startups and created 7,600 jobs. Of the 2,000 startups, many focus on bringing lifesaving gene therapies to market, creating systems to more safely and efficiently feed unique populations, and competing with Silicon Valley's research and development companies to provide resources for technology development and commercialization.

Moreover, UF supported more than 65,000 fulltime and part-time employees of the University and affiliated organizations statewide, generated external research funds exceeding \$800M, and cultivated an environment that encouraged UF visitors to spend \$479.8M in FY18.

This request, if funded, will help UF address other key initiatives and investments that play important roles in determining UF's national ranking and better enable UF to partner with the State to solve the most pressing issues of our time. UF has partnered with donor Herbert Wertheim, for example, to transform the College of Engineering's capabilities and achievements to realize the college's vision of "The 21st Century New Engineer." These sorts of innovations bolster Florida's competitiveness on the global stage for talent and will help attract innovators and investors to this state. Investments in research, outreach and education will even better prepare students for the workforce, create more vigorous streams of research in the emerging fields of cybersecurity, the Internet of Things and autonomous vehicles, attract larger grants and contracts, and increased outreach to Florida industries. And just as the College of Engineering will continue to gain national recognition, UF's national and international reputation will grow as cross-disciplinary teams of faculty tackle the 9 "Moonshots" as described in UF's 2019 Accountability Plan. Furthermore, increased funds will help UF implement a multitude of strategies that will support its goal of increasing the FTIC four-year graduation rate to 75% by 2022.

The requested funds, which could be funded through recurring increases in existing funding programs or otherwise, will be used in a variety of ways annually, including:

- Additional faculty and staff;
- Employment of support staff, such as laboratory managers and technicians, fiscal assistants, grants editors, and grants managers;

¹ An umbrella organization uniting the four entities that drive the innovation ecosystem at UF

- Employment of postdoctoral scientists who will work shoulder to shoulder with STEM faculty in their laboratories;
- Seed funds to enable faculty to experiment with new research avenues in preparation for submitting grant proposals;
- Modernization of laboratories and support facilities, such as laboratory animal care;
- Purchase of laboratory equipment;
- Establishment of world-class centers of excellence through the recruitment of National Academy-caliber scientists; and
- Compensation to assist in retaining and rewarding outstanding faculty members and graduate assistants.

In summary, UF is determined to become a top 5 public university in the US, greatly benefiting Florida's economy and workforce. With this goal comes aspirational targets and a strategic plan to meet them. However, incremental change will take time and requires continued investment to maintain the momentum. Despite this, the good news is UF is already competing among the best of the best universities in the nation and that is good for our state and the entire State University System.

With the support of the Board of Governors, Legislature and Governor DeSantis, UF will not only be a preeminent university nationally, but it will become a top destination for the very best students, faculty, and researchers.

II. Return on Investment - *Describe the outcome(s) anticipated, dashboard indicator(s) to be improved, or return on investment. 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. Similarly, if the issue focuses on expanding access to academic programs or student services, indicate the current and expected outcomes.*

Continued investment in the University of Florida is a fiscally responsible and strategic investment that benefits all Floridians. The outcomes include, but are not limited to:

- Supporting UF's goal of becoming a top 5 public university, as ranked by U.S. News & World Report. As of 2018, UF is ranked #8 in public universities by U.S. News & World Report.
- Hiring and maintaining world-class faculty and researchers to prepare Florida's students for a competitive workforce in strategic areas of emphasis.
- Reducing the student to faculty ratio from 19:1 to 16:1, which will improve students' experience and outcomes.
- Increasing the percentage of students that graduate in 4 years or less.
- Hiring new faculty to help UF continue to secure external grants and contracts, which totaled more than \$865M in FY18. Continued investment will assist UF in reaching its goal of exceeding \$1B in research contracts and grants on an annual basis.
- Supporting the growth of graduate and undergraduate programs through the hiring of additional faculty.

- Supporting “moonshot initiatives,” which will solve some of society’s most pressing problems while redefining the role of a land grant university².
- Providing one of the best value educations in the nation through increased scholarships and graduate assistantships, increasing the percentage of graduates with no student-loan debt.

More importantly, state investments will support the University of Florida as it continues to achieve world-class recognition and improve on key metrics that further enhance student and faculty success.

