



FLORIDA INTERNATIONAL UNIVERSITY

BOARD OF TRUSTEES

FULL BOARD MEETING

Zoom Meeting

Livestream: <http://webcast.fiu.edu/>

Tuesday, September 6, 2022
4:30 PM

AGENDA

- | | |
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| 1. Call to Order and Chair's Remarks | Chair Dean C. Colson |
| 2. Public Appearances | Dean C. Colson |
| 3. Action Items | |
| 3.1 2023-2024 Legislative Budget Requests | Natasha Lowell |
| 3.2 2022-2023 Linking Industry to Nursing Education (LINE) Fund Proposals | Natasha Lowell |
| 4. New Business (<i>If any</i>) | Dean C. Colson |
| 5. Concluding Remarks and Adjournment | Dean C. Colson |

The next Full Board Meeting is scheduled for September 22, 2022

**THE FLORIDA INTERNATIONAL UNIVERSITY
BOARD OF TRUSTEES**

September 6, 2022

Subject: 2023-2024 Legislative Budget Requests

Proposed Committee Action:

Recommend to The Florida International University Board of Trustees approval of the 2023-2024 Legislative Budget Requests:

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| ▪ Framework for Innovation in Undergraduate STEM Education | \$ 3,136,901 |
| ▪ Program of Distinction in Environmental Resilience | \$15,812,973 |
| ▪ Top 50 Operational Support | \$60,700,000 |
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Background Information:

Pursuant to Section 7, Article 9 of the Florida Constitution, the Board "...shall operate, regulate, control, and be fully responsible for the management of the whole university system." Included within this responsibility is the development of a Legislative Budget Request (LBR). In addition, Section 216.023(1), Florida Statutes, requires the submission of a LBR to the Legislature and Governor based on an independent judgment of needs.

The LBR is an assessment of needs developed by the Florida Board of Governors in cooperation with the universities. The Florida Board of Governors requires that all State University System institutions submit their institutional LBR request for review and approval.

Supporting Documentation: 2023-2024 Legislative Budget Requests

Facilitator/Presenter: Natasha Lowell, *Chair, Academic Policy and Student Affairs Committee*

**State University System
Education and General
2023-2024 Legislative Budget Request
Form I**

University(s):	Florida International University
Request Title:	Framework for Innovation in Undergraduate STEM Education (FIU STEM Ed.)
Date Request Approved by University Board of Trustees:	Expected September 2022
Recurring Funds Requested:	\$221,856
Non-Recurring Funds Requested:	\$2,915,045
Total Funds Requested:	\$3,136,901
Please check the request type below:	
Shared Services/System-Wide Request	<input type="checkbox"/>
Unique Request	<input checked="" type="checkbox"/>

I. Purpose – *1. Describe the overall purpose of the plan, specific goal(s) and metrics, specific activities that will help achieve the goal(s), and how these goals and initiatives align with strategic priorities and the 2021 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. University of Distinction proposals should also address the requirements outlined in the separate guidance document.*

Program Overview

The overall purpose of this proposal is to provide mechanisms for optimizing student success at *critical transitions* in students' education including enrolling for the first time in college at FIU, transferring to FIU, and completing a degree and entering STEM professions. We will expand upon the STEM Transformation Institute's past successes in driving adaptation of evidence-based practices to support students in reaching key milestones, thus ensuring that STEM students are retained, graduate on time, and pursue successful STEM careers. To achieve this goal, this proposal includes multiple student-centered initiatives: (1) solidifying a culture of STEM education innovation and excellence and expanding adoption of evidence-based practices; (2) creating support structures focusing on transfer students for rapid academic and social integration on campus; (3) expanding access to and success in core mathematics courses to

increase student progress in their STEM major; and (4) preparing STEM undergraduates for success in professional practice, through a focus on developing critical career competencies. The overarching aim is to adapt, and leverage established and successful programs of the STEM Transformation Institute and collaborating units, including the Center for the Transformation of Teaching Mathematics (CTTM) and the School of Universal Computing, Construction, and Engineering Education (SUCCEED), to target support at critical transitions in STEM major pathways. This proposal will drive greater institutional efficiencies through sharing of system resources and alignment of key actions that support student success.

History of Commitment and Success

FIU has a long history of advancing STEM education, implementing evidence-based pedagogical strategies, and creating a supportive environment for our students – thus positioning itself as a national leader in STEM education research and implementation, especially among minority-serving institutions. This initiative builds on the success of multiple projects that have brought significant change to the university and that have become integrated into university practices and culture. These projects include the Graduation Success Initiative (GSI), the Gateway and Gateway to Graduation Projects, and the Learning Assistant (LA) Program. Additionally, this initiative leverages FIU's institutional infrastructure including the STEM Transformation Institute, the Center for the Transformation of Teaching Mathematics (CTTM), the School of Universal Computing, Construction, and Engineering Education (SUCCEED), the Center for the Advancement of Teaching (CAT), the Office of Micro-Credentials, the Office of Career and Talent Development and a community of over 30 STEM education faculty scholars advancing STEM education research and practice. Through smaller initiatives and externally funded projects, FIU has developed a core of interventions that has laid the foundational framework for STEM education reforms at FIU. Key elements of this foundation include 1) adapting evidence-based instructional practices to the FIU context; 2) supporting faculty to engage students in meaningful, active learning in the classroom; 3) positioning students as in class peer-mentors that facilitate and advocate for STEM learning; 4) engaging undergraduates, faculty, and administration as partners in the transformation; and 5) applying innovative solutions to preparing FIU STEM graduates for the 21st century world of work.

FIU is focused on intentionally developing student support structures and promoting instructional innovation to impact student retention and graduation. In the last year, our efforts to ensure a solid infrastructure to support student success led to an increase of 10.1% percentage points, from 49.3% to 59.4%, in our First Time in College (FTIC) Four-Year Graduation Rate. FIU's Graduation Success Initiative (GSI), the Gateway Project and the Gateway to Graduation project have each helped to progressively raise the graduation rate for FTICs. For example, the **Gateway Project**, led by FIU's Center for the Advancement of

Teaching, initially identified courses with high enrollment, high failure rates, and/or high impact in 2014-2015. Since the inception of the Gateway Project, over 21,000 more students have passed 21 foundational “Gateway” courses than would have at the 2013-2014 passing rates (21 courses with > 35,000 enrolled students annually, including STEM courses in Biology, Chemistry, Psychology, Math, and Statistics). The first major success in the Gateway Course initiative was the comprehensive transformation of the College Algebra course that incorporated Learning Assistants and innovative technology-based instruction, leading to a sustained 35-40% increase in passing rates for all students. These improvements significantly increase efficiency through direct cost savings to our students as well as reducing excess credit hours and, thus, improving timely graduation rates. In AY 2016 – 2017, the legislative investments for course redesign of Finite Mathematics and Social Choice Math, Gateway courses taken by non-STEM majors, resulted in improved consistency in content and expectations across many sections and increases in average pass rates (12% and 16%, respectively). With well over 3,000 students enrolled in these three courses each semester, the impact is significant. Looking across Gateway courses in mathematics, when compared to 2013-14 passing rates, improvements have resulted in more than 8,000 *additional* successful course completions by 2021. The reach of this Project was expanded into the **Gateway to Graduation (G2G)**, which provides support for improving student success in courses that have historically slowed progress toward graduation. The average passing rate across these gateway courses has increased from 65% to 82%, and first-to-second-year retention increased from 85% (2013-14 cohort) to 91% (2019-20 cohort). For Hispanic-identified students, retention increased from 87% to 93%. Reduced attrition positively impacts both 4- and 6-year graduation rates, which have consequently increased (e.g., 4-year graduation rates have increased from 33% to 48% since the G2G Project’s inception in 2015-16). In January 2021, the G2G project received funding for courses that have a high impact on 4-year graduation rates: redesign teams are currently improving Organic Chemistry (CHM 2210), General Biology Labs (BSC 2010L and BSC 2011L), and Calculus for Business (MAC 2233). Each year, another 4-5 courses (all sections of each course) join the project.

The undergraduate **Learning Assistant (LA) Program** is a powerful and cost-effective approach that has been implemented across multiple STEM courses and that will be leveraged in this initiative. FIU hosts the nation’s largest LA program, with approximately 400 LAs serving in 80 different courses impacting over 12,000 student enrollments per semester (enrollment includes duplicated headcount as students may have LAs in more than one course). This program provides undergraduates with the opportunity to experience the reward of teaching, develop skills to engage in the challenges of effective instruction, and deepen their own content knowledge. Simultaneously, they serve a critical role as dedicated and skilled facilitators of learning in the classroom, thus supporting the transition to and sustaining engagement in active learning for both students

and faculty. Thus, adoption of LAs in a course is often accompanied by other pedagogical changes in the classroom (e.g., adoption of student-centered or other active learning approaches) and a noticeable increase in passing rates or other success outcomes, such as those mentioned above.

FIU's commitment to STEM education is further evidenced by the creation of structures that support the success of students in STEM courses and degree paths. Central to the success of this initiative is the **STEM Transformation Institute**, one of six designated Preeminent Programs at FIU, which has a mission to advance research and translation to practice of evidence-based STEM instruction. Two other key units in this initiative are the **School of Universal Computing, Construction, and Engineering Education (SUCCEED)** which is dedicated to education research and curricular transformation in engineering and computing, and the **Center for the Transformation of Teaching Mathematics (CTTM)**, which aims to develop and implement evidence-based practices and related measures to advance students' learning of mathematics. Throughout these three collaborating units, there is a community of over 30 STEM education research and teaching faculty who are national experts in advancing the knowledge of the field and implementing innovative instructional practices.

The Initiative's ultimate goal is to drive the economic prosperity of the State by increasing the number of well-qualified science, mathematics, engineering, and computer science graduates that work and innovate in Florida. This initiative will cultivate a more fertile environment for STEM professions and positively impact the economy of the State. Additionally, the evidence on student learning outcomes accumulated through the initiative will continue to increase FIU's and Florida's reputation as a model for STEM student success and pedagogical innovation. The practices, curricula, and evidence generated by this initiative will be shared with all SUS and FCS institutions, allowing them to adopt and adapt practices for their use, fostering greater efficiencies through shared system resources. This includes engagement with local partners and state networks where there are established trust relationships, such as Miami-Dade College and Broward College, through the annual MDC/FIU and BC/FIU days, and through the Florida Consortium of Metropolitan Research Universities, of which FIU is a member and participant in regular Consortium events. This provides the opportunity to position Florida as the first State in the nation to implement evidence-based instruction throughout STEM degree programs.

Specific Goals

Goal 1: Amplifying previous investments in STEM education reform to solidify a culture of STEM education innovation and excellence and improve STEM students' progress towards on-time graduation. FIU has made great strides in solidifying a culture of STEM education research and teaching

excellence through continuous investments in building STEM education research capacity, supporting faculty professional development and instructional innovation, and fomenting a culture of STEM teaching excellence. These investments have resulted in improved student outcomes, including increases in passing rates of key STEM courses and enhanced student progression and completion of STEM degrees. The current initiative will build upon these successes to best support the learning and academic persistence of underserved students by fostering a robust culture of evidence-based learning strategies and amplifying the transformation of STEM learning at FIU. Activities that inform this goal will target student success in individual courses, foundational to their persistence through STEM programs and will include (a) establishing *Senior Learning Assistants (SLAs)* as an opportunity for experienced LAs to enhance evidence-based instructional strategies and support students' mental health, (b) developing a *STEM Faculty Mentor* program to harness the leadership potential of STEM faculty with expertise in STEM education teaching and research, (c) developing a pipeline of *STEM Education Ambassadors* to expand the expertise and advocacy for evidence-based instructional practices from undergraduate students through to STEM postdoctoral fellows, and (d) renovating existing classrooms into active learning spaces to facilitate the use of evidence-based instructional strategies.

Goal 2: Supporting newly admitted transfer STEM students to the university environment through rapid academic and social integration on campus.

Research identifies multiple challenges for students who transfer from 2-year community colleges to 4-year institutions, especially when they pursue STEM degrees. This early adjustment to the university (i.e., transfer shock) includes difficulties connecting with faculty and peers and challenges building social capital through connections on campus. This leads to lost time, unnecessary costs, and increased time to graduation. FIU has previously focused on developing strategies that address academic and financial barriers for transfer students at both the student and institutional level. These efforts resulted in surpassing FIU's 2-year Full-Time FCS AA-Transfer graduation rate goal of 55% by more than four percentage points to reach a rate of 59.3% (all majors, 2019-21). We will build upon this success by leveraging established programs to create innovative activities that specifically support the success of STEM transfer students. The primary activity supporting this goal includes the deployment of transfer student peer-mentors in STEM courses (i.e., *LA Transfer Coaches*), which build on the model and success of the Learning Assistant program. Additionally, transfer students will benefit from activities that improve STEM learning student experiences including *Senior Learning Assistants*, the *STEM Faculty Mentor* program, *STEM Education Ambassadors*, and active learning classroom renovations.

Goal 3: Expanding access to and success in core mathematics courses to increase student progress in their STEM major: Mathematics courses leading up to Calculus occupy a uniquely critical position as a gatekeeper to STEM

disciplines, despite national reform efforts spanning decades. FIU has a history of mathematics initiatives that have radically changed the landscape of student success in mathematics courses leading up to Calculus, through externally and institutionally funded efforts. Investments in STEM education research, the Mastery Math Lab, and the Center for the Transforming Teaching in Mathematics (CTTM) have led to significant return on investment and provide the foundation for amplifying our national STEM education leadership through mathematics education research. Activities to support students in key mathematics courses include (a) integrating Open Educational Resource (OER) textbooks into courses to lower student costs, (b) implementation of tiered undergraduate Learning Assistant (LA) support in large enrollment courses (i.e., *LA Transfer Coaches* and *Senior LAs*), and (c) integrating low-cost, individualized online learning systems into courses to guide students through challenging topics.

Goal 4: Preparing STEM undergraduates for success in professional practice:

To orient students towards STEM careers and support their post-graduation success, we will create field experiences that prepare them for graduate school and/or entry into the STEM workforce. These experiences include research experiences, and industrial/business internships. In this initiative, we will focus on improving awareness of post-graduation pathways (including graduate school) and improving access to opportunities by connecting with local industry partners and supporting career preparation. Activities to support students will include: (a) increasing access to research experiences for STEM students by expanding existing course-based undergraduate research experiences (CUREs) and creating opportunities for the development of new CUREs, (b) increasing access to research experiences for STEM students by expanding paid undergraduate research experiences, building on the early success of the “Opportunities for Undergraduate Research and Scholarship” program recently piloted by the College of Engineering and Computing, (c) increasing students’ awareness of internship opportunities through targeted classroom interventions (e.g. messaging in sophomore and junior level classes about internship) and working with Strategic Employer Partners to incorporate classroom engagement with STEM students as part of their strategic mission with FIU and (d) helping students navigate processes of applying for and transitioning into internship opportunities through services already providing by FIU’s Career and Talent Development offices, augmented by coaching from LAs who have previously participated in internship experiences, as well as participating in intentionally developed career development modules that assist students with writing resumes, interviewing, and building their professional narrative; and (e) piloting new employer-sponsored activities such as curated professional pathways (combining micro-credentialing with employer engagement) and exploring project-based learning initiatives, which would allow students to solve industry problems and get industry feedback. Further, we will collaborate with internal FIU offices to leverage existing efforts to encourage faculty in re-designed courses to consider offering already-available stackable micro-credentials as part

of their courses to increase student awareness of sought-after STEM skills and highlight student acquisition of skills. This work will build on current skills-mapping work at FIU that is reviewing workforce data to explore skills most in demand by major or industry sector and working to align these with our offered degree programs. Additionally, faculty and program administrators will collaborate with the Office of Micro-Credentials to develop new stackable micro-credentials that document skills students are developing (e.g., through the Learning Assistant or course-based research experiences).

Metrics and alignment to strategic priorities:

- a. *Improving full time 2- and 3-year AA transfer graduation rate (Goals 1, 2, 3):*
Goal 2 will directly impact the transfer student graduation rate by providing intentional peer support to transfer students (i.e., LA Transfer Coaches). Goals 1 and 3 also impact this metric by transforming STEM classroom environments, including improving the success in mathematics courses, thus increasing transfer student progress towards their degrees. The overall (i.e., all majors) 2019-2021 2-year full-time FCS AA transfer graduation rate is 59.4% and the goal is for it to be sustained at 60%. Transfer students that major in STEM graduate at a lower rate of 32% (2-year) and 71% (3-year). We estimate that this initiative will increase the transfer graduation rate for STEM students to 45% (2-year) and 85% (3-year).
- b. *Improving the FTIC 4- and 6-year graduation rate (Goal 1, 3):* Goal 1 will impact this metric by transforming classroom environments through enhanced peer support, faculty professional development, and classroom renovations, while Goal 3 will increase the success of students in mathematics courses. These two goals will increase course passing rates and progression towards graduation. The current 4- and 6-year FTIC graduation rates (all majors) are 59.4% and 65%, respectively, and the corresponding rates for STEM majors are higher at 62.3% and 74.6%, respectively, having improved due to prior strategic initiatives and funding. The current institutional goals call for a gradual increase in 4- and 6-year graduation rates (all majors) over the next five years to 65% and 74%, respectively, and we estimate the STEM FTIC graduation rates to increase to 65% and 85%, respectively.
- c. *Increasing the number of Bachelor's degrees awarded annually (Goal 1, 2, and 3):*
Goals 1, 2, and 3 impact the number of Bachelor's degrees awarded by providing strategies that increase retention and successful graduation for FTIC and Transfer students. FIU awarded 12,678 Bachelor's degrees in 2020-21, 30% of which were in STEM and Health (over 3,500). Increasing passing rates in STEM courses, including mathematics, will increase the progression of students towards their graduation and move FIU closer to their goal of increasing up to 12,800 Bachelor's degrees over the next 5 years.

