



FLORIDA STATE UNIVERSITY  
OFFICE OF THE PRESIDENT

TO: Chancellor Marshall Criser

FROM: John Thrasher

DATE: August 7, 2020

SUBJECT: FY 2021-2022 Legislative Budget Request Issues

With the support of the Governor, Legislature, and Board of Governors, Florida State University has made unprecedented advancements in *U.S. News & World Report* rankings - moving from #43 four years ago to #18 as of September this year. We have set new records for four-year graduation rates in Florida and gained stature as a national leader in student success, helping fuel the innovation economy that will drive Florida's future.

FSU is now positioned to give Florida two universities in the Top 10 nationally, making Florida a magnet for top talent and companies from around the nation and beyond. Our plan to elevate FSU's ranking is outlined in this Legislative Budget Request, and it is a bold initiative to accelerate FSU's progress. Your investments in FSU's student success and the broader innovation enterprise will improve the outcomes of the university while contributing to Florida's stature as a destination state for talent and industry.

To be clear, continued state operating support is critical to further advancement in national rankings. It is more expensive to operate a nationally ranked university, but the benefit to the state and return on investment to the economy is greater. The FSU LBR reflects a request for a state financial investment that is mindful of the balance of other state priorities, particularly during the COVID-19 pandemic and our economic recovery, yet critical to successfully accomplishing the state challenge to secure and maintain a top-tier nationally ranked university.

Accordingly, Florida State University submits the following Legislative Budget Requests for consideration.

FSU Priority Initiatives (Unique University Issues)

- a. FSU-Top 10
- b. FSU Operational Support-Top 10
- c. Critical Electrical Infrastructure at the National High Magnetic Field Laboratory
- d. Integrated Advancement for the Joint FAMU-FSU College of Engineering

Also included in this packet is the University Efficiencies report.

cc: Ed Burr

**State University System  
Education and General  
2021-2022 Legislative Budget Request  
Form I**

<b>University(s):</b>	<b>Florida State University</b>
<b>Request Title:</b>	<b>FSU-Top 10</b>
<b>Date Request Approved by University Board of Trustees:</b>	<b>Pending approval at September 10-11 Board of Trustees Meeting</b>
<b>Recurring Funds Requested:</b>	<b>\$25M</b>
<b>Non-Recurring Funds Requested:</b>	
<b>Total Funds Requested:</b>	<b>\$25M</b>
<b>Please check the request type below:</b>	
<b>Shared Services/System-Wide Request</b>	<input type="checkbox"/>
<b>Unique Request</b>	<input checked="" type="checkbox"/>

- I. **Description** – 1. Describe the service or program to be provided and how this issue aligns with the goals and objectives of the strategic priorities and the 2020 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.

**Overview**

FSU is requesting a recurring investment of \$25 million dollars to continue the university’s unprecedented and entrepreneurial efforts to move into the Top 10 public universities in the nation. Florida is the nation’s third largest state and is recognized as having the top public higher education system in the country for three years in a row. FSU has demonstrated incredible return on investment of targeted state funding by becoming the fastest improving institution in the entire Top 50 publics. In the past five years, FSU has served the State by improving a full 20 spots, from #43 to #38, #33, #26, and most recently becoming the 18th ranked public university in the nation and Florida’s second institution ranked in the Top 20. The more highly an institution is ranked, the more difficult it becomes to move up. Despite this factor, FSU plans to continue its move to achieve the Top 10.

That FSU has accomplished this level of success without a teaching hospital is a remarkable testimony to the uniqueness and ingenuity of the university and

its faculty. Florida State has invested in a comprehensive strategy guided by the university strategic plan and the BOG Accountability Plan.

To continue its move to the Top 10, FSU will strategically invest in:

- Continued growth of our distinctive and productive research base with high-level faculty hiring, particularly in the STEM fields to improve our research productivity, teaching, and national reputation as a top Research 1 university;
- Building upon our nationally acclaimed student success program by becoming a model for innovative and effective academic programs and career preparation for Florida's leaders of the future;
- Improving our SUS-leading transfer student success, particularly for Florida College System AA transfers;
- Reducing the Student-to-Faculty ratio from 20.5-to-1 to 17-to-1 to advance teaching and research at the university;
- Recruiting and supporting excellence and equity in our undergraduate, graduate, faculty and staff ranks.

Florida State University is grateful for the continued support and investment of the Florida Legislature, particularly during these difficult times. Their support over recent years has propelled the upward trajectory of FSU and the entire State University System, advancing the quality of our universities to new heights.

FSU is positioned to help the state of Florida rebound from the COVID-19 pandemic and continue Florida's advances in higher education, research, and producing a talented, innovative workforce.