Key metrics that the U.S. News & World Report and other evaluators use include:

- Student retention and graduation rates
- Freshman retention
- Student/Faculty ratio
- Class size
- Faculty resources
- Total Research Expenditures
- Federal Research Expenditures
- National Academy Members
- Faculty Awards
- Doctorates Granted
- Average SAT
- Postdoctoral Fellows
- Alumni Giving Rate
- National Reputation

III. Facilities *(If this issue requires an expansion or construction of a facility, please complete the following table.):*

	Facility Project Title	Fiscal Year	Amount Requested	Priority Number
1.				
2.				

² UF launches bold initiative to tackle society’s biggest problems (4 October 2018). Retrieved from <https://news.ufl.edu/articles/2018/10/uf-launches-bold-initiative-to-tackle-societys-biggest-problems.html>

2020-2021 Legislative Budget Request
Education and General
Position and Fiscal Summary
Operating Budget Form II
(to be completed for each issue)

University:	<u>University of Florida</u>		
Issue Title:	<u>UF Top 5 National Ranking</u>		
	<u>Operating Support</u>		
	RECURRING	NON- RECURRING	TOTAL
<hr/>			
<u>Positions</u>			
Faculty	125.00	0.00	125.00
Other (A&P/USPS)	25.00	0.00	25.00
	-----	-----	-----
Total	150.00	0.00	150.00
	=====	=====	=====
<u>Salary Rate (for all positions noted above)</u>			
Faculty	\$11,718,750	\$0	\$11,718,750
Other (A&P/USPS)	\$1,500,000	\$0	\$1,500,000
	-----	-----	-----
Total	\$13,218,750	\$0	\$13,218,750
	=====	=====	=====
Salaries and Benefits	\$17,625,000	\$0	\$17,625,000
Other Personal Services	\$0	\$0	\$0
Expenses	\$0	\$0	\$0
Operating Capital Outlay	\$0	\$0	\$0
Electronic Data Processing	\$0	\$0	\$0
Special Category (Specific)	\$0	\$0	\$0
<u>UF- Top 5 National</u>		\$0	\$0
<u>Ranking Operating</u>		\$0	\$0
<u>Support</u>	\$32,375,000	\$0	\$32,375,000
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Total All Categories	\$50,000,000	\$0	\$50,000,000
	=====	=====	=====

**State University System
Education and General
2020-2021 Legislative Budget Request
Form I**

University(s):	UF/IFAS
Issue Title:	Algal Bloom Research & Mitigation
Scheduled on agenda for UBOT approval on	9/6/2019
Recurring Funds Requested:	
Non-Recurring Funds Requested:	\$1,754,000
Total Funds Requested:	
Please check the issue type below:	
Shared Services/System-Wide Issue for Fiscal Year 2020-2021	<input type="checkbox"/>
Unique Issue for Fiscal Year 2020-2021	X

- I. Description -** *1. Describe the service or program to be provided and how this issue aligns with the goals and objectives of the strategic priorities and the 2019 University Accountability Plan established by your institution (include whether this is a new or expanded service/program). If expanded, what has been accomplished with the current service/program? 2. Describe any projected impact on academic programs, student enrollments, and student services.*

The central goals of this project are to provide science-based guidance and assistance for implementation of the most effective harmful algal blooms (HAB) mitigation strategies associated with regional watersheds and specific aquatic ecosystems in Florida. Additionally, we will generate workforce-ready professionals aware of HAB issues through our comprehensive academic programs - including formal university instruction, post-graduate certificate programs, and professional short courses--delivered using distance education technologies around the state.

In response to the devastating impacts of HAB, which include red tide and other algae blooms, the Governor has issued Executive Order 19-12 to focus on the problem. The Order addresses the need to identify nutrient sources from various land uses that cause and support HABs and implement nutrient reduction strategies to mitigate algal blooms.

We will utilize a statewide collaborative initiative that builds on the existing networks among local natural resource managers, land-use planners and scientists and extension faculty from the University of Florida for the following objectives:

- Determining the specific HAB threats facing different impacted ecosystems in Florida, including quantifying potential socio-economic consequences
- Identifying major forms and sources of algae-growth-supporting nutrients in HAB-impacted ecosystems
- Evaluating the viability and feasibility of current and proposed nutrient and bloom management strategies, including techno-economic analyses, as well as developing new mitigation strategies

The University of Florida's expertise in watershed nutrient management, socio- and techno-economic analyses, and aquatic ecosystem processes, has been developed over many decades in its pursuit of its land-grant and sea-grant missions to sustainably manage Florida's natural and economic resources in urban, suburban, rural and agricultural settings.