- d. *Increasing the percent of Bachelor's degrees awarded within programs of strategic emphasis including STEM and Health (Goal 1, 2, and 3):* Goals 1, 2, and 3 will impact this metric by improving the progression to graduation of students who take STEM courses. We anticipate that students that major in STEM and Health (a BOG emphasis category) will directly benefit from this initiative and graduate at a higher rate.
- e. *Improve the percent of Bachelor's graduates enrolled or employed AND Improve the median wages of Bachelor's graduates employed full-time (Goal 4):* Goal 4 explicitly supports STEM students' preparation for graduate and professional school and their entry into the STEM workforce, thus impacting the number of Bachelor's recipients who enroll in postgraduate studies or are employed in their field. Also, as careers in STEM command higher salaries and provide paths that contribute to social equity, we anticipate that this initiative will impact this metric.

Specific Activities in This Initiative

- **LA Transfer Coaches: Leverage the STEM Transformation Institute's Learning Assistant (LA) Program by establishing a specialized LA role that intentionally supports incoming STEM transfer students:** Many LAs are transfer students themselves and therefore have the experience and knowledge needed to support new transfer students effectively. *LA Transfer Coaches* will promote the social and academic integration of transfer students into STEM communities on campus, coach students academically with a focus on identifying and achieving career goals and connect them with the wide array of campus resources including with research opportunities in STEM departments. *LA Transfer Coaches* will be recruited from the pool of experienced LAs (several hundred experienced LAs work in the Program every year) and will be provided with specialized professional development to prepare them to support STEM transfer students, including becoming knowledgeable of existing institutional resources and support mechanisms at FIU. In this role, they will work with transfer students in specific STEM courses *during class* and support their social and academic integration on campus. This placement of peer-to-peer, just-in-time support within STEM classrooms is essential for impacting institutional student success. *LA Transfer Coaches* will also invite transfer students into the LA Program to further support networking opportunities with faculty and student peers. *LA transfer coach* preparation will also include professional development through the college life coaching program which focuses on critical skills that have been found to be successful with FIU students, including active listening, goal setting, and time management.
- **Senior Learning Assistants (SLAs): Expand the role of experienced Learning Assistants to enhance use of evidence-based instructional practices and support students' mental health:** Experienced Learning Assistants are a valuable institutional resource that can help amplify the impact of evidence-based instruction, by supporting effective learning environments, promoting

pedagogical innovation and supporting students' positive mental health. We will develop a training track for experienced LAs (available after two semesters of regular LA experience) to become *Senior Learning Assistants* (SLAs). SLAs will receive additional professional development beyond what is already provided to LAs through a new SLA seminar course. This seminar course will focus on strategies to effectively mentor peer LAs in their courses/LA cohorts as well as support students' positive mental health (e.g., recognize early indicators of concern, become safe zone advocates, understand campus resources to help students, etc.). Prior research indicates that LAs support students' learning, course performance and the development of their professional/STEM identities. SLAs will be positioned as peer leaders within LA teams (many LA-supported classes have large enrollment and involve multiple sections of courses supported by several LAs simultaneously). Thus, SLAs will expand the mentoring support network of LAs and lead to more effective classroom instructional teams. Additionally, SLA roles may include providing formal feedback on curriculum design and implementation to faculty and administrators, thus improving evidence-based, transferable pedagogical practices across FIU. SLAs will be particularly key in working with new faculty adopters of Learning Assistants and in supporting the development of new curricula that incorporate LAs in key STEM courses. The development of the support system (at an appropriate scale) to identify, match, and support the SLAs will be built using the LA Campus software platform.

- ***STEM Faculty Mentor Program: Harness the leadership potential of STEM faculty who have developed expertise in STEM education by positioning them to promote the professional development of their colleagues and foment further adoption of evidence-based strategies:*** 10 Faculty Mentors will be supported for one year to lead small Faculty Learning Communities which will guide other faculty through the adoption of evidence-based practices (e.g., active learning pedagogies, use of Learning Assistants, development of competency-based assessments, etc.). This institutional change mechanism has the dual objective of (a) developing institutional leaders in innovative instruction while (b) leveraging their expertise to expand the use of evidence-based practices to new faculty. *Faculty Mentors* will be supported by strategic course buyouts to allow them sufficient time to effectively take on this role, as well as stipends to compensate for their efforts. The *Faculty Mentors* will be prepared for this role through a series of advanced workshops on active learning strategies, working with Learning Assistants, and curricular (re-)design. Their roles will include facilitating and leading summer discussions with their assigned faculty learning communities, conducting classroom observations in the Fall and Spring, providing feedback to their Mentees, and holding individual meetings to support the adoption of active learning strategies. Faculty Mentees will be supported by a stipend to compensate their participation in the professional development initiative (including summer participation), in-class support

from Learning Assistants, and out-of-class support from their *Faculty Mentor* and *STEM Education Ambassadors*. To address the particular needs of FIU's faculty, three *Faculty Mentors* will be allocated to mathematics, three will be allocated to engineering & computing, with the remaining four allocated to non-mathematics, non-engineering STEM faculty.

- **STEM Education Ambassadors: Expand the expertise and advocacy of evidence-based instructional practices by developing a pipeline of STEM Education Ambassadors ranging from recent STEM graduates to postdoctoral fellows:** To support this initiative's focus on the critical transitions of STEM students, we will support *STEM Education Ambassadors* who will directly support the research and practice that underwrites the other activities. This set of activities will build on the success of current institutional initiatives (e.g., Learning Assistant Program, FIUteach, the Discipline-Based Education Research (DBER) programs at FIU) to expand expertise and advocacy of evidence-based instructional practices from STEM undergraduate students through to STEM postdoctoral fellows. We will establish a set of professional development opportunities beginning with recent STEM graduates that will include: (a) a one-year STEM education postbaccalaureate program that provides research experiences for recent graduates, in-classroom placement for professional development in STEM education curriculum and pedagogy, mentoring by faculty, enrollment in relevant courses, and preparation for STEM graduate degree programs (including DBER and STEM teacher programs); (b) DBER Graduate Fellowships to support doctoral students to become future leading university educators and researchers, and support the implementation, evaluation, and research of STEM education student success initiatives; (c) graduate student STEM professional development offerings in STEM disciplines that support the role of Graduate Teaching Assistants in key classrooms, the implementation of evidence-based instructional practices (including the use of Learning Assistants), (d) postdoctoral fellowships to conduct research and evaluation on the impact of innovative instructional strategies through student learning outcomes and classroom observations, while extending their training as future faculty and education leaders.
- **Mathematics Course Enhancements:** As discussed, the critical sequence of mathematics courses leading up to Calculus plays a vital role in the critical transition to college of both FTIC and transfer students. To support students in key mathematics courses, we will implement specific actions to improve access and success: (a) integrating Open Educational Resource (OER) textbooks into courses to lower student costs (supported by four OER faculty adoption leaders and two iMathAS conversion faculty coordinators), (b) implementing tiered undergraduate Learning Assistant (LA) support in large enrollment courses (i.e., *Transfer LA Coaches* and *Senior LAs* – see descriptions above), and (c) integrating low-cost, individualized online learning systems into courses to guide students through challenging topics. OER textbooks provide students with access to learning materials at low or no cost and have

been developed over the last twenty years by faculty around the country using evidence-based curricular approaches to align with existing FIU evidence-based instructional practices. Moreover, in many cases these OER texts align well with open-source online learning systems such as the iMathAS platform currently used at FIU for college algebra and some sections of precalculus. So, an OER-based presentation of material in large enrollment courses such as college algebra, precalculus, and calculus will leverage existing efforts in some of those courses by expanding the iMathAS system to utilize an OER textbook as the guide for the course. This would substantially lower costs for students (to almost nothing) while creating a familiar system of tools that they could use across multiple semesters as they progress. A tiered LA system in which LAs progress from basic student support to active involvement in the instruction, to leading instructional support and development work would integrate progressive experience with the OER and support tools. At the most advanced level of the LA seniority system, *SLAs* will work with cohorts of struggling students to address specific areas of difficulty in courses using the tools. They would work with Faculty Mentors to implement ambitious support services in the Mastery Math Lab and in subsequent advanced courses. *SLAs* would, for example, work with cohorts of transfer students directly to facilitate their transition to the university environment by working with them to learn how to use these systems and OER tools productively while also developing study and time management skills that lead to successful progress through these courses. These programs would work synergistically with graduate student support through the professional development of graduate students as they prepare to work as Graduate Teaching Assistants, primarily in Calculus. In this way, the future generation of mathematics faculty would be developed who have experience with effective, evidence-based instructional practices and tools.

- **STEM Career/Graduate School Preparation:** Activities to support student preparation for graduate school and STEM careers will include: (a) expanding course-based undergraduate research experiences (CURES), (b) increasing paid undergraduate research opportunities (c) increasing students' awareness of internship and co-op opportunities and (d) helping students navigate processes of applying for and transitioning into internship opportunities. Many undergraduate students have limited understanding of what research is, what graduate school is, whether graduate school aligns with their interests and career goals, and if they themselves have the knowledge and skills to succeed in graduate school. By expanding students' opportunities to "try out" doing research – through a combination of course-based undergraduate research experiences (CURES) and paid-position research experiences, students will be able to develop an understanding of research as well develop their self-confidence in research. In both the CURES and paid-position research experiences we will incorporate exposure to modules on graduate school. We anticipate that students will be more interested in graduate school if they have positive undergraduate research experiences but

will still need more coaching about graduate school (e.g., how to identify programs that are a good fit; how to apply to graduate programs; how to find opportunities for funding as a research or teaching assistant while in graduate school; applying for fellowship opportunities; etc.). Similarly, having experience working in professional practice through internships will help students develop a better understanding of post-graduate career possibilities and help them develop confidence in their ability to succeed in professional practice. Internships also help students develop their resumes and their networks of potential future employers. To increase students' awareness of internship opportunities, we will develop messaging and classroom modules for use in sophomore and junior level classes about these kinds of opportunities. We will also help students navigate the process of applying for and transitioning into internships using services offered by our Career and Talent Development offices, augmented by coaching from SLAs who have previously participated in internship experiences. By working with the Offices of Micro-Credentials and Career and Talent Development, we will be able to leverage innovative pilot projects underway across the university and apply them to the STEM context. This will be critical in further enhancing FIU's engagement with current Strategic Employer Partners and building pathways that will not only ensure students develop in-demand competencies, but also have access to professionals that will facilitate their development of important skills such as networking and presenting.

- **STEM Research Experience Stipends:** These stipends will support the expansion of available undergraduate research experiences for students. These experiences are critical to ensure that students who may not have thought about a lab or research career have access to understand what this may look like and build their confidence in selecting this as a career path.
- **Active Learning Classroom Renovations:** **Renovate existing traditional classrooms into state-of-the-art teaching spaces to facilitate the use of active learning strategies by STEM Faculty Mentors, Mentees, and other faculty implementing evidence-based instruction:** FIU is a leader in leveraging the active-learning, technology-driven classrooms to dissuade the over-use of lecture methods and promote student engagement and evidence-based teaching strategies. New classrooms are now routinely built to support active learning practices, with access prioritized for faculty who use active learning methods (including Learning Assistants), thus incentivizing evidence-based instructional practices. Newly opened active learning classrooms have averaged over 80% utilization by STEM courses implementing active-learning practices. However, requests for specific active learning rooms persistently outpace availability and there is continuous need for creating additional active-learning classroom capacity. We include funding for one-time retrofit of at least 10 of the more outdated traditional classrooms that do not yet have the design or technological infrastructure that is required by state-of-the-art instructional design.

Alignment with SUS Strategic Priorities and 2021 FIU University Accountability Plan

The Initiative is well aligned with the goals of the SUS 2025 System Strategic Plan Goals as well as FIU's Accountability Plan. First, it will increase the number of degrees awarded at FIU, particularly in STEM fields, as well as the quality of those degrees by transforming instructional practices and improving student outcomes. Second, it directly increases the community and business workforce, as our graduates will have opportunities to gain relevant research experience and be prepared to be fully employed in their disciplines upon graduation or to seek further educational opportunities. Third, it will allow FIU to lead more boldly in STEM education instruction and research, by supporting a community of scholars at all levels to teach in innovative ways and conduct innovative STEM education research, which will continue to attract external funding and have the potential to lead to commercialization.

The initiative immediately addresses the **SUS Strategic Priorities**, including:

- **SUS Goal - Teaching and Learning; Increase Degree Productivity and Program Efficiency:** The initiative's focus on core mathematics courses aims to address a well-known barrier for persistence and completion of STEM degrees. Student support activities through *LA Transfer Coaches*, *Senior LAs*, and intentional course reform will result in increased passing rates and lead to increased graduation rates. Thus, this initiative will address this SUS goal to "*increase access and efficient degree completion for students*".
- **SUS Goal - Teaching and Learning; Increase the number of Degrees Awarded in STEM/Health and other Programs of Strategic Emphasis:** This SUS Goal aims to "*increase student access and success in degree programs in STEM/Health fields and other programs of Strategic Emphasis that respond to existing, evolving and emerging critical needs and opportunities*". This initiative will increase the success of students in STEM courses and will lead to increased numbers of STEM graduates.
- **SUS Goal - Scholarship, Research, Innovation; Strengthen the Quality and Reputation of Scholarship, Research, and Innovation:** This goal aims to (1) "*increase undergraduate participation in research to strengthen the pipeline of researchers pursuing graduate degrees*" and (2) "*improve the quality and impact of scholarship, research, and commercialization activities*". This initiative directly addresses both these goals by creating new opportunities for students to gain STEM research experiences through course-based undergraduate research experiences, internships, and co-ops, which prepare them for graduate school and/or entry into the STEM workforce. Additionally, the STEM education research (conducted by STEM Institute-affiliated faculty and *STEM Education Ambassadors*) will improve the quality of scholarly activities in a field in which FIU is a national leader and create opportunities for community engagement through outreach

- and business commercialization through new start-up projects (in engineering internships and co-ops, for example).
- SUS Goal - Community and Business Engagement; Increase Community and Business Workforce: This SUS goal aims to *"increase the percentage of graduates who continue their education or are employed full-time"*. This initiative will directly address this goal by supporting students' preparation for graduate school and STEM careers in Florida and nationally, thus increasing the number of Bachelor's degree graduates that pursue additional education opportunities or are fully employed in the STEM workforce.

The initiative immediately addresses **FIU's Accountability Plan goals and objectives**, including:

- Mission: providing *high-quality teaching, state-of-the-art research and creating activity* to serve our diverse student population.
- Statement of Strategy: This initiative is aligned to FIU's Accountability Plan strategy by *"address[ing] unprecedented opportunities to [...] lead more boldly in areas of teaching, research, [...] and public policy"*. The initiative will support *"outstanding faculty who are leading world-class programs"* such as the LA Program and CTTM, who are *"conducting cutting edge research in STEM education and implementing future-focused and innovative teaching methods."* Finally, by increasing the academic and professional success of STEM students this initiative is *"support[ing] the entire state of Florida through a robust economic recovery."*
- Key Initiative and Investment – Amplify Learner Success & Institutional Affinity: Through our student-centered activities, such as the LA Transfer Coaches and the Senior Learning Assistants, we are supporting student success by creating *"a greater sense of institutional affinity, a well-nurtured sense of belonging, and optimism towards the future."* The activities supporting the improvement of STEM courses (e.g., Faculty Mentor Program, mathematic course enhancements, STEM Education Ambassadors) also align with *"our learner-centric model that supports the dynamic needs of our students and graduates"*; while the creation of research experiences, internships, and co-op work experiences for our students will *"meet and exceed contemporary industry needs and respond to very expansive and agile workforce needs focused on innovation."*
- Key Initiative and Investment – Accelerate Preeminence & Research and Innovation: Central to this initiative is the STEM Transformation Institute, one of six designated Preeminent Programs at FIU, which is aligned with its partners of SUCCEED and the CTTM. Thus, this initiative directly supports the expansion of the activities one of the *"preeminent and emerging preeminent programs that collaborate across disciplines and generate new knowledge and innovative solutions for the betterment of ... society."*

Top Three Performance-based Funding Metric impacted through this initiative:

1. Two-Year Graduation Rate for FCS Associate in Arts Transfer Student (Metric 9a).
2. Four Year Graduation Rate (Full-time FTIC) (Metric 4)
3. Bachelor's Degrees Awarded in Areas of Strategic Emphasis (Metric 6)

Top Three Preeminent Research University Funding Metric impacted through this initiative:

1. Total Annual Research Expenditures (Science and Engineering)
2. 4-year Graduation Rate (Full-time FTIC)
3. Freshman Retention Rate (Full-Time FTIC)

Impacts on academic programs, student enrollments, and student services

The initiative will impact every STEM student who enters FIU through new and improved academic programming, expansion and enhancement of evidence-based instructional practices in STEM courses, increased access to career relevant research and work experiences, as well as increased support for student wellbeing and positive mental health. Additionally, this initiative will also impact Health majors and other non-STEM students that take many STEM courses as part of their degree (requirements and electives). The culture of teaching excellence will also be solidified in all STEM departments by expanding evidence-based instruction and data-informed improvement, through positioning FIU students, trainees and faculty as STEM education experts and advocates. These transformations will reduce individual course failure rates within two years of implementation, leading towards increases in graduation rates towards the university goals. This goal is aligned with the standard of excellence as established by the SUS Performance Funding Metrics. We also anticipate increases in the number of STEM majors and graduates (through increased retention and persistence) as has been observed with other successful initiatives.