### **Investing in new research faculty to expand our research portfolio**

With recent state investments substantially elevating the university and continuing to do so, Florida State still has far fewer dollars for faculty resources and research than the institutions that now separate FSU from a Top 10 ranking. Our Top 10 plan hinges on the continuation of a bold faculty hiring initiative that is bringing the nation's top talent to FSU. Our recent initiatives have resulted in the hiring of more than 240 outstanding new faculty members, who are teaching, conducting leading-edge research, and building the FSU and State of Florida reputation. Nonetheless, FSU remains short of its goal to add 400 new faculty overall.

Moving the needle on *U.S. News & World Report* rankings is rather straightforward. It is also tied to state investment, as many of the measures are a direct reflection of university resources. For example, 10% of an institution's ranking is determined by its per-student spending, and another 20% is based on faculty resources. Almost one-quarter of the rankings are

based on the reputation of FSU among our national colleagues. Thus, Florida State's Top 10 funding request for the coming fiscal year is directed specifically at the investments that will help elevate the performance and national stature of the university and thereby the entire State of Florida.

### **Establishing the National Framework for Student Success**

Florida State is already recognized as a national leader for improvements to its student retention and graduation rates. Since 2005, student retention at FSU improved from 87.9% to 93%, which is among the top 15 public universities in the nation. The six-year graduation rate at FSU has risen from 69.6% to 83%. The four-year graduation rate has risen from 46.2% in 2002 to 72% in 2018 (the highest four-year graduation rate in the history of FSU and the State University System) and it is expected to be even higher for the class that has graduated in 2020 (73+%). For the next set of *USN&WR* rankings, Florida State is projected to place in the top 10 in the country on these student success metrics.

We have an expectation that student success should be more than graduation and retention rates. We have established Six Pillars for Student Success to create a more holistic and beneficial effect on the student experience. Those pillars are:

1. A success team behind every student
2. Learning communities
3. A redesigned curriculum
4. Experiential and global learning
5. Leadership and personal development
6. College to career

The **success team** behind every student allows us to address inequities to assure that students from all sub-populations have an equal rate of graduation and equal experiences. To assure that support, we need to increase the number of advisors at FSU to get closer to the industry recommended student-to-advisor ratio of 300:1. Increasing the number of student advisors would also give new students a single advisor for the duration of their time at FSU, freeing up faculty to better guide and direct students on properly preparing for their careers.

Florida State has deployed College Life Coaches (CLC) to provide "high-touch" academic support to at-risk students who demonstrate the greatest need. While the CLC program has been enormously successful, it lacks a sufficient number of coaches and can thereby not adequately attend to the students who would benefit most from this level of support.

Even with these limitations, FSU has one of the nation's highest four-year graduation rates, and we have relative parity in the graduation rates of our Pell students and our various racial and ethnic populations. Our highly

successful Take 15 initiative not only improves students' times to degree, but also reduces their expenses and significantly improves their lifetime earnings.

For those students who face unique barriers or take a sub-optimal path to graduation we created the Graduation Specialists Initiative. This initiative brings together a team of specialized staff members who guide and assist 1,500+ students with high credit hours to a clear and timely path to graduation, as well as students who have stopped out of FSU and need to re-enroll to graduate.

We have been making great strides in **redesigning our curriculum**, particularly in gateway courses with high incidents of D and F grades or withdrawals (DFW). Failure to pass a gateway course is one of the keys to delayed graduation. In Fall 2017, FSU launched its Center for the Advancement of Teaching to promote proven educational practices and assist faculty in their adoption of leading-edge educational methodologies. We want to make sure that our courses maximize the learning for all of our students, particularly those who are the first-generation in their families to attend college, and employ active, experiential approaches that prepare students with the skills they need to thrive in their careers. In fact, we were just designated one of the eleven top universities in the country for successfully preparing our large group of first generation students, and noted as a national model in this important work. The COVID-19 pandemic has also expanded the need to present students with unique and effective learning environments. We must continue expand faculty professional development and the curricular interventions that improve the educational value of all of our courses for all our students.

**Experiential and global learning** - Our students are graduating into a changing world that expects them to have job-ready skills and experiences. We are a recognized leader in international education and global experiences, but we must focus on creating an access pipeline to these activities for our lower socioeconomic students. Funding will be key to developing more experiential learning opportunities and expanding those opportunities to the full breadth of our student population.

FSU's recent Engage 100 effort is an innovative way to introduce first-year students to engaged-learning experiences that enrich traditional classroom instruction and bolster student success. Our Engage 100 program currently reaches about half of each incoming class, and new resources will allow us to expand it to reach the full first-year class of students.

In 2019, FSU became the largest and most diverse university in the nation to adopt an experiential learning graduation requirement. Experiential learning includes undergraduate research, internships, community and project-based learning, international study, and other high-impact practices that provide students with the knowledge and skills needed to easily transition from **college to career**. Additional funding will expand programming and financial

support for students, particularly for students from lower-income backgrounds, so they can engage in more of these high-impact, career-building experiences.