This request directly aligns with UF's fourth strategic priority, "growth in research and scholarship that improves the lives of the world's citizens". The project is consistent with UF's second strategic priority to provide "an outstanding and accessible education that prepares students for work, citizenship, and life" and supports having "an exceptional academic environment, achieved by a diverse community of students, faculty, and staff."

II. Return on Investment - *Describe the outcome(s) anticipated, dashboard indicator(s) to be improved, or return on investment. 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. Similarly, if the issue focuses on expanding access to academic programs or student services, indicate the current and expected outcomes.*

HABs are a chronic problem and the state is at a critical juncture as the quality of life, the value of our natural-resources based industries (including agriculture and tourism), and resiliency of our communities are affected, which are at the core of our economy. HABs will worsen without the implementation of appropriate, effective and feasible mitigation efforts.

The cost to Florida's economy of major HAB events is large and pervasive. For example, just the recent HAB events of 2018 in Lee County are projected to have

produced a \$3 million loss due to reduced access to boating ramps (a recreational loss) for the event that lasted from end of June through September (Alvarez et al. 2019). A 2007 study by UF/IFAS estimated reduced revenues during months with blooms near Ft. Walton Beach and Destin over a 5-year period; losses were 29-35% for the restaurants and lodging sectors using sales tax data reported to the state. These results were 5-8 times larger than these areas incurred due to tropical storms (other environmental events).

The development and implementation of successful HAB mitigation strategies will significantly reduce these economic impacts. However, it is also important to avoid large expenditures on unproven mitigation efforts, which have low potential for success and/or cause unexpected damage to our critical natural resources. UF would work to maximize the effectiveness and efficiency of mitigation strategies, while minimizing the potential for costly failed efforts.

Economic Impact facts on HAB in Florida:

- The Sanibel & Captiva Chamber estimates a regional \$3.75 million in lost real-estate sales and \$8 million in lost tourism revenue due to 2018 algal blooms.
- The 2007 algal bloom resulted in roughly \$51 million in losses to restaurant and hotel sectors (Larkin & Adams, 2009).
- In 2018, red tide resulted in \$14.5 million in state emergency declaration funds for clean-up.
- Red tides estimated to cause more than \$20 million in tourism-related losses in Florida each year.
- The 2015-16 red tide event resulted in a sales loss of \$3.33 million to the hard clam aquaculture industry.

III. Facilities *(If this issue requires an expansion or construction of a facility, please complete the following table.):*

	Facility Project Title	Fiscal Year	Amount Requested	Priority Number
1.				
2.				

2020-2021 Legislative Budget Request
Education and General
Position and Fiscal Summary
Operating Budget Form II
(to be completed for each issue)

University: UF/IFAS
Issue Title: Algal Bloom Research & Mitigation

	RECURRING	NON- RECURRING	TOTAL
<u>Positions</u>			
Faculty	0.00	2.21	2.21
Other (A&P/USPS)	0.00	3.00	3.00
	-----	-----	-----
Total	0.00	5.21	5.21
	=====	=====	=====
<u>Salary Rate (for all positions noted above)</u>			
Faculty	\$0	\$250,000	\$250,000
Other (A&P/USPS)	\$0	\$173,077	\$173,077
	-----	-----	-----
Total	\$0	\$423,077	\$423,077
	=====	=====	=====
Salaries and Benefits	\$0	\$550,000	\$550,000
Other Personal Services	\$0	\$949,000	\$949,000
Expenses	\$0	\$255,000	\$255,000
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	\$0	\$1,754,000	\$1,754,000
	=====	=====	=====

**State University System
Education and General
2020-2021 Legislative Budget Request
Form I**

University(s):	UF/IFAS
Issue Title:	Demonstration of Reducing Residential Water Quality Impacts
Scheduled on agenda for UBOT approval on	9/6/2019
Recurring Funds Requested:	
Non-Recurring Funds Requested:	\$920,000
Total Funds Requested:	\$920,000
Please check the issue type below:	
Shared Services/System-Wide Issue for Fiscal Year 2020-2021	<input type="checkbox"/>
Unique Issue for Fiscal Year 2020-2021	<input type="checkbox"/>

- I. Description** – 1. Describe the service or program to be provided and how this issue aligns with the goals and objectives of the strategic priorities and the 2019 University Accountability Plan established by your institution (include whether this is a new or expanded service/program). If expanded, what has been accomplished with the current service/program? 2. Describe any projected impact on academic programs, student enrollments, and student services.