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. University of Distinction proposals should also address the requirements outlined in the separate guidance document.*

This Initiative will transform the education experience for FIU's 12,000 science, mathematics, engineering and computer science majors, over 80% of which are from traditionally underrepresented minority groups and 25% of which are first generation college students. It leverages existing commitments to STEM education transformation and a national climate devoted to classroom education reform. The focus of the Initiative on evidence-based innovations in innovation and student success will increase FIU's research capacity and expand funding opportunities that will lead to increased grant funding, improved student

performance, and national recognition of the institution. Further, it will stimulate adoption of similar instructional innovations at universities and colleges across Florida and the country. The initiative explicitly targets: (1) solidifying a culture of STEM education innovation and excellence by expanding evidence-based practices and providing professional development to faculty; (2) intentionally supporting STEM transfer student success, retention and graduation; (3) enhancing mathematics courses to support student success and persistence in STEM degree pathways, (4) preparing STEM undergraduates for successfully continuing their education (e.g., graduate or professional school) and/or entering the workforce. Additionally, this initiative aims to gather and analyze classroom data, and disseminate the classroom transformation model for the state. These actions will lead to improved student learning and success in STEM courses that will lead to improved retention, graduation rates, and employment.

We expect a significant Return on Investment (ROI) due to this initiative, in areas of student success, institutional capacity building, and research productivity and dissemination:

Student Success ROI

Improvements in student success gained through the initiative will increase passing rates through critical STEM courses that will, consequently, positively impact the retention and graduation of students. This investment will lead to improvements in both the transfer and FTIC graduation rates, increases in the number of degrees awarded in STEM programs, and improvements in the preparation of students for full-time employment or post-graduate studies (along with the increased salaries that accompany STEM degrees).

Course reform and intentional in-class student support will drive improved student learning and success in courses, leading to improved retention and graduation rates. Based on prior FIU initiatives and national trends in active learning, we expect a 30 - 40% decrease in failure rates in large enrollment introductory courses within four semesters of implementing evidence-based instructional methods and curricula. For the courses with initial failure rates of 20-40%, this translates to an 8-16% overall decrease in the number of failures. We base this on prior work at FIU and the research literature on active learning. For example, at FIU, College Algebra passing rates increased by 25% after evidence-based instruction was introduced across all sections in Fall 2012, rising to the current, sustained 40% increase in average pass rate (compared to the fall 2010 baseline). We have also seen a 70% decrease in failure rates in our studio-based introductory physics courses, compared to lecture courses. Meta-analyzing across all STEM disciplines, a 2014 paper in the Proceedings of the National Academies of Sciences found an average 35.5% decrease in reported failure rates when comparing active learning to traditional lecture courses (www.pnas.org/cgi/doi/10.1073/pnas.1319030111). The increase in passing rates also leads to cost savings for students (decreased costs associated to re-taking courses or extending their time to degree) and the University (additional

costs associated to the instruction of students unsuccessful in key STEM courses). Increased retention of students will also lead to institutional cost efficiencies since FIU can save \$6,150 (in-state) or \$18,540 (out-of-state) in tuition (30 credits x \$205/\$618 per credit) for each student that is retained. We expect that the improved passing rates will (1) increase the graduation rates of STEM transfer students to 45% (2-year) and 85% (3-year), from the current rate of 32% (2-year) and 71% (3-year), and (2) increase the graduation rate of STEM FTIC student to 65% (4-year) and 85% (6-year) from the current rate of 62.3% and 74.6%.

Course reform will be supplemented by in-class student mental health/wellness interventions, which will be launched in the first semester and will impact 4,000-10,000 STEM students in the first year.

This initiative will also impact 200 Learning Assistants (LAs) that will take on roles as *LA Transfer Coaches* and *Senior Learning Assistants*. This will benefit students by facilitating evidence-based STEM instruction and supporting students academically and interpersonally. The LAs themselves will also benefit from significant on-the-job development and career preparation, which positions them to successfully secure full employment or pursue post-graduate studies. Graduation rates have also been shown to be positively impacted by the LA experience and, thus, we expect increased graduation rates and lower cost-to-graduation for LAs involved in this initiative.

Ultimately, this initiative drives economic development by substantially improving learning and skill development for FIU students, as well as enhancing efficiency in degree attainment. Thus, ROI will be evidenced by increases in the number of Bachelor's degrees awarded annually, particularly to STEM/Health disciplines. Our graduates will be well prepared to tackle existing, evolving, and emerging critical needs and opportunities in the global society and technology-driven marketplace. They will be the innovators, entrepreneurs, and start-up leaders of the future. Their reputation for solving global challenges will attract top technology companies to South Florida. Graduates will also benefit from improved employment rates and higher wages, as careers in STEM/Health command higher salaries. Thus, FIU will be *the* reliable catalyst for South Florida's highly skilled and diverse STEM workforce.

Institutional Capacity ROI

This initiative will also lead to ROI through improving FIU's institutional capacity to continue to implement world-class STEM education, including providing professional development to faculty and improving institutional infrastructure.

This initiative includes the professional development of 40 STEM faculty, who will utilize this preparation to expand evidence-based practices in their classrooms and impact thousands of students during and after the initiative. The *STEM Faculty Mentor Program* will provide leadership opportunities for 10 Faculty Mentors who will lead professional development programming thirty additional faculty annually. Faculty mentees will be supported to integrate

evidence-based practices into their classrooms, while receiving additional support from *STEM Education Ambassadors* to engage in evidence-based driven decision-making regarding classroom instruction and student support. This will directly impact approximately 12,000 student enrollments annually.

Additionally, the initiative includes a one-time retrofit of at least 10 of the more outdated traditional classrooms that do not yet have the design or technological infrastructure that is required by state-of-the-art instructional design. These classrooms will be used for STEM courses using evidence-based practices during the initiative and will continue to provide benefits well after the initiative has ended. These classrooms will promote student engagement and faculty adoption of evidence-based teaching strategies and, therefore, improve the success of students in those courses.

Research Productivity and Dissemination ROI

Key to solidifying a culture of teaching excellence that promotes evidence-based, learner-centered, and inclusive teaching is the central role of research on faculty practices and student impact. This effort will be led by over 30 *STEM Education Ambassadors* that include recent graduates (post-baccalaureates), graduate students and postdoctoral fellows, who will support STEM faculty in research and dissemination of student impact. Student learning outcomes are a key driver to sustained transformative instruction (as well as a critical feedback loop element) and will be reported through scholarly products. It is anticipated that this initiative will lead to *STEM Education Ambassadors* and STEM faculty producing at least 50 scholarly products (publications and presentations) annually. Additionally, we expect all *STEM Education Ambassadors* that are graduate students and postdoctoral fellows will seek external research funding and/or fellowships to support their training and other research endeavors. Postbaccalaureate *STEM Education Ambassadors* will be expected to apply to fellowships to support future education paths, as appropriate and available.

III. Personnel – *Describe personnel hiring and retention plans, making sure to connect both plans to initiative(s) and goal(s) described in section I. State the amount of faculty FTE and staff FTE and estimated funding amounts used for retention and new hires in each category. In describing faculty hires, provide overall hiring goals, including academic area(s) of expertise and anticipated hiring level (e.g., assistant professor, associate professor, full professor. Please describe how funds used for faculty or staff retention will help the institution achieve its stated goals. University of Distinction proposals should clearly note how anticipated hires or retained individuals will help the institution elevate a program or area to national or state excellence.*

Personnel resources needed to implement the initiative include:

- **10 Faculty Mentors** (supporting Goals 1 and 3): Each *Faculty Mentor* will support a faculty learning community of approximately 3 *Faculty Mentees*, over a year. They will hold discussions on evidence-based

- teaching, provide guidance on course redesign (summer), and give feedback and support during implementation of evidence-based instructional practices (fall and spring). Funding Amounts: 2 weeks summer salary (estimated \$4,000 plus fringe), \$2,000 stipend per Fall/Spring semester. Sub-total = \$9,759 per Faculty Mentor (including fringe); **Total = \$97,588**
- **30 Faculty Mentees** (supporting Goals 1 and 3): Faculty Mentees will participate in the redesign of key STEM courses and implementation of evidence-based instruction, with support of one Faculty Mentor. Funding Amounts: 2 weeks summer salary (about \$4,000 plus fringe), \$2,000 stipend per Fall/Spring semester, Subtotal = \$9,759 per Faculty Mentee (including fringe), **Total = \$292,764**
 - **4 OER faculty adoption leaders and 2 iMathAS conversion faculty coordinators** (supporting Goal 3): The OER adoption leaders will work to support the adoption of OER materials in key mathematics courses including restructuring of curriculum and pacing. The iMathAS conversion coordinators will help align problem sets, homework and quizzes with the chosen OER textbooks in this open system. Funding Amounts: OER Faculty Adoption Leaders: \$5000/leader stipend (plus fringe), iMathAS conversion faculty coordinators: \$5000/coordinator stipend (plus fringe); **Total = \$31,593**
 - **Faculty Mentor for GTA Professional Development** (supporting Goals 1 and 3): A faculty mentor will lead the professional development activities for the STEM Education GTAs. Funding Amounts: \$5000 stipend (plus fringe); **Total = \$5,265**
 - **1 Assistant Teaching Professor assigned to the Learning Assistant Program** (supporting Goals 1, 2, and 3): A full-time faculty member will be hired as an Assistant Teaching Professor to support the LA program and have primary roles in the formal instruction of LAs (including teaching a tools-based LA seminar and designing and teaching seminars for Senior LAs and Transfer Student Ambassadors). This faculty will have a doctorate in a particular area of Discipline-Based Education Research with expertise in curricular design and adoption of evidence-based practices in undergraduate STEM courses. In line with the longstanding practices in the STEM Transformation Institute, this faculty will be jointly appointed between the STEM Transformation Institute and the STEM Department of their disciplinary expertise. This will support both the faculty member's professional development and success at the institution and will also ensure that they have impact on the teaching in their discipline, as members of a STEM department. Funding Amount: 9-month base salary at \$80,000 plus 38.66% fringe; **Total = \$110,928**
 - **1 Assistant Teaching Professor assigned to the STEM Education Ambassador Program and LA program at the Engineering Center campus** (supporting All Goals): To support the implementation of these activities within the College of Engineering and Computing, a full-time

faculty member will be hired as an Assistant Teaching Professor to support the implementation of the STEM Education Ambassadors program, LA program, and CUREs at the Engineering Center campus. This person will serve as a touchpoint for faculty and students who primarily teach and learn at the Engineering Center. They will have roles in the formal instruction and mentoring of LAs (including teaching a tools-based LA seminar and designing and teaching seminars for Senior LAs and Transfer Student Ambassadors), supporting engineering faculty in developing CUREs, and mentoring STEM Education Ambassadors. In line with the longstanding practices in the STEM Transformation Institute, this faculty will be jointly appointed between the STEM Transformation Institute, the School of Universal Computing, Construction, and Engineering Education and the Engineering/Computing Department of their disciplinary expertise. This will support both the faculty member's professional development and success at the institution and will also ensure that they have impact on the teaching in their discipline, as members of an Engineering/Computing department. Funding Amount: 9-month base salary at \$80,000 plus 38.66% fringe; **Total = \$110,928**

- **STEM Education Ambassadors:**
 - **10 STEM Ambassador Post-baccalaureate Fellows** (supporting All Goals): STEM Education Ambassador post-baccalaureates will conduct research on STEM education, support data collection and evaluation of STEM courses, and support curriculum improvement. At least 2 Ambassadors will have primary duties of supporting evidence-based instruction in Engineering courses. Funding Amount: One year fellowship at \$30,000 plus fringe, **Total = \$315,930**
 - **20 Discipline-Based Education Research (DBER) Graduate Student Fellowship Supplements** (supporting All Goals): A prestigious graduate student research fellowship program will be created for graduate students to develop skills as both future university educators and education researchers. These DBER Graduate Fellows will work with DBER faculty to implement and provide data on student impact and improved faculty instruction. Additionally, when eligible, they will apply to the prestigious National Science Foundation Graduate Research Fellowship to support their studies. Funding Amount: One year fellowship supplement at \$8,000 (plus fringe) to supplement existing graduate stipend up to \$32,000, **Total = \$179,040**
 - **60 STEM Education Graduate Teaching Assistant Supplements** (supporting Goal 3 and 4): We will create a series of professional development offerings for Graduate Teaching Assistants teaching key STEM courses and laboratories. We will particularly support GTAs teaching STEM courses that incorporate authentic research experiences (e.g., CUREs), as well as TAs that mentor LAs in their

courses. Support will be provided for GTAs to participate in these professional development activities. Funding Amount: 60 supplements of \$2,000 (plus fringe) per semester for STEM GTAs to complete professional development activities (25 in Fall, 25 in Spring, and 10 in Summer), **Total = \$126,372**

- **10 Graduate Teaching Assistants (GTAs) in Introductory Mathematics Courses to Expand GTA Presence** (supporting Goal 3): Due to the relatively new PhD program in mathematics, Graduate Teaching Assistants currently have a limited number of roles in mathematics courses. To support the professional growth of GTAs as teachers and leaders in mathematics, many of whom are members of underrepresented groups, support will be provided to (a) recruit strong undergraduates into the mathematics PhD while also (b) providing them an opportunity to develop teaching experience using evidence-based, effective teaching practices in a variety of courses and roles. Funding Amount: 10 Graduate Teaching Assistants each at \$32,000 per year (plus fringe); Stipend for Faculty mentor to lead Professional Development for GTAs \$5,000; **Total = \$358,080**
- **4 STEM Education Ambassador Postdoctoral Fellows** (supporting All Goals): STEM Ambassador Postdoctoral Fellows will conduct state-of-the-art research on evidence-based instruction and STEM education, leading to improved student success measures. They will also develop grant proposals to seek external funds. At least one postdoctoral fellow will have primary duties supporting evidence-based instruction in Engineering courses. Funding Amount: One year fellowship at \$52,000 per year (plus fringe 38.66%); **Total = \$288,413**
- **Specialized Learning Assistants:**
 - **100 Supplements for Senior Learning Assistants** (supporting Goals 1 and 3): The salary of 100 LAs will be supplemented for their roles as Senior LAs (SLAs). SLAs will be LA leaders within their instructional team, support the mentoring of other LAs, promote inclusive and safe learning environments, and work with faculty to develop active learning curricular materials that incorporate LAs (particularly in key STEM and upper division courses). Funding Amount: One semester SLA supplement at \$400, with 100 supplements (40 in Fall, 40 in Spring, and 20 in Summer); **Total = \$40,000**
 - **100 Supplements for Transfer LAs Coaches** (supporting Goal 2): The salary of 100 LAs will be supplemented for their roles as Transfer Student Ambassadors. These LAs will receive additional preparation on transfer student challenges and support systems and will provide just-in-time support to transfer students in STEM courses. Funding Amount: One semester Transfer LA Coaches

supplement at \$300, with 100 supplements (40 in Fall, 40 in Spring, and 20 in Summer), **Total = \$30,000**

- **STEM Research Experiences**

- **100 semester-long research experiences in STEM labs:** This funding will be used to expand the ability for students to gain critical hands-on experience in a lab environment. Funding Amount: \$1,500 for Spring/Fall lab experiences (10hrs/week) and \$3,000 for summer lab experiences (20 hrs./week). **Total = \$210,000**

Total Personnel Support: \$2,196,901

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

FIU currently has 18 active learning classrooms with capacity ranging from 48 to 270. With increasing demand in particular for mathematics and engineering courses to utilize active learning classrooms in the range of 48 – 72, we have a need to upgrade more of the existing traditional classrooms and maintain current active learning classrooms to adapt to faculty needs.

	Facility Project Title	Fiscal Year	Amount Requested	Priority Number
1.	Active Learning Room Renovation	2023/2024	\$900,000	1

2023-2024 Legislative Budget Request
Education and General
Position and Fiscal Summary
Operating Budget Form II
(to be completed for each issue)

University: Florida International University
Framework for Innovation in
Issue Title: Undergraduate STEM
Education (FIU STEM Ed.)