### **Transfer Student Success**

In Spring 2020, the Florida Legislature passed a bill to include transfer student graduation rates as a Performance Funding Metric for the State University System. The intent was to improve the graduation rates of AA degree transfers from the Florida College System. Florida State has a considerably higher two-year graduation rate than any of the other SUS institutions, but we need to do better. Twenty years ago, we started an enrollment management group that met once every two weeks to improve the student success for first-time-in-college freshmen. We are leveraging this group to deeply expand the support and engagement we provide to transfer students, such as through new advisors, transfer student support, and our Engage 100 project mentioned earlier. Financial aid remains an issue for these students and it is difficult to get donors, especially in the current financial context, to give sufficient philanthropic support for need-based aid.

FSU also has been engaged in a workgroup on transfer student success for the past two years with our colleagues from a dozen universities in the Southeast. This effort, sponsored by the Association of Public and Land-Grant Universities (APLU), is identifying the data and interventions necessary to assure on-time graduation for transfer students. Through this partnership, we are learning new ways to improve our transfer student performance.

### **Emphasis on Excellence and Equity**

Top 10 universities are renowned for recruiting top students, faculty and staff. FSU has done fairly well in that regard, but we need to increase the critical mass of top leaders and influencers to climb the next rung of the rankings ladder. FSU will need to enroll more Benacquisto (National Merit) Scholars, Presidential Scholars (a program that lacks a recurring funding source), and other very top students.

FSU's plans of hiring new faculty means we are aspiring to hire a full range of outstanding faculty members: National Academy members, senior faculty (full professors) of national acclaim, associate professors with extensive research experience, assistant professors that hold research promise, and instructional faculty who will address course capacity constraints and provide smaller class sizes.

Exceptional students in doctoral and graduate programs are also essential in supporting FSU's movement in the national rankings and its instruction and research portfolio. These students and scholars are key components of a

competitive Research I University, and they are a core part of our Top 10 plan. We have had record enrollment of graduate students for the past two years, but we need to do a better job being competitive in the recruitment of the nation's top graduate students. FSU plans to invest in expanding our graduate student stipend support to help us move closer to market levels. Furthermore, to help accommodate the needs in undergraduate teaching, mentoring, and research, FSU will plan on investing to expand the number of graduate student assistantships.

This expansion will allow Florida State to increase its graduate student enrollment and programs and bring FSU on par with its public Research I University peers. Currently, FSU is in the bottom third of this peer group on the proportion of the student population that are graduate students. Funding is critical to our expansion of our overall graduate student population, funding expanded faculty and additional graduate assistantships.

The faculty hired through our national rankings enhancement funding will both help recruit and rely on exceptional students in doctoral programs. These students and scholars are key components of a competitive Research I University, and they are central to our Top 10 plan. To accommodate the needed growth in faculty research, we must increase the number of recurring graduate assistantships by at least 80. The assistantships will help us to attract top graduate assistants to complement our recent and future faculty hires to help elevate FSU to the level of our peers, to strengthen the scholarship of existing faculty members, to promote the research of new hires, to teach key undergraduate courses, and to mentor graduate and undergraduate students.

Diversity and equity are an essential component of our strategic plan and our institutional excellence. It is imperative that we grow and support our diverse students, faculty and staff and provide them with experiences that create equitable outcomes for all groups. We have not been able to keep up with our Research I peers in providing strong financial aid packages for many of our Pell-eligible students. Tallahassee is not a large metropolitan area, so most of our Pell students must move to Tallahassee to enroll at FSU. That means their annual Cost of Attendance is roughly \$5,500 more per student than those who are able to live at home. The result is that FSU must spend considerably more on need-based aid per student than universities in metropolitan areas. We have nation-leading programs like CARE and our Unconquered Scholars programs that support first generation and lower socioeconomic students, but they only serve 20% of our Pell-eligible students. We must expand more avenues of highly targeted support to all our Pell students.

The diversity of our faculty ranks remains lower than we want in spite of specialized incentives to recruit and retain these faculty. Our students benefit when faculty from varied backgrounds and experiences mentor them. FSU has a long history of inclusion born from its days as a women's college. The

precursors to our CARE program began over 50 years ago. We have earned the Excellence in Education Diversity Award for each of the past six years and have been named National Diversity Champions for the past four years. We are number four in the nation producing Black medical doctors, behind three HBCU Colleges of Medicine and a leading producer of Black and Hispanic doctoral degrees in non-medical disciplines.

FSU also has a distinguished record as one of the leading producers of study abroad opportunities for students. Additionally, FSU recently was awarded the 2018 Platinum Level Institutional Award for Global Learning, Research & Engagement from the Association of Public and Land-Grant Universities. The previous year, FSU was one of four institutions awarded the Senator Paul Simon Award for Campus Internationalization. In spite of these accolades, FSU is committed to doing more to improve equity and reduce racism on our campus and throughout Florida.