The purpose of this project is to scientifically demonstrate a reduction of impacts from the urban sector on Florida’s environment through a variety of activities on residential yards. Researchers will implement and demonstrate the use of soil amendments and other scientifically-proven methods for use of irrigation to residential yards, including compost and other materials.

The project consists of identifying and amending soils in 200 diverse residential landscapes over a one-year period. This real-world demonstration project will determine the optimal amendment rate for a broader implementation state-wide. Soil amendments can come from a variety of sources, but they all share similar characteristics such as increased organic matter content and a variety of microbiology. Ultimately they may increase soil health, reduce irrigation needs and provide organic sources of nutrients for plants.

Additionally, irrigation water use will be measured to determine the effect of amendments when reducing irrigation. Initial water quality impacts will be assessed to determine if amendments may reduce water quality impacts from residential neighborhoods. This research will include efforts to mitigate water quantity and quality impacts from residential landscapes. Finally, landscape quality will be assessed to determine customer acceptance.

This request is consistent with UF's second strategic priority to provide "an outstanding and accessible education that prepares students for work, citizenship, and life." It also aligns with UF's fourth strategic priority, "growth in research and scholarship that improves the lives of the world's citizens."

- II. Return on Investment** - *Describe the outcome(s) anticipated, dashboard indicator(s) to be improved, or return on investment. 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. Similarly, if the issue focuses on expanding access to academic programs or student services, indicate the current and expected outcomes.*

About 21 million people already live in Florida, and 1,000 new people move here each day. All those people stretch the state's finite water supply and impact Florida's natural resources. Residential yards are one large contributor to urban impacts on Florida's environment due to uses of fertilizer, irrigation, and other activities. In order to reduce the nutrients that reach Florida's bodies of water, scientifically proven methods are needed to reduce negative impacts such as excessive growth of plant life and algal blooms. Additionally, methods should recommend more resilient landscapes which require less intensive inputs such as water and fertilizer.

The Florida Department of Environmental Protection (DEP) has adopted rules (Basin Management Action Plans) that require the reduction of pollutants, including excess nutrients, in different regions of the state by amounts from 35% to 90%. One of the sources of these nutrients is storm water runoff from residential yards.

The DEP and water management districts have developed Water Supply Plans that include ways to save water to ensure adequate resources for the growing demand. This study can help address that need by developing ways to irrigate more efficiently in residential areas thereby reducing water use.

The University of Florida Institute of Food and Agricultural Sciences (UF/IFAS) has demonstrated great success working in this area, specifically in its Agricultural and Biological Engineering (ABE) department. ABE has a successful grants program including federal and state grants as well as an innovative

internal grants program for faculty. ABE faculty have received \$5.7M in external funding since 2012, more than \$5 for every state dollar invested in projects.

The Florida-Friendly Landscaping Program™, created by ABE, is supported through both federal and state non-point source funding, administered through FDEP, with UF/IFAS providing matching funds through in-kind services. Since 2012, the program has received \$4,208,589 in federal funding, with the current funding extending through March 2019.

The Department's Green Industries-Best Management Practice program has trained 56,659 and certified 47,657 landscape professionals, conducting more than 1,963 classes throughout Florida.

Additionally, over 265 million gallons of water were saved in Florida through a direct impact from UF/IFAS extension programs across the state in one year (2016). This is enough water to supply the annual indoor water needs of nearly 3,000 homes. The cumulative impact is over 500 million gallons saved in the last two years.

III. Facilities *(If this issue requires an expansion or construction of a facility, please complete the following table.):*

	Facility Project Title	Fiscal Year	Amount Requested	Priority Number
1.				
2.				