	RECURRING	NON-RECURRING	TOTAL
<hr/>			
<u>Positions</u>			
Faculty	2.00	0.00	2.00
Other (A&P/USPS)	0.00	0.00	0.00
	-----	-----	-----
Total	2.00	0.00	2.00
	=====	=====	=====
Salaries and Benefits	221,856.00	221,856.00	\$443,712
Other Personal Services	\$0	1,753,189.30	\$1,753,189
Expenses	\$0	40,000.00	\$40,000
Operating Capital Outlay	\$0	900,000.00	\$900,000
Electronic Data Processing	\$0	\$0	\$0
Financial Aid	\$0	\$0	\$0
Special Category (Specific)	\$0	\$0	\$0
	\$0	\$0	\$0
	\$0	\$0	\$0
	\$0	\$0	\$0
	-----	-----	-----
Total All Categories	\$221,856	\$2,915,045	\$3,136,901
	=====	=====	=====

**State University System
Education and General
2023-2024 Legislative Budget Request
Form I**

University(s):	Florida International University
Request Title:	FIU Program of Distinction on Environmental Resilience
Date Request Approved by University Board of Trustees:	Expected September 2022
Recurring Funds Requested:	\$13,902,973
Non-Recurring Funds Requested:	\$1,910,000
Total Funds Requested:	\$15,812,973
Please check the request type below:	
Shared Services/System-Wide Request	<input type="checkbox"/>
Unique Request	<input checked="" type="checkbox"/>

- I. Purpose** – 1. Describe the overall purpose of the plan, specific goal(s) and metrics, specific activities that will help achieve the goal(s), and how these goals and initiatives align with strategic priorities and the 2021 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. University of Distinction proposals should also address the requirements outlined in the separate guidance document.

A. Introduction

The FIU Program of Distinction on Environmental Resilience is aimed at supporting the Board of Governors Strategic Plan and FIU's 2025 Strategic Plan of achieving exceptional student-centered learning and graduate success, producing meaningful research and creative activities, and leading transformative innovation. In addition, this proposal directly addresses recommendations from both the Florida Council of 100's Project Sunrise report and the Chamber of Commerce 2030 report. Specifically, this proposal will create a "Strong Florida" through the creation of policies and projects that improve the health of Florida's cities and communities, and through a future workforce able to communicate across disciplines and implement convergent research approaches. This budget request addresses two pillars of FIU's strategic framework: 1) Accelerate Preeminence & Research and Innovation Impact, and 2) Amplify Learner Success & Institutional Affinity.

The Environmental Resilience program concentrates collaboration across several of FIU's Preeminent research centers that have gained distinction through State and Federal investments in the recruitment of nationally recognized faculty. These centers and programs, which have secured over \$400M in research awards over the last 10 years, include the Institute of Environment, the Extreme Events Institute, the Institute for Resilient and Sustainable Coastal Infrastructure (InteRaCt), the Brain, Behavior and the Environment Program, and the Center for Children and Families (CCF).

FIU's leadership in environmental research and public health grew out of FIU's distinctive geographic location, diverse population, and vulnerable South Florida ecosystem. From FIU's inception, faculty have focused on environmental research because of the Everglades, the Florida Keys, the coastal regions such as Florida and Biscayne Bays, and our hurricane vulnerabilities. Similarly, the size, heterogeneity and complexity of South Florida's population have attracted world class faculty to FIU to study the region's unique public health challenges.

The FIU Program of Distinction on Environmental Resilience is designed to advance our current research programs and lead to innovative solutions for enhancing local, regional, and national resilience to environmental change, including preparing the workforce needed to address these challenges. It will also raise FIU's academic standing by leveraging existing programs of national preeminence to generate new knowledge and innovative solutions for the betterment of the environment, health, and society. This will solidify FIU's role as a top urban public research university and leader in environmental resilience and solutions. If funded, this proposal for the Program of Distinction will enable FIU to further attract and retain the best, most productive faculty, cultivate future leaders, and nurture all students, post-doctoral scholars, researchers, and staff to excel.

The metrics measuring program success will be as follows:

- At least one metric must demonstrate a year-one accomplishment or success.
 - Autonomous Vehicle Design and Construction for water monitoring by the end of the first year and deployment on the second year.
 - Comprehensive mapping of coastal water monitoring needs.
 - Development of community workshops during the first six months of the year to establish public input and engagement (co-production of knowledge)
 - Within the first year of funding, the Environmental Resilience program will submit at least one student training grant application to the NIH or NSF to financially support students being trained in the program.

- Development of storm-related prevention workshops during the first six months.
- At least two metrics must demonstrate a return on investment to the state.
 - During second year, sessions of the Miami International Conference on Evidence-based Treatments for Childhood and Adolescent Mental Health (MICAMH) dedicated to storm-related prevention workshops for mental health professionals and parents.
 - Enhanced water quality monitoring statewide, securing Florida's coastlines which are crucial for its economic activity from tourism and sustaining its natural marine resources.
 - Development of a Professional Certificate on Environmental Finance to provide sustainable environmental policies and practices for government, NGO, Business leaders and other non-academic stakeholders.
 - FIU will develop a series of professional development workshops and technical reports that will be provided to stakeholders, policy makers, business, and government entities to explore new ways to link finance with environmental resilience.
 - Continued improvement in the U.S. News and World Report "Best States" category as tracked by the Florida Council of 100.
- Metrics that demonstrate how the program has improved over time as a result of the funding.
 - FIU's Program of Distinction continues to be a leader in Florida's Everglades restoration efforts with its "[FIU in the Everglades](#)".
 - FIU's Program of Distinction is emerging as a leader in Biscayne Bay restoration, monitoring and preservation.
 - Centers within the Program of Distinction continue to be successful in proposing and securing external research funding for their projects.
- Metrics and/or rankings to demonstrate program elevation to excellence and prominence.
 - Over the first five years, based on research expenditure growth, of the academic fields associated with the Program of Distinction, the rankings will improve in the NSF HERD's STEM field categories as follows:
 - Psychology – From current #3 of 438 programs among public universities to top 2.
 - Computer Science – From current #38 of 430 programs among public universities to top 30.
 - Environmental Sciences – From current #50 of 431 programs among public universities to top 40.

- Health Sciences – From current #90 of 448 programs among public universities to top 75.

B. Creating Unique, Interdisciplinary Approaches to Florida's Environmental Resilience

This Program of Distinction addresses important environmental challenges: (1) Enhanced Water Quality Monitoring for Coastal Health and Resilience, (2) Environmental Forensics and Public Health, (3) Environmental Finance and Risk Management, (4) Family Preparation and Resilience to Disasters.

1. Enhanced Water Quality Monitoring for Coastal Health and Resilience

Tourism is an important component of Florida's economy, much of which is focused on Florida's more than 600 miles of coastline. These world-renowned economic assets are vulnerable to a myriad of environmental and human-driven challenges, e.g., harmful algal blooms (HAB), which create health risks and had significant negative impacts of up to \$130 million on tourism as reported by the Tampa Bay Regional Planning Council in 2018. Most recently, we have experienced catastrophic 'fish kills', illustrating the vulnerability of the Biscayne Bay Ecosystem and human health and economic well-being.

With funds from NSF, DEP, NOAA and the BOG, we have initiated a state-of-the-art water quality monitoring throughout our southern coastlines as well as in the interior freshwater bodies that transport pollutants to the coastline. Through FIU's Center of Excellence in Aquatic Chemistry and Environment (described below), we are developing those necessary tools to provide the real-time data needed to make predictions regarding harmful algal blooms, fish kill events, and water quality deterioration.

In this initiative, we propose to build on our current Autonomous Vehicle and Buoy sensing platform to measure and predict the occurrence of water quality and infrastructure issues and their likely severity and impacts on coastal ecosystems. In order to improve ecological models that predict the presence and locations of harmful coastal inputs, FIU seeks to understand the factors driving coastal water quality collapse.

FIU has now initiated a comprehensive monitoring program and have initiated new sensor platform technologies. We have made strategic hires to enhance and broaden our expertise. However, we have discovered an alarming increase in novel emerging contaminants such as pharmaceuticals in bonefish and Polyfluoroalkyl substances (PFAS), all of which threaten human health. To trace the origins and transport of these dangerous chemicals, we require new instrumentation and technologies to full assess the magnitude of the problems. We are currently one of only a few universities, US wide that

have the basic technology to measure these contaminants although we have to outsource some of pharmaceutical analyses to other laboratories. We require this support to build and support new technologies to ensure it is well-positioned to help answer the critical questions facing Florida.

To fully utilize the data, FIU has begun to develop a near-real-time database for Biscayne and Florida Bay, and the Florida Keys built on our 20-year record of data collected along a series of monitoring stations. In addition to a spatially explicit database, computer scientists in our CREST Center (described below) are developing computer algorithms to search other existing city, county, and state datasets such as those at Florida Department of Environmental Protection (FDEP), South Florida Water Management District (SFWMD), Miami Dade County, etc., to harvest existing data and more fully populate the FIU database with ancillary information.

It is important to note that while it is imperative to be able to predict where and when nuisance algal blooms will occur to prevent human health issues, it is equally important to be able to predict where coastlines are free of such events and readily usable to the public and tourists.

2. Environmental Forensics and Public Health

Environmental Forensics requires a cross disciplinary approach that encompasses the understanding of the sources of environmental contaminants, their transport through key ecosystems and their subsequent incorporation into humans and other fauna. The role of elements such as magnesium, calcium, zinc, or manganese in high concentrations are now known to be involved in the onset and progression of chronic diseases like Alzheimer's or Parkinson's.

This initiative will: (a) improve basic scientific understanding of global change and anthropogenic effects caused by multiple environmental drivers, the physical and biological responses measured in water quality, soil, and sediment contamination, emerging diseases, invasive species, and other global stressors that are a risk to ecosystems and community health – filling the knowledge gap; (b) train students in the practices and uses of technologies needed to better understand risk assessment and mitigation with innovative solutions; and (c) provide state of the art facilities that can support faculty and student researchers at FIU and around the nation – to fill research gaps that now exist because the capabilities and instrumentation are not available.

The team composition reflects the complex nature of the problem; toxic metals, for example, are affecting ecosystems like the Florida Everglades and its resources, inducing adverse outcomes pathways in marine organisms, influencing mental health of populations, and creating environmental

inequalities in minority populations. Another area of concentration is the characterization of environmental materials for provenance discrimination and/or geographic origin identification.

3. Environmental Finance and Risk Management

FIU has established an Environmental Finance and Risk Management Program (“Environmental Finance”) to provide useful data and sustainable environmental policies for government and the private sector. The goal of the program is to apply the most sophisticated financial modeling to the latest environmental data in real time, so that the market has an accurate picture of the environmental risks. To date, we have created a graduate certificate program. We now need to expand this to a Professional Certificate for non-academic stakeholders.

A main focus of the program is to help ensure the proper operation of efficient markets within a sound public policy framework. For example, the programs help make sure that flood and hurricane insurance are priced correctly, and that investments in mitigation and adaptation measures are accurately reflected in the price. By linking theories and modeling techniques of finance and environmental sciences via mathematics and data science, and then studying the practical applications of this to environment-linked securities, the Environmental Finance program will offer a first-of-its-kind academic model for assessing, managing, and reducing the most serious environmental risks facing Florida and the world.

FIU’s Environmental Finance program provides solutions to environmental challenges that require research from many different fields to address. This program includes researchers and faculty from engineering, finance, mathematics, data analytics, risk management, resilience, sustainability, environmental law and policy, and coupled systems. It will also emphasize environmental finance’s relevance to a growing number of commercial and policy applications. This integrated, interdisciplinary program will prepare a generation of leaders with expertise in those disciplines to meet the gravest environmental challenges, and either find or create high paying careers.

The program uses a unique “convergent” research approach that combines financial engineering and environmental science. This integration of finance and environmental science can be achieved by applying advanced financial models to environmental data in real time, so that governments and markets can correctly “price” the full array of environmental risks. Without this quantitative approach, many of our most crucial resiliency strategies are a matter of speculation with the potential for enormous social losses, whether risks are underestimated or overestimated, inflicting losses on taxpayers one way or the other.

The Environmental Finance program is built like a pyramid, with research at the base, followed by education, stakeholder outreach, and solutions at the apex.

- **Research.** With a focus on environmental parameters as triggers for financial flows, EFRM's basic research will help governments and markets to assess and price environmental risks in real time on the basis of the latest data. These applications can help strengthen and advance virtually every area of sustainable finance, from disaster preparedness and resilience to climate change mitigation and environmental sustainability, through advanced financial instruments such as catastrophe bonds, weather derivatives, index insurance, carbon emissions trading systems, debt-for-nature swaps, mitigation banking, green bonds, and ESG investments
- **Education.** The program currently offers a Graduate Certificate, which was partially supported by a grant from the Volo Foundation. We now need to expand to a Professional Certificates. The Mitre Corporation has expressed interest in partnering with FIU. The certificate programs will be taught in-person and fully online for working professionals. The certificates will also be made available to non-degree-seeking students from around the state, country, and internationally.
- **Outreach.** EFRM also has a robust program of community, state, and national outreach. Program researchers are working with government entities to increase awareness of regional resiliency efforts and are working with stakeholders to develop reports and recommendations for a coordinated regional strategy for addressing critical environmental challenges.
- **Solutions.** Building on those foundations, our program will craft innovative solutions to critical environmental problems that governments and the private sector need in order to prepare for future challenges.

4. Family Preparation and Resilience to Disasters

Given increasing risk from severe weather and other shock events in Florida, preparing the state's most vulnerable populations is critical, in both pre- and post-impact periods. FIU's Center for Children and Families (CCF) and Extreme Events Institute (EEI)/International Hurricane Research Center (IHRC) are well positioned to address this critical challenge. The CCF-EEI/IHRC teams will coordinate to develop workshops focused on promoting storm- and shock-related media literacy for Floridians by helping families (a) make sense of meteorology reports, storm updates, and shock event coverage, (b) learn to distinguish actionable updates from more "spectacle-focused" coverage and appreciate the negative impacts that extensive media exposure can have on child and family functioning. Parents will receive coaching on how to talk to children across different

developmental levels about impending storms and shock events, about destruction and loss, and will be trained on how to identify signs of significant impact and adjustment difficulties in their children and themselves.

In the context of shock or severe weather events, addressing emotions and preparation is not only critical from a public mental health perspective, but also from a public safety perspective. Research documents how stress and irrational public behavior constrain responsible decision-making and place Floridians at risk. During storm watches for example, masses of individuals not dwelling in evacuation zones make emotion-based decisions that contribute to pervasive traffic congestion/gridlock and widespread gas shortages that disrupt and prevent timely evacuation for those in mandatory evacuation zones and in immediate danger. Poor pre-season household preparation (e.g., stocking water, non-perishables, batteries, and other supplies) leads to abrupt supermarket shortages during individual storm watches that lead to additional unwarranted evacuations that burden the smooth and timely flow of evacuees from high-risk/mandatory evacuation regions. In fact, one of the leading reasons individuals in high-risk zones give for not choosing to evacuate is their concern that evacuation routes (and subsequent return routes) will be overcrowded and that they will not be able to access needed fuel along the way.

Once the shock- and storm-related prevention workshops are developed, the CCF is well-poised to disseminate them to the rest of the State of Florida through multiple mechanisms. The CCF's annual Miami International Conference on Evidence-based Treatments for Childhood and Adolescent Mental Health (MICAMH) can be used as a dissemination site as it is attended by mental health professionals from around the state. Further, the CCF has extensive experience disseminating information to health professionals throughout Florida and the U.S. through its decade-old website on Evidence-based Practices in Child Mental Health. Further, Dr. Jonathan Comer, a member of the CCF with expertise on the impact of disasters on child mental health, has developed procedures for modifying parenting programs to be delivered over the internet, and has shown that the impact is comparable to face-to-face trainings/sessions. Thus, the team will develop both face-to-face and web versions of shock- and storm-related prevention materials. The dissemination effort will also be facilitated through the extensive networks of FIU's Extreme Events Institute (EEI) and International Hurricane Research Center.

C. Workforce of the Future

The future workforce will need to be able to communicate across disciplines, implement convergent research approaches, and navigate the technological

innovations of coming decades. Attracting and retaining top research faculty will provide our undergraduate and graduate students with exceptional preparation for innovatively solving the most critical environmental resilience challenges. In addition to traditional in-class and lab training, this proposal includes extensive field opportunities and innovative workforce training components. The U.S. Bureau of Labor Statistics, Employment Projections program highlights that future jobs will require degrees, credentials, and skills offered by trans-disciplinary programs, such as Environmental Risk Management, Engineering, Public Health, and Disaster Management.

Alongside the research programs mentioned above, we will develop the workforce needed to enhance environmental resilience locally and nationally. A few specific programs to be added to our current offerings include:

Certificate in Environmental Finance and Risk Management.

As mentioned above, very few students or faculty have training in both finance and environmental science. Our newly created Graduate Certificate links our pre-eminent Institute of Environment with our nationally ranked programs in mathematics, statistics, finance, policy, law, business, and engineering, not only for our students but for professionals from around the country and the world who are working to solve the challenges of Environmental Resiliency. The overarching goal of the Certificate Program is to spur an understanding of how the modern global financial system interacts with multiple natural systems. Specific goals are to train future scientific, financial, and policy professionals in:

- The advanced quantitative skills required to understand, evaluate, and price modern financial instruments that are linked to environmental parameters. Such skills include scientifically based risk assessment, analytic techniques of mathematical finance, and computer-based simulation techniques.
- Key statistical methods and techniques for applying these methods to scientific and financial data.
- Key concepts of the role of finance as part of the dynamic coupled Earth Systems.

Environmental Fellows pipeline and top student recruitment.

The Environmental Fellows pipeline will be focused on the development and recruitment of top-qualified and diverse talent from South Florida schools. This will include high school teacher trainings, intense summer research experiences, guaranteed undergraduate research placements and paid internships in the fields related to Environmental Resilience.