### **Resource Needs**

Primary among FSU's needs is to increase the size and quality of the faculty and to retain its existing faculty. The current COVID-19 outbreak may create an opportunity for FSU to hire nationally acclaimed faculty whose institutions can no longer adequately support their research. We have improved the climate for faculty at FSU and have improved our student-to-faculty ratio from 25:1 to 20.5:1. Yet we are still 181<sup>st</sup> in the latest *U.S. News & World Report* rankings of public universities on this measure. Florida State's multi-year plan has a student-to-faculty goal of 17:1, which would place us among the top 100 public universities.

Our current ratio requires our faculty to do more with less and it affects our ability to reimagine the classroom experience and create small classes. Student-to-Faculty Ratio and class size are both *U.S. News* metrics. With the previous support of the Legislature, Governor, and Board of Governors, FSU has hired hundreds of new faculty members, but we are still short of the number needed to reach a student-faculty ratio of 17:1 ratio would require an additional 363 faculty members. In total, the dollars requested in FSU's 2021-2022 LBR for Top 10 Plan would allow Florida State to hire an additional 102 faculty members. These 102 additional faculty would bring the university's student-to-faculty ratio to 19.4:1, good enough to improve to 161<sup>st</sup> in the nation.

Achieving this short-term 19.4 ratio would still have FSU behind most public universities in the United States, including institutions such as:

- University of Northern Kentucky
- University of North Florida
- University of Texas – Tyler



- University of West Georgia
- Valdosta State University

The requested funds will be used in a variety of ways annually, including:

- Hiring additional faculty;
- Establishment of world-class centers of excellence through the recruitment of National Academy-caliber scientists and senior researchers;
- Expanding student success efforts and advising;
- Recruiting for excellence and diversity among students, faculty and staff; and
- Providing funds necessary to improve scholarships and need-based aid.

Specifically, these funds will be used for:

2 National Academy Members	\$0.5M
15 Full Professors (established researchers)	\$2.3M
15 Associate Professors (mid-career stars)	\$1.8M
40 Assistant Professors	\$4.0M
30 Instructional Faculty	<u>\$2.2M</u>
Total	\$10.8M + Benefits=\$14.4M
80 Graduate Student Stipends	\$1.7M
20 Advisors/Academic Coaches/Graduation & Transfer Student Specialists	\$1.0M
Undergraduate Student Success Programming	\$1.0M
Scholarships	\$2.5M
Financial Aid	<u>\$4.4M</u>
	\$25M

**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.

Increases in funding will provide strategic investments that benefit the State of Florida:

- Elevate Florida State University in its pursuit of Top 10 status among public universities as determined by *U.S. News & World Report*.
- Achieve higher national prominence as a leader in the fields of science, technology, engineering and math to ensure that Florida State continues to be a model for the State of Florida and nation in student career readiness and placement
- Realize substantial savings for Florida families through high student retention and increased four-year graduation rates
- Provide affordable excellence across a broad spectrum of academic fields; add significantly to the university's existing centers of excellence, including its nationally ranked science, arts, and business programs
- Provide benefits associated with expanding the university's research enterprise and research discoveries that will create jobs, opportunities for start-up companies, and by generating discoveries that may directly affect Floridians.

More importantly, state investments will allow Florida State to elevate its standing in most of the Florida Board of Governors' metrics, enhance its contributions to the State of Florida, and enable Florida State University to achieve world class distinction.

Key metrics that the *U.S. News & World Report* and *Top American Research Universities* include:

- Peer Ratings/National Reputation
- Student Retention and Graduation Rates (especially four-year graduation rates)
- Freshman Retention
- Student/Faculty Ratio
- Class Size
- Faculty Resources
- Total Research Expenditures
- Federal Research Expenditures
- National Academy Members

- Faculty Awards
- Doctorates Granted
- Average SAT
- Postdoctoral Fellows
- Alumni Giving Rate
- National Reputation

**III. Facilities** (*If this issue requires an expansion or construction of a facility, please complete the following table.*): **None**

**2021-2022 Legislative Budget Request  
Education and General  
Position and Fiscal Summary  
Operating Budget Form II**

**University:** Florida State University  
**Issue Title:** FSU Top 10

	<u>RECURRING</u>	<u>NON- RECURRING</u>	<u>TOTAL</u>
<u>Positions</u>			
Faculty	102.00	0.00	102.00
Other (A&P/USPS)	20.00	0.00	20.00
	-----	-----	-----
Total	122.00	0.00	122.00
	=====	=====	=====
Salaries and Benefits	\$15,400,000	\$0	\$15,400,000
Other Personal Services	\$1,700,000	\$0	\$1,700,000
Expenses	\$0	\$0	\$0
Operating Capital Outlay	\$0	\$0	\$0
Electronic Data Processing	\$0	\$0	\$0
Financial Aid	\$6,900,000	\$0	\$6,900,000
Special Category (Specific)	\$0	\$0	\$0
<u>Student Success Programming</u>	\$1,000,000	\$0	\$1,000,000
	\$0	\$0	\$0
	\$0	\$0	\$0
	-----	-----	-----
Total All Categories	\$25,000,000	\$0	\$25,000,000
	=====	=====	=====