2020-2021 Legislative Budget Request
Education and General
Position and Fiscal Summary
Operating Budget Form II
(to be completed for each issue)

University: UF/IFAS
Issue Title: Demonstration of Reducing Residential Envir

	<u>RECURRING</u>	<u>NON- RECURRING</u>	<u>TOTAL</u>
<u>Positions</u>			
Faculty	0.00	0.00	0.00
Other (A&P/USPS)	0.00	0.00	0.00
	-----	-----	-----
Total	0.00	0.00	0.00
	=====	=====	=====
<u>Salary Rate (for all positions noted above)</u>			
Faculty	\$0	\$0	\$0
Other (A&P/USPS)	\$0	\$0	\$0
	-----	-----	-----
Total	\$0	\$0	\$0
	=====	=====	=====
Salaries and Benefits	\$0	\$0	\$0
Other Personal Services	\$0	\$180,000	\$180,000
Expenses	\$0	\$740,000	\$740,000
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	\$0	\$920,000	\$920,000
	=====	=====	=====

**State University System
Education and General
2020-2021 Legislative Budget Request
Form I**

University(s):	UF/IFAS
Issue Title:	Florida 4-H Environmental Education
Scheduled on agenda for UBOT approval on	9/6/2019
Recurring Funds Requested:	
Non-Recurring Funds Requested:	\$1,625,000
Total Funds Requested:	
Please check the issue type below:	
Shared Services/System-Wide Issue for Fiscal Year 2020-2021	<input type="checkbox"/>
Unique Issue for Fiscal Year 2020-2021	<input checked="" type="checkbox"/>

- I. Description** – 1. Describe the service or program to be provided and how this issue aligns with the goals and objectives of the strategic priorities and the 2019 University Accountability Plan established by your institution (include whether this is a new or expanded service/program). If expanded, what has been accomplished with the current service/program? 2. Describe any projected impact on academic programs, student enrollments, and student services.

The Florida 4-H Environmental Education Program will educate Florida’s youth about the environment as a means of preserving Florida’s soil, air, and water. Youth in grades K-12 will engage in non-formal education, delivered through facilitated inquiry and discovery, by means of overnight, day-long, weekend, and weeklong Environmental Stewardship and Agricultural Sustainability education programs through Florida 4-H, which is based at the University of Florida. The program uses research-based curriculum and practices focused on positive youth development and experiential learning. Youth will apply science learning to contexts outside of school (e.g. service learning, science fairs, etc.) and adopt and use new methods of environmental conservation and stewardship.

The program will use the 3 Florida 4-H camps as nature-based learning labs, each located in a distinct ecosystem across Florida. The camps provide the opportunity for students to learn in a safe and structured environment, using a scientifically-based locally-focused curriculum that includes the diversity of Florida's natural environment and how it intersects with daily lives. This funding request includes \$1.5M for Expenses, Repairs and Maintenance of Buildings for this purpose.

The Florida 4-H program is a prime example of UF actively performing its second strategic priority to provide "an outstanding and accessible education that prepares students for work, citizenship, and life." Florida 4-H annually engages more than 200,000 of Florida's K-12 student population in education and development programs with the aim of college, career, and life preparation on behalf of, and using resources created by, the land-grant University system.

This request will increase our capacity to reach more youth and further the following core objectives:

- Increasing our reach to underserved and at-risk youth
- Increasing the number of youth statewide participating in STEM projects
- Increasing knowledge about Florida's environment and stewardship of its natural resources

Today our communities face struggles relating to high incidence of opioid abuse, bullying and school violence. Florida has one of the highest percentages of teen dropout rates (42nd), single parent homes (36th), and children in poverty (36th). Research clearly shows that an effective strategy to reducing negative outcomes for youth is to strengthen youth themselves, their families, and their communities. In Florida, 28% of youth face food insecurity, and many face a job market requiring a skilled and/or educated labor force; one that is ready to participate.

The Florida 4-H program provides a science-based approach to positive youth development by providing youth with opportunities to explore different project areas through experiential activities. Project areas are designed ensure that youth learn and prepare for careers and lives by leading programs in food systems, healthy living, workforce preparedness, entrepreneurship, citizenship/leadership, diverse populations, volunteer management, school-based programming and STEM.

And finally, our 4-H camps are a vital delivery mode of our program, providing students with the opportunity to learn and grow in a structured environment with numerous a varied educational programs. However, our camps are aged and all require additional investment in upgrades and repair to modernize and meet the needs of today's youth. In addition, there is a need to accommodate new programs based on the changing needs and interests of today.