Graduate student retention, doctoral student and postdoctoral fellow support. Graduate students and postdoctoral fellows constitute a fundamental

scientific workforce for research centers and research programs. FIU will provide financial support for recruitment and retention of graduate students and postdoctoral fellows who will work with the faculty directly involved with these programs.

Industry partnerships, trainings and certifications.

This funding will support partnerships with industry in developing technological solutions to address environmental challenges and partnerships in workforce training.

Artificial Intelligence & Robotics.

Automation and machine intelligence promise to fuel economic growth and produce new occupations, with likely impact on almost all industries and occupations. The broad-based application of Artificial Intelligence (AI) to software and hardware systems is launching a significant leap forward, creating intelligent software applications and robotic machines that learn from experience to make decisions and process vast amounts of data to reach independent conclusions. Therefore, we propose training in automation and robotic processes, in partnership with our Robotics Academy.

To further disseminate the findings, FIU will develop a series of professional development workshops that can be provided to stakeholders, policy makers, business, and government entities to explore new ways to link finance with environmental resilience.

C. Research Centers and Programs Participating in the Environmental Resilience Core Competence Program

The Institute of the Environment

The Institute of the Environment has over 130 faculty and staff and includes the Southeast Environmental Research Center (SERC), the Center for Coastal Oceans Research and the Medina Aquarius Program, the Florida Coastal Everglades Long Term Ecological Research Program, plus an NSF-funded Center of Excellence on aquatic chemistry and ecotoxicology. It also includes the Sea Level Solutions Center, bringing together faculty from nearly every college and school at FIU to address challenges posed by rising seas and other environmental threats. In addition, the Institute features organized research units on the Sustainable Built Environment and Informatics, International Programs, and a UNESCO Chair on Water Security and Social Equity.

From the wetlands of the Everglades to the coral reefs in the oceans, institute researchers are helping to preserve freshwater and marine resources for future generations. The Institute of Environment is the largest research center/institute at FIU, with a portfolio of over \$40M in research awards,

which includes both research grants and training grants for undergraduate and graduate students.

The Director of the Institute, Dr. Todd Crowl, has more than 30 years of experience working on interdisciplinary projects related to ecosystems science and aquatic ecology, including urban stream ecology. Dr. Crowl has received and managed more than \$40M of grants, including two of the NSF's largest Center of Excellence awards.

The Institute of Water and the Environment houses several flagship programs that have State of Florida, national and international recognition. These flagship programs include:

- The Center for Aquatic Chemistry and the Environment (CACHÉ): A National Science Foundation (NSF) Center of Research Excellence in Science and Technology (CREST) that tackles one of the most complex challenges—environmental contamination. CREST has funded over 30 PhD students and over 50 undergraduate and master's students.
- The Florida Coastal Everglades (FCE) LTER Program: Part of the Long-Term Ecological Research (LTER) Network established by the National Science Foundation in 1980. The FCE LTER Program was established in May of 2000 in South Florida, where a rapidly growing population of over 6 million people live near - and in dependence upon - the Florida Everglades. The program includes 86 senior scientists and 77 students from 29 institutions. FCE researchers study how hydrology, climate, and human activities affect ecosystem and population dynamics in the ecotone and more broadly, the Florida Coastal Everglades. FIU researchers working in the Everglades provided the data and water quality analyses that were used to set Florida's water quality criteria. The criteria for allowable phosphorus concentrations in freshwater are still in force and have significantly diminished the threat of catastrophic algae bloom in the Everglades.
- The NSF Research Experience for Undergraduates Coastal Ecosystems (REU) Program: This program supports 10-12 undergraduates from across the US to attend FIU during the summers to study our myriad coastal ecosystems.
- The Southeast Environmental Research Center (SERC) Water Quality Monitoring Network. Operated by SERC, the function of the Network is to address regional water quality concerns that exist outside the boundaries of individual political entities. Funding for the Network has come from many different sources with individual programs being added as funding became available. Field sampling occurs over different time periods due to the nature of the funding. The Florida Keys National

Marine Sanctuary and the Southwest Florida Shelf are sampled quarterly. The data summary maps are produced on a quarterly basis by integrating the individual projects into one data file for that month sampled. Previous surveys of Biscayne Bay, Florida Bay & Whitewater Bay, Ten Thousand Islands, and Marco-Pine Island Sound were sampled monthly.

- The Center for Coastal Oceans Research. The Center consists of the Medina Aquarius Program, the world's only permanent undersea research laboratory, and partners with the Florida Keys National Marine Sanctuary, and the Rookery Bay Research Reserve.

The Extreme Events Institute (EEI)

The EEI comprises the International Hurricane Research Center and the Disaster Resilience and Climate in the Americas program. The EEI is a globally involved center for research, education, and training in natural hazards and disaster risk management. The Institute conducts multi-disciplinary research on hazards and vulnerabilities of all types, with emphasis on the role of pre-impact risk drivers. The Institute includes faculty and researchers from the social and behavioral sciences, engineering, computer science, earth and atmospheric sciences, public health, public administration, business, and architecture. The EEI manages the Wall of Wind Laboratory, which was established through a State of Florida Center of Excellence and is funded through the NSF Natural Hazards Engineering Research Infrastructure (NHERI) program. The EEI developed and manages the Florida Public Hurricane Loss Model. The EEI has a portfolio of \$15.6M in research awards from a variety of agencies, including the NSF, NOAA and USAID.

The Director of EEI is Dr. Richard Olson, an international expert on disaster management. Professor Olson was part of a research team to the 1972 Managua, Nicaragua earthquake and was subsequently involved in disaster response, research, and evaluation of more than 20 events, including Guatemala 1976 (earthquake); Chile 1985 (earthquake); Mexico City 1985 (earthquakes); Colombia 1985 (volcanic eruption and lahar) and 1994 (earthquake and landslide); Peru and Bolivia 1996-1998 (El Niño- Southern Oscillation); the Dominican Republic 1998 (Hurricane Georges); Honduras and Nicaragua 1998 (Hurricane Mitch); Belize 2000 (Hurricane Keith); and El Salvador 1986 and 2001 (earthquakes). He subsequently organized field research teams to the Chile and Haiti earthquakes of 2010.

The Brain, Behavior and the Environment Program

The Brain, Behavior and the Environment Program is a trans-disciplinary initiative at FIU that unites the dynamic and diverse neuroscience community at FIU toward three goals: to create and empower research programs focused

on environmental causes of neurological disease, to devise strategies and develop treatments for neurological disorders using novel neuroscience and engineering tools as well as pharmacological approaches, and to establish a rich educational resource in South Florida to educate students, faculty, clinicians, the public, and health officials on the role that environmental factors play in neurological disease. This program currently has \$10M in research awards, with the majority being from the NIH.

The Brain, Behavior and the Environment Program includes a multidisciplinary group of faculty. Dr. Tomas Guilarte is the director of the Program and Dean of the Robert Stempel College of Public Health & Social Work. Dr. Guilarte was recruited through a World Class Scholars initiative. Dean Guilarte is renowned for revealing the effects that low-level lead exposure has on the central nervous system during brain development, a discovery that led to strategies for mitigating learning deficits. He joined FIU after serving as the inaugural Leon Hess Professor and Chairman of the Department of Environmental Health Sciences at Columbia University-Mailman School of Public Health in the City of New York. Prior to Columbia University, Dr. Guilarte spent three decades as a professor and researcher in the Department of Environmental Health Sciences at the Johns Hopkins University Bloomberg School of Public Health.

The Center for Children and Families (CCF)

The CCF is a nationally recognized, interdisciplinary clinical research center committed to improving the lives of children and families struggling with mental health concerns. The mission of the CCF is to (1) study the causes and nature of children's mental health problems, (2) to develop and test intervention and prevention models for evidence-based, cost-effective services that can be used to improve mental health in children and families at a population level, (3) to provide services for children and families in clinic and community settings, and (4) to educate students, families, and professionals in the U.S. and abroad regarding the causes and treatment of childhood mental health and effective intervention and prevention. The CCF has over \$60M in research awards (50 grants), with the majority being from the NIH. The CCF was recruited to FIU from SUNY Buffalo as a part of a cluster hire, and its director, Dr. William Pelham, is internationally recognized as a leader in child mental health and has received numerous national awards recognizing his contributions. Dr. Pelham has hired 25 faculty members in the CCF, all of whom have all obtained federal funding for their research and the majority of whom have won early and midcareer awards for their research. Dr. Jon Comer has received national exposure for his research on children's response to disasters, including hurricanes. Dr. Pelham has held more than 80 research grants (16 current) from federal agencies (NIMH, NIAAA, NIDA, NINDS, NICHD, IES), foundations, and pharmaceutical companies and has over 400 scientific publications. CCF faculty together publish more than 160 scientific

papers annually. Dr. Pelham and other CCF faculty have served as consultants/advisors to numerous federal agencies (e.g., NIMH, NIAAA, NIDA, NICHD, IES, ACF, SAMHSA, IOM, OMAR, CDC, and AHRQ) and national organizations (AAP, AACAP, APA, CHADD, NICHQ, SDBP). The CCF conducts a nationally prominent annual conference, the Miami International Conference on Evidence-based Treatments for Childhood and Adolescent Mental Health (MICAMH), that is attended by more than 500 mental health professionals throughout Florida.

D. Funding Categories (excluding Personnel listed in Section III)

Environmental Fellows Career Pipeline & Support (\$200,000)

The Environmental Fellows pipeline will be focused on the development and recruitment of top-qualified and diverse talent from South Florida schools. This will include high school teacher trainings, intense summer research experiences, guaranteed undergraduate research placements and paid internships in the fields related to Environmental Resilience.

Early engagement in research experiences leads to undergraduate student success, both in terms of early graduation and job placement success or continuation to post-graduate education. The Environmental programs at FIU already have recruitment and training connections with high schools and state colleges. This includes Research Assistantships for High School Students (RAHSS), as well as the Research Experience for Teachers (RET), and the Wind Engineering for Science Teachers (WEST) Workshop, which involves seasoned Miami-Dade County Public School (M-DCPS) teachers participating in a 6-week wind engineering research program. We will design an Environmental Academy pipeline by accelerating dual enrollment, providing High School students with summer research basics/fundamentals, and professional development for High School science teachers to strengthen the pipeline. This component of the program will also focus on establishing an early pipeline of State College students with interest in the fields of study associated with the program. FIU is already co-located with MDCPS's Marine Academy of Science and Technology (MAST) at its Biscayne Bay Campus.

Doctoral Student Support (\$776,774)

FIU's doctoral degree production has increased by 15% (373 to 430) in the past three years, with increases in research doctorates by 28% (151 to 194). Research doctoral education is an integral part of research preeminence, and a necessary component of recruitment of world class faculty. We will dedicate some of the financial support of doctoral students that will be part of the academic programs connected to the proposed program of distinction. This will support the continued success of these programs by being able to recruit the best and brightest doctoral student candidates. Since the research programs and institutes that are part of the proposed program of distinction receive

significant external research grants and drive FIU's innovation, this investment will in turn increase external funding for doctoral students and amplify FIU's innovation impact.

Recruitment Scholarships and Retention/Completion Grants (\$1,500,000)

This funding will expand the merit scholarship budget towards the goal of improving the incoming student profile in the disciplines associated with the Environmental Resilience program of distinction, as well as retaining and accelerating the graduation rates of students. These funds also support students who face unexpected emergencies and financial circumstances that impact their ability to remain enrolled.

Industry Partnerships for Economic Growth/Workforce Development in Environmental Resilience (\$725,787)

An important component of FIU's 2025 Next Horizon Strategic Plan is learner success through alignment with industry workforce needs. This funding will support partnerships with industry in developing technological solutions to address environmental challenges and partnerships in workforce training. Artificial Intelligence, Robotics and Financial management in industry competency for Environmental Resilience associated with the proposed Environmental Resilience program of distinction.

This will include:

- Identification and badging "essential" skills
- Identification and badging industry-recognized credentials throughout degree programs
- Alignment of essential skills to University Core Curriculum
- Development and/or alignment of continuing education for workforce development

We have already worked with industry, NGO, government and other public partners to create credentials-badges in 3-D printing, environmental data analytics, sensor development, environmental advocacy and robotics.

Ongoing Support for Field Deployed Monitoring Equipment and Data Processing Technologies (\$1,959,225)

The funds will be used to support and maintain world-class coastal monitoring systems and centralized data-processing to inform policy and decision-making. This dataset will be available to all researchers focused on enhancing the resilience of Florida's coastal environment and the large populations living in near proximity. This program will require continuous upgrades and maintenance support to ensure it is well-positioned to help answer the critical questions facing Florida.

Development of Environmental Forensics Chemistry and Water Omics Technologies (\$1,910,000)

In our enhanced water quality monitoring associated with S. Florida Coastal water bodies, we have discovered an alarming increase in novel emerging contaminants such as pharmaceuticals in bonefish and Polyfluoroalkyl substances (PFAS), all of which threaten human health. To trace the origins and transport of these dangerous chemicals, we require new instrumentation and technologies to full assess the magnitude of the problems. We are currently one of only a few universities, US wide that have the basic technology to measure these contaminants although we have to outsource some of pharmaceutical analyses to other laboratories. We require this support to build and support new technologies to ensure it is well-positioned to help answer the critical questions facing Florida.

Equipment Repairs & Maintenance (\$290,775)

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. University of Distinction proposals should also address the requirements outlined in the separate guidance document.*

Return on Investment will be measured through metrics listed earlier that are directly related to the impact of the Environmental Resilience program on specific areas of program focus, as well as on the overall impact on FIU's progression in student success and research excellence. Through the program's accomplishments, FIU will also contribute to the SUS goal of Florida continuing to lead in higher education across the nation. Competition for economic drivers such as corporations, business infrastructure, and research and development are estimated to only increase across the state, and we believe FIU's relative contributions to these SUS goals will help to retain existing and drive new business and industry to Florida. This request focuses on Accelerating Program of Distinction Research, Student Success and Innovation Impact.

III. Personnel - *Describe personnel hiring and retention plans, making sure to connect both plans to initiative(s) and goal(s) described in section I. State the amount of faculty FTE and staff FTE and estimated funding amounts used for retention and new hires in each category. In describing faculty hires, provide overall hiring goals, including academic area(s) of expertise and anticipated hiring level (e.g. assistant*

professor, associate professor, full professor. Please describe how funds used for faculty or staff retention will help the institution achieve its stated goals. University of Distinction proposals should clearly note how anticipated hires or retained individuals will help the institution elevate a program or area to national or state excellence.

Faculty Recruitment/Teaching and Research (\$6,412,634)

Faculty are the main drivers of research and student success at a university. To expand the interdisciplinary research collaboration of the Environmental Resilience program of distinction, faculty recruitment will be essential. Following the successful approach that has brought FIU to the status of a Research I University, the faculty recruited into this core program of distinction will consist of clusters that will both complement and add to the existing faculty; and will be world class in their achievements and potential. We will focus on expertise in the intersect of environmental factors and public health, and resilient infrastructures. We will recruit 2 members of the National Academies of Sciences, 16 senior level faculty and 16 mid-level faculty.

The full impact of a program of distinction encompasses both research and teaching. Our goal is for the program to be a critical contributor to student success in all the areas (environment, infrastructure and public health) that are the interdisciplinary components of the program. Therefore, we will accelerate the recruitment of new faculty, with the recruitment focusing on curricular areas with highest demand within the integrated program. These new faculty members will focus on offering undergraduate level courses in various modalities to meet student demand and supply additional class sections required to ensure timely degree completion.

Program of Distinction Postdoctoral Fellows (\$776,025)

Postdoctoral scholars constitute a fundamental scientific workforce for research centers and research programs. World-class faculty, when recruited, require postdoctoral support to back their research. Successful postdoctoral scholars conduct research, add to the research funding, and assist in the training of undergraduate and graduate students.

Faculty Research Grant & Doctoral Student Support (\$859,639)

The growth of the program of distinction in terms of obtaining external research funding and quickly moving the research finding into technical applications and programmatic applications will depend on the recruitment of staff. Staff will be essential in providing the necessary administrative support, and perhaps more importantly, support in the pursuit of funding for the basic and translational research that will be conducted.

Program of Distinction Technical Professionals (\$402,114)

The development, deployment and maintenance of solutions-oriented research and data centers require a highly trained workforce. Our Environmental Chemistry and Forensics facilities as well as our Coastal Data Center all require MS or PhD level staff to maximize and optimize essential data collections and dissemination.

Recruiting world-class faculty is maximized when state-of-the-art facilities, as well as technical support staff are provided.

IV. 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.	Development of Environmental Forensics Chemistry and Water Omics Technologies		\$1,910,000	
2.				