**State University System  
Education and General  
2021-2022 Legislative Budget Request  
Form I**

<b>University(s):</b>	<b>Florida State University</b>
<b>Request Title:</b>	<b>FSU Operational Support-Top 10</b>
<b>Date Request Approved by University Board of Trustees:</b>	<b>Pending approval at September 10-11 Board of Trustees Meeting</b>
<b>Recurring Funds Requested:</b>	<b>\$20M</b>
<b>Non-Recurring Funds Requested:</b>	
<b>Total Funds Requested:</b>	<b>\$20M</b>
<b>Please check the request type below:</b>	
<b>Shared Services/System-Wide Request</b>	<input type="checkbox"/>
<b>Unique Request</b>	<input checked="" type="checkbox"/>

- I. Description** – 1. Describe the service or program to be provided and how this issue aligns with the goals and objectives of the strategic priorities and the 2020 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.

**Overview**

Operations funding will further advance FSU’s plan to reach the Top 10 by investing in critical ongoing needs as well as transformational efforts that will advance Florida’s economy and workforce.

**Improving Positioning for Membership in the AAU**

Florida State University finds itself as the only SUS institution designated “Preeminent,” (due to our meeting 12 of 12 metrics for five years and nationally noted for meeting the goal of designation to the Top 20 publics more quickly than anyone could have predicted) which does not receive specific “Operating Funds” from the legislature. FSU maintains that with such support, we will not only continue our march up the *US News* rankings, but also will be increasingly ready to earn another important marker of excellence. Despite all the positive publicity around the State University System of Florida, the nation’s third largest state continues to have only one member of the Association of American Universities (AAU). The AAU

describes themselves as follows: "AAU comprises 65 distinguished research universities across the United States that continually advance society through education, research and discovery. Our universities earn the majority of competitively awarded federal funding for academic research and are educating tomorrow's visionary leaders and global citizens." Historically, the AAU has favored institutions with large research hospitals, expansive engineering programs, and high R&D expenditures through their research enterprises. These institutions are considered the top research universities, and they use that status to collaborate with each other and to win external funding contracts. Membership in AAU also elevates an institution's national peer reputation, a core metric for *U.S. News & World Report* and other academic rankings, and something that is often difficult to improve quickly.

The historic composition of AAU membership did not favor an institution like FSU that has a distributed primary medicine program and an atypical, shared engineering college with FAMU. However, the AAU accepted three members in 2019 that broke their historic mold. Their website notes: "*the association's black box of membership criteria include a mix of "quantitative measures used to assess the breadth and quality of university programs of research and graduate education" and a "more qualitative set of judgments about an institution's mission, characteristics, and trajectory."* With recent legislative investments, FSU is now better positioned than ever to deliver the state of Florida its second institution in the AAU. FSU fits that new AAU mold with a strong academic trajectory, a growing research portfolio (now over \$250M annually in research expenditures), a diverse population, and leadership in health and other issues affecting rural and underrepresented populations.

FSU has the benefit of being home to a diversity of highly recognized research organizations including: the National High Magnetic Field Laboratory, the Center for Ocean-Atmospheric Prediction Studies (COAPS), the Florida Center for Reading Research, the Learning Systems Institute, the Center for Advanced Power Systems, the Geophysical Fluid Dynamics Institute, the Institute of Politics, and the Institute for Justice Research & Development. These are some of 60 centers and institutes at FSU that cut across a broad spectrum of disciplines.

This diversity of programs and expertise positions FSU to establish itself as a national leader in many multidisciplinary fields. FSU has begun a health data sciences initiative to build our data sciences infrastructure to improve our case for more large National Institutes of Health (NIH) funded projects. Another project, entitled Big Bets, is working to increase external funding from non-governmental sources. Both of these projects have four pilot entries, but they will require additional resources for FSU to compete with other top universities – especially those in the AAU.

In the FSU-Top 10 Legislative Budget Request, we identify efforts to build our reputation as a top research university by increasing our faculty ranks by 102. We showed our commitment to student success especially for diverse and lower-income populations and for transfer students. We also discussed our need to improve our recruitment of excellence and equity with undergraduate and graduate students, and faculty and staff. These bold investments will be necessary to move FSU into the Top 10 public universities in the nation.

This is an expensive endeavor, however, and it requires a concomitant investment in our operations and infrastructure to be fully realized. National Academy members, full professors, and associate professors with large research portfolios require startup packages including laboratory space and equipment, which in some disciplines may reach seven-figures. Invariably, FSU will need to retrofit aging laboratories with new machinery and technologies. Usually, these new faculty members are more expensive to employ during their first few years until they start attracting external research funding. However, the returns on these initial investments can be immense, as these faculty secure large grants and attract other high-performing faculty.