- II. Return on Investment** - Describe the outcome(s) anticipated, dashboard indicator(s) to be improved, or return on investment. 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. Similarly, if the issue focuses on expanding access to academic programs or student services, indicate the current and expected outcomes.

For this request, pre/post assessments will determine how youth participants have increased their environmental stewardship and agricultural sustainability knowledge and aspirations. For more than 10 years, 4 H has partnered with Tufts University to study the effectiveness of its programs and found that 4 H's unique hands-on approach gives kids the opportunity to learn by doing and build life skills. 4-H members are four times more likely to give back to their communities, two times more likely to make healthier choices, and two times more likely to participate in STEM activities than other youth. All programs of Florida 4-H, including camping and environmental education programs, are under continued outcome evaluations.

Outcomes anticipated on the Short Term:

- Increased awareness and engagement in environmental stewardship among youth.
- Increased awareness of agricultural and food sustainability issues among youth.
- Increased awareness of opportunities to contribute to society using science skills.

Outcomes anticipated on the medium-Term:

- Youth adopt and use new methods of environmental conservation and stewardship.
- Youth express interest/demonstrate aspirations towards environmental science careers Youth raise questions and identify problems to be addressed using science.

Outcomes anticipated on the Long-Term:

- Improved environmental stewardship and conservation practices among program alumni.
- Increased innovation addressing environmental and social problems using science.
- Increased science literacy in general population.
- Increased number and more diverse pool of trained teachers, educators, and scientists.
- Increased contribution to agricultural and food sustainability in general population.

These funds will be leveraged with grants, contracts, participation fees, etc. to help assure there will be sufficient resources to elevate the 4-H program. The 4-H and Family Initiative state faculty members have received a total of \$36,500,671 in external funding since 2006. Regional specialized agents have brought in an additional \$2,189,215. Combined, this is more than \$3.8 for every state dollar invested in projects. These funds have come from diverse and appropriate sources including federal, state, and local agencies, foundations, and other partners.

Since 2007, the faculty involved have had an impressive reach, with creation of 1861 education materials, 2549 field visits, and 380,673 group contacts. Additionally, 9,265 volunteers provided 155,798 volunteer hours of service; a value of over \$3.4 million. The evaluations conducted of these faculty member's programs and trainings show that the majority of those evaluated demonstrated behavior/practice change.

III. Facilities *(If this issue requires an expansion or construction of a facility, please complete the following table.):*

	Facility Project Title	Fiscal Year	Amount Requested	Priority Number
1.				
2.				

2020-2021 Legislative Budget Request
Education and General
Position and Fiscal Summary
Operating Budget Form II
(to be completed for each issue)

University: UF/IFAS
Issue Title: Florida 4-H Environmental Education

	<u>RECURRING</u>	<u>NON-RECURRING</u>	<u>TOTAL</u>
<u>Positions</u>			
Faculty	0.00	0.00	0.00
Other (A&P/USPS)	0.00	0.00	0.00
	-----	-----	-----
Total	0.00	0.00	0.00
	=====	=====	=====
<u>Salary Rate (for all positions noted above)</u>			
Faculty	\$0	\$0	\$0
Other (A&P/USPS)	\$0	\$0	\$0
	-----	-----	-----
Total	\$0	\$0	\$0
	=====	=====	=====
Salaries and Benefits	\$0	\$0	\$0
Other Personal Services	\$0	\$100,000	\$100,000
Expenses	\$0	\$1,525,000	\$1,525,000
Operating Capital Outlay	\$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	\$0	\$1,625,000	\$1,625,000
	=====	=====	=====

**State University System
Education and General
2020-2021 Legislative Budget Request
Form I**

University(s):	UF/IFAS
Issue Title:	IFAS Workload
Recurring Funds Requested:	\$3,882,213
Scheduled on agenda for UBOT approval on 9/6/2019	
Non-Recurring Funds Requested:	
Total Funds Requested:	\$3,882,213
Please check the issue type below:	
Shared Services/System-Wide Issue for Fiscal Year 2020-2021	<input type="checkbox"/>
Unique Issue for Fiscal Year 2020-2021	<input checked="" type="checkbox"/>

- I. Description** – 1. Describe the service or program to be provided and how this issue aligns with the goals and objectives of the strategic priorities and the 2019 University Accountability Plan established by your institution (include whether this is a new or expanded service/program). If expanded, what has been accomplished with the current service/program? 2. Describe any projected impact on academic programs, student enrollments, and student services.