2023-2024 Legislative Budget Request
Education and General
Position and Fiscal Summary
Operating Budget Form II
(to be completed for each issue)

University: Florida International University
Issue Title: FIU Program of Distinction in Environmental Resilience

	RECURRING	NON-RECURRING	TOTAL
<hr/>			
<u>Positions</u>			
Faculty (Includes Postdocs)	46.00	0.00	46.00
Other (A&P/USPS)	14.00	0.00	14.00
	-----	-----	-----
Total	60.00	0.00	60.00
	=====	=====	=====
Salaries and Benefits	\$8,450,412	\$0	\$8,450,412
Other Personal Services	\$976,774	\$0	\$976,774
Expenses	\$2,516,562	\$0	\$2,516,562
Operating Capital Outlay	\$1,959,225	\$1,910,000	\$3,869,225
Electronic Data Processing	\$0	\$0	\$0
Financial Aid	\$0	\$0	\$0
Special Category (Specific)	\$0	\$0	\$0
	\$0	\$0	\$0
	\$0	\$0	\$0
	\$0	\$0	\$0
	-----	-----	-----
Total All Categories	\$13,902,973	\$1,910,000	\$15,812,973
	=====	=====	=====

**State University System
Education and General
2023-2024 Legislative Budget Request
Form I**

University(s):	Florida International University
Request Title:	Top 50 Operational Support
Date Request Approved by University Board of Trustees:	September 22, 2022 (Pending Approval)
Recurring Funds Requested:	\$60,700,000
Non-Recurring Funds Requested:	
Total Funds Requested:	\$60,700,000
Please check the request type below:	
Shared Services/System-Wide Request	<input type="checkbox"/>
Unique Request	<input checked="" type="checkbox"/>

I. Purpose

1. Describe the overall purpose of the plan, specific goal(s) and metrics, specific activities that will help achieve the goal(s), and how these goals and initiatives align with strategic priorities and the 2021 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. University of Distinction proposals should also address the requirements outlined in the separate guidance document.

Sustaining Excellence

FIU's core mission is to provide an outstanding education that truly prepares students to launch productive careers, lead transformative innovations both locally and globally, and contribute to the economic well-being of the state and community. FIU has delivered on this commitment since the day it opened its doors to 5,667 students — the largest opening enrollment in U.S. collegiate history — 50 years ago, on September 14, 1972. Over this brief time, FIU has produced almost 300,000 graduates.

FIU made an unrelenting commitment to provide qualified students of all backgrounds with access to a world-class university education. The university has achieved the highest Carnegie (R1) Research Activity designation; made history by earning the highest-ever Performance Based Funding score of 99 (out of 100) in 2021; skyrocketed in *U.S. News & World Report* university rankings; achieved Emerging Preeminent state research university designation; and met 10 of 12 Preeminent state research university academic and research excellence standards. These accomplishments were achieved with the second lowest Full-Time Enrollment (FTE) funding (more than \$3,000 per student less than the SUS Median) in the state's most expensive region.

FIU has helped develop a stronger middle class, a robust society and a community of leaders, entrepreneurs and public servants. The hundreds of thousands of FIU graduates who have chosen to remain in Florida have become leaders in contributing to the state's booming economy and have given and continue to give back to the Florida taxpayers who subsidized their education many-fold. **Nearly 80% of FIU alumni remain in Florida and invest their talent back into the state, joining the professional workforce and becoming leaders driving the state's economy, prosperity, technology and innovation.**

Supporting FIU means investing in the future of Florida. FIU alumni power the state's main population center, Miami-Dade County, and beyond. FIU is a key institution, acting as a catalyst for economic prosperity for Florida citizens.

FIU is requesting operational funding to continue its drive to a Top 50 public research university while sustaining FIU's strategic investments in outstanding student success programs and comprehensive and innovative 21st century research, workforce and economic development initiatives. This will allow FIU to capitalize on the university's legacy of student success and the creation of new knowledge and innovative solutions to support Florida, particularly in economic development, health and the environment. This is directly in-line with both the FIU *NextHorizon2025* Strategic Plan and the Board of Governors 2025 Strategic Plan.

This investment will continue to fuel our mission-driven approach to student success and research excellence and maintain FIU's momentum toward improvement and efficiency, groundbreaking research, and is in-line with both the FIU *NextHorizon2025* Strategic Plan and the Board of Governors 2025 Strategic Plan. FIU is requesting funding to continue its drive to Top 50 while:

- Continuing to deliver on FIU's outstanding student success accomplishments
- Developing and implementing a strong and sustainable 21st century framework
- Rolling out a shared services operational infrastructure to adapt to changing economic and local-market driven forces.

Alignment with Strategic Plans and FIU Accountability Plan

These goals speak directly to FIU's *NextHorizon2025* Strategic Plan's uncompromising mission to 1) continuously revitalize and foster student excellence; 2) create the highest quality educational environment that simultaneously nurtures and challenges students to succeed; and 3) lead research, innovation and transformation that will create a positive impact on the lives, economic development and growth of Florida's community and beyond. Additionally, FIU's BOG-approved Accountability plan aligns with the goals of the university's strategic plan to:

- Accelerate student success and continue to elevate research excellence
- Bring to fruition FIU's strategic goal of being recognized as a Top 50 public university by *U.S. News & World Report*
- Continue FIU's leadership as a Hispanic Serving Institution and a Minority Serving Institution.

These goals also align with the BOG's 2025 goals:

- **Excellence:** By fostering even greater excellence and achievement in students and alumni, FIU bolsters the entire state's economic growth, provides top-quality workforce professionals and drives the innovation hub of the state.
- **Productivity:** FIU's strong graduation rates have nearly reached the university's 2025 strategic plan goal of 60% — almost three years ahead of schedule — with Pell Grant eligible students continuing to outperform non-Pell grant eligible students. FIU is propelling students into successful careers and contributing to the state's economy and growth.
- **Strategic Priorities for a Knowledge Economy:** FIU has proven, as evidenced by the university's SUS Performance Based Funding metric scores, that it meets its strategic goals to ignite student, alumni and research successes, despite having the second lowest funding per student FTE as well as increased inflation and the high cost of living in Miami. The median per FTE funding minus tuition is approximately \$9,869 after the 2022 legislative session. FIU's per FTE funding is \$6,842 (a difference of \$3,027 per student).

Continuing FIU's Rise in Rankings and Reputation

FIU and its students have achieved unprecedented success and have earned national recognitions, proving that the university has done much with the funding it has received. This year, the university is requesting a higher investment of funds commensurate with the university's sustained excellence goals and to aid FIU in its efforts to train the next generation of workforce professionals amidst rising inflation and shifting market conditions.

FIU is proud to highlight a few examples of what the university has already achieved — and a glimpse of even greater milestones it will accomplish:

FIU Rankings Highlights

- **FIU jumped 54 spots** in the last five years on *U.S. News & World Report* rankings (currently ranked No. 78). This is the greatest improvement among public universities designated Carnegie R1 – Very High Research Activity. **The university's improvement in 2021 was the greatest in Florida.** (See chart below).

Institutions	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	10-year change
Florida International University	134	128	130	134	122	100	105	95	78	72	62
University of South Florida	94	88	84	83	68	57	44	46	46	42	52
Florida A&M University	148	141	136	138	113	148	121	116	103	103	45
New Jersey Institute of Technology	79	78	71	64	68	45	43	54	46	42	37
University of Central Florida	94	97	91	93	90	86	79	77	67	64	30
Florida Atlantic University	156	155	158	163	151	139	137	135	138	132	24
University of Illinois--Chicago	63	78	62	78	73	60	60	52	46	42	21
University of Maryland, Baltimore County	85	78	84	83	83	86	79	77	78	64	21
Florida State University	40	43	43	38	33	25	18	19	19	19	21
Rutgers University--Newark	73	61	71	64	63	51	60	54	61	53	20
Indiana University-Purdue University--Indianapolis	123	110	115	106	102	105	108	100	99	103	20
North Carolina State University	47	43	37	38	33	31	34	32	32	29	18
University of Missouri--St. Louis	124	124	130	125	133	128	137	125	117	107	17
University of California, Riverside	55	55	58	56	58	35	39	34	33	38	17

- FIU has **ranked in the Top 3 among SUS universities for three of the last five years**, according to performance-based funding scores. This includes a record 99 points in 2021. (See chart below).

INST	2018	2019	2020	2021	2022
FAMU	72	70	78	82	72
FAU	84	86	85	91	80
FGCU	75	81	88	85	71
FIU	90	87	88	99	91
FL Poly				83	66
FSU	86	88	88	88	90
NCF	75	67	87	73	66
UCF	77	88	92	92	88
UF	93	95	95	90	93
UNF	68	78	86	83	78
USF	86	92	95	96	92
UWF	86	94	86	83	81
SUS AVG	81	84	88	87	81

FIU Rank	2	6	4	1	3
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- FIU ranked the highest in Florida and **No. 32** in the nation in *Washington Monthly's annual national university rankings*.
- Degree Choices named FIU **Top 25** nationally in the economic return of graduates' investment in a college degree.
- FIU achieved **\$246 million** of research expenditures for the 2021 fiscal year. FIU is ranked 72nd in total expenditures among U.S. public institutions (based on latest 2020 data).
- FIU ranked among the **Top 10** in the past decade among Carnegie R1 universities for research expenditure growth; Fast-Growing Research Spending as reported by *The Chronicle of Higher Education*. (See chart below).

University	% Change
Indiana U. at Bloomington	310.4%
George Mason U.	162.7%
New York U.	158.9%
Northeastern U.	150.2%
Georgia State U.	149.9%
Uniformed Services U. of Health Sciences	141.9%
Temple U.	140.7%
U. of Virginia	136%
FIU	114.8%
Harvard U.	112.6%

“Data reflect institutions that had at least \$200 million in research-and-development expenditures in 2020 and also reported data for 2010. Institutions whose research

spending includes figures for entities that weren't the same for both fiscal years are not included.” Source: *The Chronicle of Higher Education*.

- **FIU ranked 3rd** in NSF HERD Report for Psychology (focused on Children and Families, as well as Health Disparities).
- FIU ranked among the **Top 5** among public universities for social mobility by *U.S. News & World Report*, which recognizes the university for its work allowing students to enter competitive jobs and fortify the middle class.
- FIU ranked **in the Top 20** for most innovative public universities by *U.S. News & World Report*.
- FIU ranked **No. 23** by Degree Choices, one of only two Florida universities in the **Top 25** based on Return on Investment. FIU ranked ahead of Yale and Columbia University.
- FIU ranked among the **Top 20** public universities for U.S. patents by *Intellectual Property Owners Association*.
- FIU is one point shy (meeting 10 out of 12 metrics) of achieving designation as a Preeminent Research University as defined by BOG in 2022 and is on track to achieve it in the 2023 cycle. (See chart below).

Preeminent Research University Metrics for 2022

		Institution					Benchmark
		FIU	FSU	UCF	UF	USF	
A	Average GPA	4.3	4.3	4.3	4.5	4.2	4.0 GPA
	Average SAT Score	1241	1299	1317	1386	1293	1200 SAT
B	National University Rankings	2	8	3	9	6	Top 50 in 2 or more
C	Freshman Retention Rate (Full-time, FTIC)	91%	94%	92%	96%	90%	>= 90%
D	4-Year Graduation Rate	59%	73%	50%	75%	65%	>= 60%
E	National Academy Memberships	7	7	8	33	16	6
F	Total Annual S&E Research Expenditures (\$M)	216	251	182	920	340	>= \$200M
G	Total Annual R&D Expenditures in Non-Health Sciences (\$M)	200	215	167	575	231	>= \$150M
H	National Ranking in Research Expenditures	6	7	6	8	7	5 in Top 100
I	Patents Awarded (3-year period)	186	140	157	419	345	>= 100
J	Doctoral Degrees Awarded	460	529	510	1500	721	>= 400
K	Post-Doctoral Appointees	235	233	142	671	292	>= 200
L	Endowment size (\$M)	276	898	201	2379	693	>= \$500M
Number of Criteria Met		10	12	8	12	12	

- FIU was elected to the APSIA (Association of Professional Schools of International Affairs), an elite network of schools of international and public affairs. **FIU is the only school in Florida and one of only 38 in the world (and 25 in the U.S.) to join APSIA.**
- FIU ranked **No. 83** in the country for tenured faculty per capita S&E Research Expenditures. (See chart below).

Tenure Faculty Per Capita S&E Research		
Institution	Amount	Rank
U of Maryland, College Park	\$ 712,000	10
U of Colorado Boulder	\$ 400,000	26
U of Washington, Seattle	\$ 343,000	40
NC State at Raleigh	\$ 319,000	47
U of Pittsburgh	\$ 288,000	53
UAB	\$ 262,000	65
SUNY Buffalo	\$ 254,000	68
UC Irvine	\$ 252,000	72
U of Cincinnati	\$ 247,000	74
U Texas, Dallas	\$ 222,000	81
FIU	\$ 221,000	83
Rutgers New Brunswick	\$ 209,000	87
U Illinois Chicago	\$ 205,000	89
UC Riverside	\$ 196,000	91
U of South Florida	\$ 185,000	96
U of Houston	\$ 173,000	104
Georgia State	\$ 147,000	113
George Mason	\$ 152,000	112
Temple	\$ 125,000	123

- The university has also contributed to the BOG's meeting its strategic plan, particularly by bolstering the entrepreneurial spirit of Florida through its research, innovation, initiatives and alumni career placement.

Additional FIU Recognitions

- FIU ranked **No. 1** in the country for awarding bachelor's and master's degrees to Hispanic students according to *Diverse: Issues in Higher Education*
- FIU ranked **Top 10** awarding bachelor's degrees to African Americans according to *Diverse: Issues in Higher Education*
- FIU was recognized as a **2020 Top School for Veterans** by U.S. Veterans Magazine and selected as a **Military College of Distinction**.
- **FIU Pell-eligible students: 50%** of the student body is eligible for Pell Grants; FIU's FTIC Pell Grant recipient **six-year graduation rate is 65%**.
- FIU's Model United Nations team has ranked in the **top five** teams in North America for nearly a decade.
- **FIU College of Law graduates ranked highest on Bar passage rate: 87%** of these graduates since July 2015 have passed the Florida Bar exam on their first attempt, the highest among all 11 Florida law schools
- FIU's FTIC four-year graduation rate has jumped from 33.8% to **59.4%** from 2018 to 2022 Accountability Plan cycles. **This is a 76% improvement.**

Premier Hispanic Serving R1 University

FIU is a top Hispanic Serving Institution (HSI) and a leader in nearly every measure of student success and research excellence. The university annually provides thousands of immigrants and children of immigrants from all over the world the opportunity to earn a world-class education. Many FIU students have experienced firsthand the relentless oppression of totalitarian regimes, the pain of poverty and the crushing weight of widespread violence present in many of their native countries.

FIU students bring a level of real-world knowledge that motivates them to take hold of opportunities. The university's students also carry within them a desire to give back to their communities. FIU helps them achieve their goal.

FIU not only offers its students the opportunity to earn a degree, but to earn a **degree from a prestigious R1 Carnegie-classified research university** that equips them — through immersive courses, hands-on research and experiential learning led by internationally

renowned faculty — to enter the professional workforce well-prepared and ahead of the curve.

FIU's commitment to Hispanic students and to fostering a strong, middle class of leading professionals is evidenced by its recognition as a top performer in social mobility by *U.S. News & World Report* and as a leading force in the education of Hispanic students (recognized as a Top Hispanic Degree Producer by *Diverse: Issues in Higher Education*). **FIU serves its minority-majority community by offering an outstanding education that arms its 280,000+ alumni with the tools, knowledge and skills to successfully compete with graduates of the nation's elite universities — and, most often, FIU students lead the way.**

FIU's status as an HSI in Florida is especially unique in that the university's student body authentically mirrors its local community. FIU is the leading public research university in South Florida.

By 2025, FIU plans to become the country's leading HSI. FIU is keenly focused on merging research expertise into more opportunities for its students to reap the benefits of studying at a Carnegie R1 institution. The university will continue to lead the nation in the number of bachelor's and master's degrees conferred to Hispanic students and continue increasing those earning doctoral degrees. FIU's professional schools, including medicine, law and architecture, are also leaders in Hispanic success. These efforts will continue to be bolstered by a myriad of support services as well as by efforts in the classroom, including expansion of the Gateway to Graduation course re-design initiative. The Gateway program eliminates barriers to graduation by identifying, analyzing and developing interventions to update courses that stop students from progressing in their majors. This has contributed to the significant increase in FIU's four-year graduation rate, the increase in the number of students graduating without excess hours, and the reduction in the average cost of earning an undergraduate degree.

FIU's role as an HSI is not subsiding. Neither is the university's commitment to excellence and research preeminence. Now, more than ever, the overall university strategy continues to focus on accelerating Hispanic student success and utilizing data and evidence to ensure that others beyond the campus borders recognize what FIU has always known: That through effective teaching and learning practices combined with a sense of caring and understanding of the talent pipeline, research universities can help first-, second- and third-generation immigrants achieve the American Dream, climb up the ranks in their fields and fortify Florida's continuously growing middle class.

Each one of FIU's investments ties back into its crucial role as a leading HSI. This means FIU continues to — and strives to ever more ardently and ambitiously — meet its students where they are. FIU embraces its role as an anchor institution whose mission is to equip its students with the tools and resources they need to flourish. This funding will support the university's priority strategies, which move graduation rates up in all categories, including FTIC and Florida College System AA transfer students. It will also strengthen scholarship funding and increase funding for additional teaching and learning assistants and career and academic advisors, which have also contributed to the university's improvement in student retention and graduation.

Breakdown of Funding Request

FIU is requesting funding to sustain the investments in initiatives and programs that have been made over the past several years as part of the university's Strategic Plan, annual Accountability plans and focus on Performance Funding Metrics at a time when inflation is eroding FIU's ability to maintain the quality improvements it has achieved. Additionally, FIU is requesting funding to expand programs that have proven to be successful for student success and pathbreaking research while continuing to improve in rankings and performance.