Each new faculty member in STEM or Health can be expected to generate more than \$150,000 in contracts and grants a year and be central players in FSU securing new patents and creating new business spinoffs. Recent return-on-investment studies show that research activities contribute to a strong return-on-investment; for every dollar Florida invests in its state universities, there is a return of nearly \$11.00.

In addition to startup funds for laboratory improvements, most of these faculty require the support staff necessary to manage their laboratories and research activities. The Health Data Science Initiative (HDSI) has a goal of producing the big data infrastructure necessary to earn larger grants, especially from the National Institutes of Health (NIH). The support staff needed for that project include individuals who can manage the projects, computing environment, data architecture, data carpentry, data governance, and AI/Machine Learning/Cognitive Computing algorithms to name a few.

Florida State is building a data science/big data infrastructure to empower multidisciplinary research grant proposals for groups like HDSI, but needs to elevate the computing and statistical support necessary to justify winning even bigger grants. Our Magnet Lab is a good example of the value of creating a strong infrastructure that supports research on many projects that leverage that high-caliber infrastructure to promote internationally recognized research. The Big Bets project is another example where FSU is creating an infrastructure and pipeline to secure grants from private

foundations and businesses. These grants are often multidisciplinary in nature, so operational resources are needed to coordinate efforts between faculty in numerous departments.

Building new research infrastructure and upgrading existing infrastructure will allow researchers to compete for more and better grants, which will not only bring external funding to the university, but it will also improve the learning environment for our graduate and undergraduate researchers. These efforts will allow FSU to produce more high-quality PhD graduates who will be ambassadors demonstrating the value of an FSU education.

Whereas new faculty can bring expertise in new research areas, an equally important investment is in retaining assistant and associate professors who are research productive. Florida State has invested in its faculty development programs to assure that all faculty can join a network of colleagues who can mentor them to be great researchers. It is usually less expensive to retain a faculty member than to hire a new one. Nonetheless, as FSU has increased its place in the rankings, our faculty are getting more offers to join other universities. We need to counter that trend by maintaining competitive wages and providing salary and support funds as a basis for counteroffers. With the significant investments the university makes in getting new faculty members established at the university, it is particularly challenging to have them leave the university. Retaining faculty is a key strategic priority.

Existing faculty often also benefit from seed money to explore emergent research topics. This seed money allows them to partner with colleagues to demonstrate expertise on emerging topics that are ripe for earning grants. These funds are frequently used to encourage the interdisciplinary research that leads to new discoveries, product, patents, and startup companies. FSU provides some seed money for faculty researchers but will need more to elevate to a position among the top 10 universities.

Another key support for both existing and new faculty is post-doctoral scholars (post-docs) and graduate student research and teaching assistants. FSU has been able to grow its number of post-doctoral researchers and graduate assistants in the past few years. Moving graduate assistant stipends to market levels will allow the university to recruit and retain outstanding graduate student assistants. Furthermore, recent PhD graduates covet post-doctoral appointments in top research centers around the world. Post-doctoral researchers are an invaluable support structure for grant research as they bring external research experience from other institutions and they are committed almost exclusively to research for the three years of their appointment. Although post-docs can be paid by grant proceeds, most grants are not large enough to support these researchers without additional institutional support.



Florida State continues to raise private funds to support new faculty members and infrastructure needs, as well as the development of state-of-the-art teaching and laboratory facilities. Rarely do institutions receive \$100M donations as FSU did from the Jim and Jan Moran Foundation for the Jim Moran College of Entrepreneurship. We will continue to pursue private funds to support our mission, but we need state dollars to provide the strategic investments we need to get into the Top 10. It is important to note that alumni giving is also one of the *US News* metrics.

In addition to research infrastructure and faculty retention, there are operational expenses associated with a top student success program. Previous dollars have allowed Florida State to invest in the EAB Student Success Collaborative, a project designed to increase persistence and graduation among at-risk students. This initiative has allowed FSU to identify, through statistical analysis, and then guide students to their best – or a better – course of action. Examples include students who might benefit from switching majors and providing students (and their academic advisors) with information on job prospects and expected earnings.

FSU is also investing in Salesforce to provide a common communication platform for students. This platform will allow FSU to centralize almost all communications with students under a single platform. As we invested in various platforms to improve our student retention and graduation, we also created a fragmented landscape of tools. As we focus now on the full student life cycle, it is essential for us to have a singular platform for students to access information and for advisors to access students to help them achieve on-time graduation.