The UF/IFAS Workload Formula is a cost to continue funding formula or model that would respond to increased research and extension workload demand. It was developed at the request of and approved by the Florida Board of Governors (BOG) in 2004. These funds are requested to provide for increased demand for IFAS research and extension activities based on the delivery of research information to IFAS clientele throughout Florida.

The request for UF/IFAS Workload addresses three separate priorities of the University of Florida in their strategic plan: (1) to have “an exceptional academic environment, achieved by a diverse community of students, faculty, and staff;” (2) “growth in research and scholarship that improves the lives of the world’s citizens;” and 3) to have “a physical infrastructure and efficient administration and support structure that enable preeminence.

The model uses extension delivery methods to measure increases in workload by both extension and research faculty in the form of workload delivery units. The model uses non-traditional teaching methods (such as field consultations, office consultations, telephone and email requests, group workshops, and printed materials) and converts these contacts to the equivalent of student FTEs. These delivery methods are converted by multiplying by a factor to account for level of effort and then divided by 40 which is the number used to convert student credit hours to FTEs. The total IFAS research and extension budget (General Revenue) is divided by this number to determine the value of a workload delivery unit.

II. Return on Investment - *Describe the outcome(s) anticipated, dashboard indicator(s) to be improved, or return on investment. 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. Similarly, if the issue focuses on expanding access to academic programs or student services, indicate the current and expected outcomes.*

According to the most recent National Science Foundation figures, UF has ranked first or second among US universities in total agricultural sciences research expenditures since fiscal year 2001. Topics most actively researched include pest and disease management, nutrition management, improved crop varieties, biotechnology, livestock, irrigation and food safety. In human systems, studies included global competitiveness, labor-saving technologies, marketing, consumer behavior, youth development, and human nutrition.

UF/IFAS has a \$610 million economic contribution to the state supplying 8,862 jobs. Sponsored research within UF's Agriculture and Natural Resources or IFAS accounted for \$151 Million dollars for the 2017-2018 year and state expenditures for Research and Extension accounting for \$ 141,171,379.

IFAS Extension and Research covers a wide and diverse set of issues, which support Floridians. A few examples of return on investment:

- Workforce training - increasing income by as much as 32%,
- Beef cattle research resulting in \$2 million to \$7 million in savings to the Florida cattle industry each year,
- Creating new industries such as blueberries (industry didn't exist in Florida 12 years ago) now a nearly \$70 million industry
- Development of more efficient drip irrigation systems with the potential to reduce water consumption by nearly 2 billion gallons per week.
- Family Nutrition Program improved health related behavior in Pre-K through 5th grade between 72% and 93%.

- From 2013-2017, 858 crop variety licenses were executed with 67% obtained by Florida based growers for example, 90% of commercial strawberries planted in Florida are UF/IFAS varieties.

III. Facilities *(If this issue requires an expansion or construction of a facility, please complete the following table.):*

	Facility Project Title	Fiscal Year	Amount Requested	Priority Number
1.				
2.				

2020-2021 Legislative Budget Request
Education and General
Position and Fiscal Summary
Operating Budget Form II
 (to be completed for each issue)

University: UF/IFAS
Issue Title: IFAS Workload Increase

	<u>RECURRING</u>	<u>NON- RECURRING</u>	<u>TOTAL</u>
<u>Positions</u>			
Faculty	8.00	0.00	8.00
Other (A&P/USPS)	20.00	0.00	20.00
	-----	-----	-----
Total	28.00	0.00	28.00
	=====	=====	=====
<u>Salary Rate (for all positions noted above)</u>			
Faculty	\$728,000	\$0	\$728,000
Other (A&P/USPS)	\$1,200,000	\$0	\$1,200,000
	-----	-----	-----
Total	\$1,928,000	\$0	\$1,928,000
	=====	=====	=====
Salaries and Benefits	\$2,633,256	\$0	\$2,633,256
Other Personal Services	\$280,000	\$0	\$280,000
Expenses	\$968,957	\$0	\$968,957
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	\$3,882,213	\$0	\$3,882,213
	=====	=====	=====