With these funds, FIU will build on its incredible successes and continue its mission to train future leaders and find solutions to society's pressing issues through top-notch research. Along with philanthropic and external sources of monetary support — especially sponsored research funds — these new state funds will act to jumpstart and deepen key success and excellence initiatives.

Funds breakdown:

Student Success Investments - \$22.5 Million

Recruitment and Retention of Students (\$15 million)

- This investment is focused on increasing academic merit scholarships and launching initiatives to recruit, admit and graduate national merit scholars and undergraduate, graduate and transfer students in areas of strategic importance for the state.

Strategic Faculty Hiring (\$5 million)

- This investment addresses recruiting outstanding faculty in areas of strategic importance, particularly STEM, in order to increase the number of degrees awarded in these critical fields. The investment would also decrease student-to-faculty ratios in certain programs and courses, which would improve skillsets and student retention and graduation.

Academic and Industry-Career Placement Initiatives (\$2.5 million)

- This investment centers on the recruitment and retention of academic and career advisors; the implementation of high-impact practices, including project-based learning; and programs that connect students directly to employers during their time at FIU through their program of study.

University Infrastructure Investments- \$33.2 Million

Investment in Retention and Recruitment (\$25.7 million)

- This funding will be used to retain FIU's outstanding faculty and staff who have demonstrated sustained exceptional performance and commitment to quality teaching, research and student success. It will also be used to attract replacement faculty and staff, including OPS employees, to address the challenges of the unprecedented increasing cost of living in South Florida, especially with increased housing costs that have made the area the least affordable place to live in the country, according to RealtyHop Housing Affordability Index as of July 2022.

Increased Operational, Utility, and Support Services (\$7.5 million)

- This funding will support escalating operating, utility, custodial, grounds, maintenance and support services costs of operating FIU's physical plant. Price increases of utilities, materials and supplies have impacted the cost of operating and maintaining university facilities, resulting in inadequate levels of service which have negatively impacted day-to-day operations. FIU is proud that it has consistently been the most efficient SUS university in terms of energy utilization, but this efficiency can no longer cover the cost increases to appropriately support the university's teaching and research mission.

Investing in Transformational Technologies for Operational Innovation and Service Improvement - \$5 Million

Realign the University's Workforce and Invest in System Upgrades and Recurring Licenses (\$5 million)

- By investing in strategies to realign the university's workforce in key central areas (including human resources, information technology, compliance, communications, etc.), including the use of cutting-edge technologies that will improve services and reduce costs. FIU will increase university efficiencies, increase automation and accelerate process improvements.
- This investment will also support the immediate deployment of centralized services and reduce duplication of efforts. Investments include streamlining student success, improving communications, investing in infrastructure and supporting a better student experience. Connecting forward-facing technologies will have an immediate impact, reduce redundancies and increase student success.

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. University of Distinction proposals should also address the requirements outlined in the separate guidance document.

Investing in FIU is Investing in Florida

Investing these funds in FIU will bring several immediate Returns on Investments to Florida:

- Advancing FIU's student excellence and research capabilities will, along with the achievements of other SUS institutions, fortify Florida's national reputation as a hub for economic growth, research and innovation in the higher education setting and, in the community, at large.
- Promoting stronger economic growth as the majority of FIU graduates join the ranks of the state's professional workforce and help create the types of jobs needed for Florida's economic success.
- The contributions of FIU students, researchers and graduates will further the state's already outstanding record attracting out-of-state partners, businesses and entrepreneurs to Florida's innovation ecosystem.

- FIU's achieving status as a Top 50 public university on *U.S. News & World Report* will benefit the SUS and the BOG by demonstrating that Florida is home to world-class universities. It will also help attract more students, entrepreneurs and professionals to Florida. This will further bolster the economy and growth of the state.

Student Success: A Launch Pad for 21st Century Professionals

Increase in Overall Student Success Metrics based on Accountability Plan

Improving student excellence outcomes by **2025**

- Increasing FTIC freshmen 4-year graduation rates to **65%**
- Increasing FTIC freshmen 6-year graduation rates to **74%**
- Increasing Pell eligible students 6-year graduation rate to **72%**

Improving research outcomes

- Increasing number of personnel funded by grants by **10%** (growth of 500 individuals)
- Increasing translational research produced by FIU by **10%**
- Increase Freshmen in the Top 10% of High School Class to **40%**
- Increase Top 50 Rankings to **3**
- Increase Ph.D. production to **600 per year**
- Increase research expenditures to **\$415 million**

FIU would increase faculty who are also members of the National Academies of Science, Engineering and/or Medicine to **12**.

Investing in Recruiting and Retaining Students

The Return on Investment in this category will be measured by FIU continuing to attract, admit and graduate the best, most qualified students and academic candidates; to support students' career objectives; and to meet industry demands. This support will be measured on providing additional merit based academic scholarships, as well as additional investments in strategies to attract highly recruited students. It will also be measured by increasing the number of FIU's National Merit Scholars.

Academic and Career Advising and Meeting Industry Need

As part of FIU's strategic plan, the university recognizes that access to a meaningful career and continued professional success is a crucial outcome of higher education. This funding will be used to build a robust academic-industry pipeline that will support increasing strategic employer partnerships. These initiatives will enable FIU to connect students directly to career pathways during their academic career helping both the student launch their career and meet industry demand.

Intentionally creating these pathways will positively impact retention and graduation. Increasing the retention and graduation rate of FIU students, in turn, positions them to enter a mid-to-high wage career — and this allows them to become key contributors to the growth of the community and local economy.

Stimulating Economic Growth

FIU alumni, nearly 80% of whom become professional employees in South Florida, fill crucial positions in major industries and contribute to the overall economic growth, innovation and prosperity of the state.

Miami-Dade County is the most populous county in Florida and the seventh most populous county in the United States. It is a major driver of economic growth and a hub for innovation in Florida. **FIU alumni power Florida's main population center, and beyond.** FIU is a key institution in the state, acting as a catalyst for economic prosperity for Florida citizens.

FIU's strategy is to work with industry and government leaders to ensure that South Florida is poised to support the entire state through robust economic growth. This economic growth hinges directly on FIU students and alumni. FIU graduates fill the ranks of CEOs, engineers, cybersecurity experts, entrepreneurs, lawyers, governmental officials, health care providers, educators and many others.

For example, to meet the increasing demands of computer science and engineering professionals, FIU has for years graduated thousands of alumni ready to enter the field.

According to the U.S. Bureau of Labor Statistics, jobs in computer and information technology are expected to grow 13% by 2030, resulting in more than 650,000 jobs.

According to one analysis, Florida ranked among the top five states for information technology job postings. In response, the university has graduated more than 5,000 professionals in computer science and information technology in recent years. FIU ranks No. 5 in “social mobility” according to the *U.S. News & World Report*, recognizing the university’s ability to effectively prepare its students to land competitive jobs and launch stellar careers.

Accelerating the Pace of Innovation

Research Innovation

The university is leading research that tackles some of the key issues affecting the nation and the state, from dementia and Alzheimer’s to personalized cancer treatments and hurricane loss mitigation. FIU is home to one-of-a-kind research facilities: The Wall of Wind research and testing facility — one of only eight National Science Foundation-supported experimental facilities in the country — is the largest and most powerful university research facility of its kind, capable of stimulating Category 5 hurricane winds.

The Aquarius Reef Base is the only undersea research laboratory in the world. And the Center for Translational Science in Port St. Lucie, Florida, will speed the timeline of new drug development.

The university’s areas of research excellence include: the environment; public health; childhood mental health; disaster mitigation; forensics; health disparities; Latin American studies; public humanities; and STEM education.

Operational Innovation

Investing to transform a decentralized model into a model that is increasingly nimble, adaptable and embraces continuing advances in technology. FIU will be leveraging the latest technological tools, business analysis systems and machine learning combined with cutting-edge software to create seamless work processes and more efficient educational and work environment. This investment would continue to make FIU a leader in operational efficiency investing in a central shared service model for support areas, increase outsourcing opportunities (with oversight and cost management), and being responsible stewards of state and student resources. Additional investments in a shared digital infrastructure maximizes common systems, invests in expansion of current systems to all student facing areas, protects university systems from cyberthreats, etc.

Addressing the Cost of Living

Supporting FIU's momentum requires the retention of high-performing faculty and staff impacted by the increased cost of living and market forces. The cost of living has spiked up significantly across South Florida, according to Realtor.com; median rent prices in the Miami-Fort-Lauderdale-West Palm Beach metro area have increased by an astonishing 45% within the last year.

According to 2020 data from the Bureau of Economic Analysis, the average total personal consumption cost in the state was \$43,615 per year, which meant roughly \$3,635 per month. Housing costs in Florida have been rising drastically, with the average housing costs between \$1,040 to \$1,700 per month, according to the latest census data. And, according to RealtyHop Housing Affordability income (as of July 2022), the average home price is \$600,000, as corroborated by Zillow (as of June 30, 2022), Miami-owned values saw a one-year 26% change to an average home price of \$531,706.

In terms of food (not including restaurant expenses), the Council for Community and Economic Research ranked Miami as the city in Florida with the second highest grocery cost in the second quarter of 2021. And transportation costs according to MIT's Living Wage Calculator, averaged between \$5,113 and \$13,896 per year.

The combination of inflation, housing affordability and in-migration from other U.S. cities to Miami, along with new corporate competitors to the market, have priced FIU out of the market.

III. Personnel – *Describe personnel hiring and retention plans, making sure to connect both plans to initiative(s) and goal(s) described in section I. State the amount of faculty FTE and staff FTE and estimated funding amounts used for retention and new hires in each category. In describing faculty hires, provide overall hiring goals, including academic area(s) of expertise and anticipated hiring level (for example: assistant professor, associate professor, full professor. Please describe how funds used for faculty or staff retention will help the institution achieve its stated goals. University of Distinction proposals should clearly note how anticipated hires or retained individuals will help the institution elevate a program or area to national or state excellence.*

Specific investments will be made in the following areas to enhance FIU's National reputation in accordance with FIU's 2025 Next Horizon Strategic Plan:

- \$10 million to retain current high-performing faculty

- \$8.5 million to recruit 53 new strategic faculty
- \$9.7 million to retain current high-performing administrative staff
- \$1.4 million to recruit 20 additional Academic and Career Advisors
- Recruitment of 5 additional National Academy Members

The funds for faculty and staff retention will help the university achieve its Strategic Plan. This funding will be critical to keep appropriate levels of employment to fulfill the university's mission; ensure current student success levels; and continue our momentum toward our Accountability goals as described above.

2023-2024 Legislative Budget Request
Education and General
Position and Fiscal Summary
Operating Budget Form II
(to be completed for each issue)

University: Florida International University
Issue Title: Top 50 Operational Support

	RECURRING	NON- RECURRING	TOTAL
<hr/>			
<u>Positions</u>			
Faculty	130	0	130
Other (A&P/USPS)	116	0	116
	-----	-----	-----
Total	246	0	246
	=====	=====	=====
Salaries and Benefits	\$30,386,000	\$0	\$30,386,000
Other Personal Services	\$1,700,000	\$0	\$1,700,000
Expenses	\$22,614,000	\$0	\$22,614,000
Operating Capital Outlay	\$0	\$0	\$0
Electronic Data Processing	\$0	\$0	\$0
Financial Aid	\$6,000,000	\$0	\$6,000,000
Special Category (Specific)	\$0	\$0	\$0
	\$0	\$0	\$0
<hr/>	\$0	\$0	\$0
<hr/>	\$0	\$0	\$0
<hr/>	\$0	\$0	\$0
	-----	-----	-----
Total All Categories	\$60,700,000	\$0	\$60,700,000
	=====	=====	=====

THE FLORIDA INTERNATIONAL UNIVERSITY
BOARD OF TRUSTEES

September 6, 2022

Subject: 2022-2023 Linking Industry to Nursing Education (LINE) Fund Proposals

Proposed Board Action:

Approval of the 2022-2023 Linking Industry to Nursing Education (LINE) Fund Proposals:

▪ Memorial Healthcare System	\$ 123,600
▪ Memorial Healthcare System	\$ 200,000
▪ Baptist Health South Florida	\$ 750,000
▪ HCA Healthcare/HCA East Florida	\$ 1,500,000

Background Information:

Florida Board of Governors Regulation 8.008(1)(d), Nursing Education, provides, in part, as follows: “Linking Industry to Nursing Education (LINE) Fund: This fund provides the opportunity for each state university to receive matching funds for every dollar contributed to an institution by a healthcare partner. The fund provides a dollar-to-dollar match to the participating institution, subject to funds availability.”... “Each university board of trustees may submit to the Chancellor’s office proposals made in accordance with the guidelines, formats, instructions, and schedule provided by the Chancellor.”

Supporting Documentation: 2022-2023 Linking Industry to Nursing Education (LINE) Fund Proposals

Facilitator/Presenter: Natasha Lowell, *Chair, Academic Policy and Student Affairs Committee*



**State University System
2022-2023 Linking Industry to Nursing Education (LINE) Fund
Proposal Form***

University:	Florida International University
Healthcare Partner:	Memorial Healthcare System
Date Proposal Approved by University Board of Trustees:	Expected by 8/29/2022
Amount Requested:	\$123,600
University Contact (name, title, phone, & email):	Dr. Ora Strickland, Dean and Professor, Nicole Wertheim College of Nursing and Health Sciences (NWCNHS), (305)348-0407, olstrick@fiu.edu
Please check the boxes below as appropriate:	<i>All boxes must be checked in order to be eligible to participate.</i>
Healthcare partner making contribution is located in and licensed to operate in Florida?	<input checked="" type="checkbox"/> Yes
Healthcare partner making contribution is a health care provider as defined in Section 768.38(2), Florida Statutes?	<input checked="" type="checkbox"/> Yes
Nursing programs met or exceeded a first time NCLEX passage rate of 70% for the prior year based on the 2022 Accountability Plan?	<input checked="" type="checkbox"/> Yes
The funds will be used for an eligible purpose per Section 1009.896, Florida Statutes?	<input checked="" type="checkbox"/> Yes

Proposal Details

I. Use of Funds.

Matching funds are requested for a \$123,600 gift received from Memorial Healthcare System, which will support the Nicole Wertheim College of Nursing and Health Sciences (NWCNHS) partial salary and benefits of nursing faculty

*This form is subject to change pending the adoption of Regulation 8.008 – Nursing Education.

and/or adjunct faculty for one (1) year. The purpose of the funds is to foster and support the education and graduation of registered nurses to help alleviate the nursing shortage. The faculty/adjuncts supported by these funds will teach in the undergraduate nursing program and will supervise students in clinical rotations, provide excellence in supervision and teaching in all clinical settings. The support for faculty/adjunct position(s) will help the college increase admission and retention of BSN students, with an adequate number of faculty positions to meet accreditation and FL State Board of Nursing guidelines, for the supervision of students in clinical rotations; including Fundamentals of Nursing, Medical/Surgical, Psychiatric Mental Health, Obstetrics, and Senior Practicum at Memorial Healthcare System.

II. Onboarding & Retention of Graduates.

NWCNHS will provide the Memorial Healthcare System recruitment team with a Clinical Partner Orientation Day, which will foster the opportunity to showcase the hospitals facilities, mission statement, goals, and expectation of the potential Generic BSN/ Accelerated Option nursing student candidates, for the designated hospital assignment. The selected generic nursing students will remain at Memorial Healthcare System for the duration of the nursing program. Memorial Healthcare System will benefit from the opportunity to observe, mentor, and interact with the student(s) and the dedicated clinical faculty during clinical rotations. This opportunity will expose students to the Memorial Healthcare System culture and mission, as well as create a pipeline for recruitment and hiring of students prior to their graduation and licensure.

III. Program Expansion.

The gift of \$123,600 from Memorial Healthcare System will be used to support highly needed nursing faculty and/or adjunct faculty position(s) in NWCNHS. Florida is projected to have a nursing shortage of nearly 60,000 nurses by 2035. According to a special survey of 892 nursing schools released by AACN in October 2019, a total of 1,637 faculty vacancies were identified by baccalaureate and/or graduate programs across the country. In 2022, schools of nursing are experiencing high rates of nursing faculty retirements due to the COVID-19 pandemic, further increasing the faculty and nursing shortage. Additionally, other factors that negatively impact the preparation of RNs include limited educational program resources, clinical sites for student training, and budget constraints, which inadvertently limit faculty employment (American Association of Colleges of Nursing, 2019). Historically, the NWCNHS has turned away qualified applicants for the BSN program due to insufficient numbers of nursing faculty positions available to address the student demand.

Anticipated Impact. The financial support for more nursing clinical faculty and/or adjuncts that will oversee students in clinical rotations at Memorial Healthcare System hospitals will support the expansion of the number of nursing

*This form is subject to change pending the adoption of Regulation 8.008 – Nursing Education.

students admitted to the NWCNHS BSN Programs and support the student supervision guidelines of 1:8 faculty to student ratio in the clinical setting. The gift will ensure the commitment of adequate clinical spaces for NWCNHS BSN students in all clinical specialties and increase the number of diverse baccalaureate-prepared registered nurses in the region and the State of Florida. The Nursing Accelerated Option (AO) program is a cohorted 4 semester program and the Nursing Generic BSN program is a cohorted 5 semester program. Therefore, this gift will foster the development and graduation of newly licensed nurses entering the workforce from 15 to 20 months respectively, or in less than two years for both programs.