Increasingly, top universities are using artificial intelligence, machine learning and data science to identify positive and negative student behaviors and outcomes. From these efforts, they can identify when students have a change in their academic performance or behaviors that may suggest a need to intervene. The EAB platform does this to a minor extent, but FSU has been working on expanding its student data science infrastructure as a way to gain better insights into student success both in school and after graduation. Expanding student success technologies and data capacities is particularly important during the COVID-19 pandemic as the university works to ensure every student is engaged and supported throughout their time at FSU, even if many are not on campus.

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

- Startup funds for new faculty to establish their research centers or laboratories
- Purchase of laboratory equipment and technologies;

Pending BOT Approval September 12, 2020

- Development of infrastructure and expertise around data sciences;
- Employment of support staff, such as laboratory managers and technicians, fiscal assistants, grants editors, and grants managers to support new research ventures;
- Employment of postdoctoral scientists who will work shoulder to shoulder with STEM faculty in their laboratories;
- Seed funds to enable faculty to experiment with new research avenues in preparation for submitting grant proposals;
- Compensation to assist in retaining and rewarding outstanding faculty members;
- Purchase of information technology and technology support to improve student outcomes.

Specifically, funds will be invested in:

72 Start-up for new faculty's research labs	\$6.0M
50 Research Support Staff	\$2.5M
40 Post-doctoral Scholars	\$1.5M
New Research Proposal Seed Money	\$1.0M
Faculty Retention	\$2.8M
Graduate Assistant Stipends & Retention	\$1.2M
Laboratory upgrades, machinery and technology	\$2.0M
IT infrastructure upgrades	\$2.0M
Student Success Technologies	<u>\$1.0M</u> \$20M

**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 strategic investment will result in significant positives for both Florida State University and the State of Florida:

1. Retaining top faculty will further FSU's goal of being ranked in the Top 10 among public universities as determined by *U.S. News & World Report* by reducing class size and improving the student-to-faculty ratio
2. Maintaining stability by keeping faculty from being lured to higher-paying institutions improves academic program continuity while providing students with greater consistency, relatability and connectedness to the faculty and the institution
3. Retaining top faculty will allow Florida State to attract additional high-achieving undergraduates, including Bright Futures and Benacquisto Scholars, who often choose a college based on opportunities to engage with distinguished faculty
4. Improving faculty retention means more students will be able to engage in high-impact practices like directed individual study, undergraduate research, community and project-based learning, honors courses, entrepreneurial activities, and internships
5. Heighten the university's reputation as a STEM leader in Florida and the nation, enhancing Florida State's standing
6. Further FSU's national stature in research and creative endeavors through the attraction and retention of faculty who are at highly productive and widely regarded points in their careers
7. Establish affordable excellence across a wider array of disciplines and Florida State's centers of excellence, including its top-ranked programs in business, STEM, design, film, and other high performing fields of study
8. Improving student success and the college to career pathway through technology investments.

Continued state investments in FSU will also raise the university's standing in virtually every Board of Governors metric used in performance awards and preeminence determinations, including:

- Student Retention and Graduation Rates
- Freshman Retention

- Student/Faculty Ratio
- Class Size
- Faculty Resources
- Total Research Expenditures
- Federal Research Grants
- National Academy Members
- Faculty Awards
- Doctoral Degrees Granted
- Average SAT
- Postdoctoral Fellows
- Alumni Giving Rates
- National Rank and Reputation

**III. Facilities** *(If this issue requires an expansion or construction of a facility, please complete the following table.):* **None**

**2021-2022 Legislative Budget Request  
Education and General  
Position and Fiscal Summary  
Operating Budget Form II**

**University:** Florida State University  
**Issue Title:** FSU Operational Support

	<u>RECURRING</u>	<u>NON- RECURRING</u>	<u>TOTAL</u>
<u>Positions</u>			
Faculty	0.00	0.00	0.00
Other (A&P/USPS)	42.00	0.00	42.00
	-----	-----	-----
Total	42.00	0.00	42.00
	=====	=====	=====
Salaries and Benefits	\$2,500,000	\$0	\$2,500,000
Other Personal Services	\$2,700,000	\$0	\$2,700,000
Expenses	\$4,000,000	\$0	\$4,000,000
Operating Capital Outlay	\$8,000,000	\$0	\$8,000,000
Electronic Data Processing	\$0	\$0	\$0
Financial Aid	\$0	\$0	\$0
Special Category (Specific)	\$0	\$0	\$0
Retention	\$2,800,000	\$0	\$2,800,000
	\$0	\$0	\$0
	\$0	\$0	\$0
	-----	-----	-----
Total All Categories	\$20,000,000	\$0	\$20,000,000
	=====	=====	=====