**State University System
2022-2023 Linking Industry to Nursing Education (LINE) Fund
Proposal Form***

University:	Florida International University
Healthcare Partner:	Memorial Healthcare System
Date Proposal Approved by University Board of Trustees:	Expected by 8/29/2022
Amount Requested:	\$200,000.00
University Contact (name, title, phone, & email):	Dr. Ora Strickland, Dean and Professor, Nicole Wertheim College of Nursing and Health Sciences
Please check the boxes below as appropriate:	<i>All boxes must be checked in order to be eligible to participate.</i>
Healthcare partner making contribution is located in and licensed to operate in Florida?	<input checked="" type="checkbox"/> Yes
Healthcare partner making contribution is a health care provider as defined in Section 768.38(2), Florida Statutes?	<input checked="" type="checkbox"/> Yes
Nursing programs met or exceeded a first time NCLEX passage rate of 70% for the prior year based on the 2022 Accountability Plan?	<input checked="" type="checkbox"/> Yes
The funds will be used for an eligible purpose per Section 1009.896, Florida Statutes?	<input checked="" type="checkbox"/> Yes

Proposal Details

I. Use of Funds

Memorial Healthcare System (MHS) will commit \$200,000 to financially support 20 nursing students who will be placed at MHS for their clinical learning experiences. The \$200,000 in funds provided will be valued at \$10,000 per student award. LINE matching funds would double Memorial Health System's

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financial investment to \$400,000, which would increase the value of the awards to \$20,000 per student. These student awards are intended to increase students' commitment to work for MHS facilities for two years. This financial support will facilitate identifying qualified nursing students who are interested in working within the MHS system and would facilitate retention of these nursing scholars upon graduation from FIU as part of the MHS nursing workforce in the State of Florida. MHS would commit to investing time and resources into onboarding and orienting new graduates and providing professional development to these new RNs.

II. Onboarding & Retention of Graduates

MHS has implemented a Financial Assistance Program, a Nurse Residency Program, and an RN Fellowship program to address recruitment and retention issues. MHS facilitates retention through the Partners in Success, Nurse Residency Program, and the RN Fellowship Program.

1. Partners in Success: MHS will give each FIU nursing student selected \$10,000 towards their tuition and college expenses in exchange for a 2-year work commitment to MHS. It is our hope that the LINE Fund will match the \$10,000 so that the 20 students would each receive a total of \$20,000 in financial support. These funds will ensure that Memorial Healthcare System increases the nursing workforce and improves patient care in the community. In addition to the financial support, MHS will guarantee new graduates are employed in a clinical area of their choice that will become their "home" unit. Additionally, those chosen for the MHS Scholars program will be placed in their "home" unit during the last semester of their nursing program and will be offered a Nurse Tech job in their "home unit" upon graduation until they pass their NCLEX exam and become RNs. These new initiatives will help with the retention of newly graduated program participants until RN licensure.

2. Nurse Residency Program: Research has shown that new nursing graduates are more successful when they are onboarded through a nurse residency program. The MHS Nurse Residency Program is designed to help recent nursing graduates gain the knowledge and hands-on experience they need to provide informed, high-quality care to patients. Additionally, the program's curriculum allows residents to connect and learn from one another through monthly meetings as well as provide tools and resources to support their professional growth and development upon completion of the program.

3. RN Fellowship Program: The MHS RN Fellowship Program provides a formal professional development pathway for experienced RNs with career goals to learn and transition to new specialty practice areas. This program is attractive to MHS nurse residents as it offers many career trajectories for them after they graduate from the nurse residency program. These opportunities promote nurse

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satisfaction and nurse retention and the ability to grow within MHS. The RN Fellowship Program also offers pathways to specialty certification and post-baccalaureate nursing education.

III. Program Expansion

Beginning in fall 2022, the Nicole Wertheim College of Nursing & Health Sciences (NWCNHS) at FIU will increase admissions to the Generic BSN program by 35 additional students with an increase of 29% from 120 to 155 students in the Generic BSN Program. For fall of 2023, the Generic BSN program is projecting to onboard 180 new nursing students resulting in an overall increase of 60 students or 50% over fall of 2021's 120-target enrollment. For fall of 2023, the Accelerated Option BSN program will increase by 10% from 60 students to 66 nursing students. Increasing the nursing pipeline will benefit from student financial assistance which will be provided by MHS. Student financial support from MHS, coupled with the opportunity for both committed clinical rotation spots and future employment will enhance recruitment and retention of diverse undergraduate nursing students in both the NWCNHS Generic BSN and Accelerated Option BSN programs. The MHS Nurse Residency and RN Fellowship Programs will provide additional clinical experience and expertise that will enhance quality health care and support their nursing expertise, which will benefit them if they decide to seek graduate education in nursing.

The State of Florida will benefit from the increased enrollment in the nursing programs, since this will lead to an increase in new licensed registered nurses entering the workforce. The State of Florida LINE matching funds will reduce financial barriers for nursing students coupled with the MHS support.



**State University System
2022-2023 Linking Industry to Nursing Education (LINE) Fund
Proposal Form***

University:	Florida International University
Healthcare Partner:	Baptist Health South Florida
Date Proposal Approved by University Board of Trustees:	Expected by 8/29/2022
Amount Requested:	\$750,000
University Contact (name, title, phone, & email):	Dr. Ora Strickland, Dean and Professor, Nicole Wertheim College of Nursing and Health Sciences (NWCNHS)
Please check the boxes below as appropriate:	<i>All boxes must be checked in order to be eligible to participate.</i>
Healthcare partner making contribution is located in and licensed to operate in Florida?	<input checked="" type="checkbox"/> Yes
Healthcare partner making contribution is a health care provider as defined in Section 768.38(2), Florida Statutes?	<input checked="" type="checkbox"/> Yes
Nursing programs met or exceeded a first time NCLEX passage rate of 70% for the prior year based on the 2022 Accountability Plan?	<input checked="" type="checkbox"/> Yes
The funds will be used for an eligible purpose per Section 1009.896, Florida Statutes?	<input checked="" type="checkbox"/> Yes

Proposal Details

I. Use of Funds

Baptist Health South Florida will invest \$750,000 to be used for student financial support to help cover the student's cost of tuition and fees for up to 72 eligible

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NWCNHS undergraduate nursing students each year (“Nurse Scholars”) enrolled in the Generic BSN and Accelerated Option BSN programs, in exchange for a work commitment post-graduation. LINE matching funds would double the financial support investment to \$1.5M, which would increase the value of the student awards and/or the number of Nurse Scholars. The funds will facilitate identifying qualified nursing students who are interested in working at Baptist Health South Florida facilities and would enhance retention of these nursing scholars upon graduation, as part of the Baptist Health South Florida nursing workforce in the State of Florida. Baptist Health South Florida would commit to investing time and resources into onboarding, orienting, and enhancing the professional development of these new graduates as RNs. A copy of the proposed pledge terms from Baptist Health Scholars Program Agreement is available upon request.

II. Onboarding & Retention of Graduates

The Clinical Learning Department within the Center for the Advancement of Learning at Baptist Health South Florida facilitates competency training for nurses and other clinical partners and drives positive clinical outcomes by delivering evidence-based education, clinical orientation, professional development courses, and continuing education provided by the American Nurses Credential Center (ANCC). The department includes the ANCC-accredited RN Residency Program and the Competency and Clinical Advancement Program.

- 1. RN Residency Program** has specialty programs in the areas of critical care, operating room, perioperative residency, and emergency medicine to help new graduate and transitional nurses gain experience, judgment, skills, and confidence to have a successful practice. This program is led by masters- and doctorate-level educators that provide standardized nursing and clinical partner orientation and training, cardiopulmonary resuscitation classes, phlebotomy, and arrhythmia training. Nurses are actively involved with the educational and competency validation process and incorporate teaching in all aspects of their practice. Classes on leadership, precepting, and mentoring are highly valued by direct care nurses, and the orientation and development of unit-based clinical educators is enhanced through special forums, conferences, and the sharing of electronic resources. The goal of this education centers heavily on patient safety, but also includes developing expertise in the spiritual, cultural, and patient education aspects of care as well.
- 2. The Competency and Clinical Advancement Program** is designed for nurses eager to develop professionally, and it offers the unique opportunity to participate in shared governance; explore avenues for new knowledge, innovations and improvements, demonstrate exemplary professional practice, and enjoy salary benefits.

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As a Magnet-designated health system for nursing excellence, Baptist Health upholds the highest standards and supports the mission to provide clinically excellent, compassionate care. Baptist Health South Florida also offers tuition reimbursement and financial support for nurses pursuing higher degrees and an extremely competitive benefits package. Through Baptist Health's membership with CE Direct, all licensed clinicians have free access to continuing education and nursing certification test preparation content. Other educational opportunities include conferences, webcasts, symposiums, and online learning provided by Baptist Health's Continuing Medical Education (CME) department, which provides nearly 2,000 hours of classes annually through its nationally accredited program. Every year, Baptist Health clinicians earn nearly 90,000 credits in 400+ courses.

III. Program Expansion

Beginning in fall 2022, the Nicole Wertheim College of Nursing & Health Sciences (NWCNHS) at FIU will increase admissions to the Generic BSN program by 35 additional students with an increase of 29% from 120 to 155 students in the Generic BSN Program. For fall of 2023, the Generic BSN program is projecting to onboard 180 new nursing students resulting in an overall increase of 60 students or 50% over fall of 2021's 120-target enrollment. For fall of 2023, the Accelerated Option BSN program will increase by 10% from 60 students to 66 nursing students. Increasing the nursing pipeline will benefit from student financial assistance which will be provided by Baptist Health Student financial support from Baptist Health, coupled with the opportunity for both committed clinical rotation spots and future employment will enhance recruitment and retention of diverse undergraduate nursing students in both the NWCNHS Generic BSN and Accelerated Option BSN programs. The Baptist Health Nurse Residency and Competency and Clinical Advancement Programs will provide additional clinical experience and expertise that will enhance quality health care and support their nursing expertise, which will benefit them if they decide to seek graduate education in nursing.

The State of Florida will benefit from the increased enrollment in these nursing programs, since this will lead to an increase in new licensed registered nurses entering the workforce. The State of Florida LINE matching funds will reduce financial barriers for nursing students coupled with the Baptist Health System support.



**State University System
2022-2023 Linking Industry to Nursing Education (LINE) Fund
Proposal Form***

University:	Florida International University
Healthcare Partner:	HCA Healthcare/HCA East Florida
Date Proposal Approved by University Board of Trustees:	Expected by 8/29/2022
Amount Requested:	\$1,500,000
University Contact (name, title, phone, & email):	Dr. Ora Strickland, Dean and Professor; (305) 348-0407; olstrick@fiu.edu
Please check the boxes below as appropriate:	<i>All boxes must be checked in order to be eligible to participate.</i>
Healthcare partner making contribution is located in and licensed to operate in Florida?	<input checked="" type="checkbox"/>
Healthcare partner making contribution is a health care provider as defined in Section 768.38(2), Florida Statutes?	<input checked="" type="checkbox"/>
Nursing programs met or exceeded a first time NCLEX passage rate of 70% for the prior year based on the 2022 Accountability Plan?	<input checked="" type="checkbox"/>
The funds will be used for an eligible purpose per Section 1009.896, Florida Statutes?	<input checked="" type="checkbox"/>

Background

The LINE Fund is intended to incentivize collaboration between nursing education programs and health care partners and to meet local, regional, and state workforce demand by recruiting faculty and clinical preceptors, increasing the capacity of high-quality nursing education programs, and increasing the number of nursing education program graduates who are prepared to enter the workforce. Subject to available funds,

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for every dollar contributed to an institution by a health care partner, the fund shall provide a dollar-for-dollar match to the participating institution for approved proposals.

Funds may be used for student scholarships, recruitment of additional faculty, equipment, and simulation centers to advance high-quality nursing education programs throughout the state. Funds may not be used for the construction of new buildings. To participate, an institution must submit a timely and complete proposal to the Board of Governors for consideration.

Proposals must be submitted with a total of no more than three pages of narrative for the following sections. Proposals with more than three pages of narrative will be rejected.

Proposal Details

Use of Funds.

Matching funds are requested for a \$1.5M gift received from HCA Healthcare, which will launch the Nicole Wertheim College of Nursing and Health Sciences (NWCNHS) Nurse Educator Program. The program will increase the number of highly qualified nurse educators for nursing education programs and healthcare organizations throughout the State of Florida. The gift will provide funding for: (a) two faculty that will teach in FIU's Nurse Educator Program; (b) nurse educator student scholarships; (c) recruiting and preparing preceptors as nurse educators; and (d) general recruitment of registered nurses who want to become nurse educators.

Faculty Positions. Two (2) doctoral-prepared nursing faculty with experience and expertise in nursing education will be recruited to teach in the Nurse Educator Program and to lead the recruitment, mentoring and advising of students that will be prepared as nurse educators. Emphasis will be placed on recruiting culturally and ethnically diverse students that are representative of the population of Florida. The HCA Healthcare gift provides for special consideration to be placed on recruiting African American, Hispanic, and male nurses, which are underrepresented in nurse educator positions in Florida and the Nation. The three Nurse Educator Program Tracks include:

1. The RN-BSN-MSN Track for RNs prepared at the associate degree level who seek to be prepared to receive their BSN and MSN degrees while in the Nurse Educator Program
2. The MSN Track for BSN nurses seeking to become nurse educators while earning their MSN degree
3. The Graduate Nurse Educator Certificate Track for nurses who have a master's or doctoral degree who seek to become prepared as a nurse educator.

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Student Scholarships. Scholarships will be provided for eligible students enrolled in the NWCNHS Nurse Educator Tracks. Funds will be available for tuition, books, and fees to lessen their debt and financial burden upon graduation, assure academic success, and help alleviate financial stressors while completing the program. Scholarships will assist in recruiting and retaining racially, ethnically, socially, and culturally diverse students into the program. Graduates of the FIU Nurse Educator Program will increase the number of needed diverse faculty for schools of nursing for Florida's community colleges, state colleges and universities as well as for healthcare organizations, which require nurse educators to provide ongoing continuing education to nursing staff.

Preceptor Recruitment. Nurses that currently serve as clinical preceptors or adjunct clinical faculty with limited preparation as nurse educators will be targeted for recruitment and training as nurse educators for formal nursing education programs.

Student Recruitment. Sources of applicants will focus on, but not be limited to pathways created from partnerships with community colleges such as Miami-Dade College. Recruitment and information sessions will be offered via regional hospitals, alumni outreach and engagement, and promotion of the programs on social media platforms. Strengths of the program include the fact that students will be trained in a culturally competent and diverse environment at FIU and in the South Florida region. The FIU program will have available tracks for associate degree, BSN, MSN, and doctoral-prepared registered nurses who want to become a nurse educator.

Onboarding & Retention of Graduates. It is anticipated that the first class of nurse educator students for the program will be enrolled in fall of 2022 and that up to 109 new nurse educators will be prepared over the next four years. Nurse educator faculty will serve as advisors for students and establish strong mentoring relationships to encourage student retention. The availability of scholarship funding via the HCA Healthcare gift will provide needed financial support, which will also encourage student retention. NWCNHS will collaborate with HCA Healthcare, other healthcare organizations and other nursing education programs in Florida to recruit students and provide clinical experiences and teaching internships for students.

Program Expansion. The HCA Healthcare \$1.5M gift will expire in four years with a marked reduction in funding during the 3rd and 4th years as follows: Year 1: \$577,712; Year 2: \$589,009; Year 3: \$300,000, and Year 4: \$33,279

The additional matching funds from the state will be used to hire one new additional faculty position for the Nurse Educator program and support the two HCA funded faculty positions in years 3 and 4, when HCA funding becomes more limited and to fund student scholarships for new students beginning in years 3 and 4. The matching funds can provide scholarships for up to 78 students, which doubles the number of students who can receive scholarships over the four-year period.

Anticipated Impact. Nursing Schools in the State of Florida are limited in the number of nursing students they can admit to Associate Degree and Bachelor of Science in Nursing programs due to the limited number of RNs prepared to teach nursing coursework. This situation severely limits the number of students that can be prepared as registered nurses (RNs) and is a major driving force behind the projected shortage of nearly 60,000 nurses by 2035. Community colleges that prepare associate degree nurses and BSN nurses lack the faculty needed to increase the number of diverse and non-diverse registered nurses for the State of FL. Production of registered nurses in the State of Florida needs to be greatly increased but is thwarted by the lack of nurses prepared as nurse educators. The HCA gift and matching funds from the state of Florida will support the preparation of much needed nursing faculty for expansion of enrollment in nursing programs in Florida and an increased production of registered nurses for the state and region. Nurse educators are needed to serve as partners for practice transitions, learning facilitators, change agents, mentors, leaders, champions of scientific inquiry, and advocates for high quality health care. They also serve as mentors, role models, and preceptors to guide staff nurses' professional development. This initiative will help decrease the current nurse educator shortage in Florida and help address the nursing shortage, since more nurse educators are needed in order to educate and graduate more registered nurses. This important initiative will have a long-term impact on the future of healthcare in the region and beyond by fostering academic and professional development of nurse educators for the state's schools of nursing and healthcare organizations; thereby increasing the availability of well-educated nurse educators that will help increase the supply of registered nurses for the state and region.