**State University System  
Education and General  
2021-2022 Legislative Budget Request  
Form I**

<b>University(s):</b>	Florida State University
<b>Request Title:</b>	Critical Electrical Infrastructure at the National High Magnetic Field Laboratory
<b>Date Request Approved by University Board of Trustees:</b>	Pending approval at September 10-11 Board of Trustees Meeting
<b>Recurring Funds Requested:</b>	-NONE-
<b>Non-Recurring Funds Requested:</b>	\$15,820,017.00
<b>Total Funds Requested:</b>	\$15,820,017.00
<b>Please check the request type below:</b>	
<b>Shared Services/System-Wide Request</b>	<input checked="" type="checkbox"/>
<b>Unique Request</b>	<input type="checkbox"/>

**I. Description**

Introduction

The National High Magnetic Field Laboratory (National MagLab) is the only lab of its kind in the United States and is the largest and highest powered magnet laboratory in the world. Headquartered at **Florida State University** (FSU) with sites at the **University of Florida** (UF) and Los Alamos National Laboratory, the National MagLab hosts 2,000 scientists from across the globe each year who leverage the power of high-field magnets to make discoveries today that will lead to the technologies of tomorrow.

Established 30 years ago through a visionary partnership between the State of Florida and the National Science Foundation (NSF), the National MagLab hosts a fleet of powerful magnets -including 17 world-record holders - that have helped facilitate more than 9,600 groundbreaking scientific publications. This research has helped scientists understand complex, new materials, find energy solutions, create a more sustainable planet, and cure diseases.

Aging Critical Infrastructure

The National MagLab's dominance in the realm of high magnetic field research is largely based on the unique capability to operate several world-record, high-field magnets at the FSU-based Tallahassee site. These magnets produce fields more than a million times stronger than the Earth's magnetic field - up to 45 tesla

continuously – with the help of strong and reliable scientific and industrial infrastructure.

*The critical equipment that supplies electrical power to the National MagLab's FSU site is now more than 28 years old and at the end of its lifetime. This affects the reliability of the electrical power to the lab, putting the lab's reputation and leadership at risk, as well as our personnel and tens of millions of dollars of highly-specialized equipment.*

The National MagLab's power needs have increased over the past two decades as our lab's stature has grown and are expected to continue to grow significantly over the next 5-10 years due to the construction of new magnets and an expansion to existing scientific and electrical equipment funded by our primary funder, the NSF – *upgrades which cannot be supported by the existing electrical power infrastructure.*

Electrical power is fed from the municipal power grid to the National MagLab via a pair of power feeds (2,000 ampere/12,500 volt AC) and a main switchgear (US1) consisting of circuit breakers, distribution lines and power quality balancing components. The electrical switchgear that powers the National MagLab is large in scale. When fully operational, the National MagLab draws more than 7% of the City of Tallahassee's power generation capacity through its electrical gear. More than 95% of the power used at the National MagLab flows through four 14.5 million watt power supplies to our massive magnets. *However, the original (US1) switchgear has reached its end of life and, having been constructed nearly 30 years ago, does not include modern protections against arc flash and other hazards.*

#### US1 Electrical Infrastructure Upgrade

The upgrade of the National MagLab's main electrical gear needs to achieve reliable and safe operations that will support the future increased electrical power demands. The upgrade is comprised of four major parts:

- (1) The replacement of the main National MagLab switch gear with modern-day equipment** that is operationally highly-reliable, increases personnel safety (via process automation, arc flash shielding, increased fault ratings), meets the increased power needs and is maintainable over the expected equipment life time of 30 years.
- (2) The replacement of the existing power quality balancing infrastructure** (capacitor bank) with a system that ensures high power quality, while also increasing the electrical power capacity, operational reliability, magnetic field stability, and longevity of tens of millions of dollars of scientific instrumentation powered by the US1 electrical infrastructure.
- (3) The replacement of the laboratory's 1992 diesel powered back-up generator** with a natural gas powered generator that can reliably sustain critical building infrastructure and unique scientific equipment during the extended power

outages which will be associated with the installation of the new US1 electrical infrastructure, as well as power interruptions due to thunderstorms and hurricanes that impact Tallahassee.

**(4) The upgrade of the laboratory's networking infrastructure** to enhance the speed, security and reliability of the MagLab computer network to accommodate the data requirements of state-of-the-art research and the new intelligent US1 electrical infrastructure.

The project can be realized within 24 to 30 months of the funds being made available. This effort includes a detailed engineering and construction planning phase executed by FSU and the National MagLab in collaboration with a private-sector electrical engineering firm, followed by installation of the equipment onsite.

#### Budget Estimate

FSU and the National MagLab have contracted and are collaborating with a private-sector engineering firm to perform a detailed engineering and feasibility study. The work has provided an informed conclusion on how the US1 electrical gear should be upgraded to achieve the most reliable and safest operations to support the National MagLab's increased electrical power demands for the next 30 years. This engineering team has worked with all relevant stakeholders and has prepared the proposed infrastructure upgrade plan.

The project cost includes engineering and detailed construction designs by an engineering firm, all necessary replacement equipment, and the installation and commissioning of the gear as well as the generator at our FSU-based site. Upgraded electrical and networking infrastructure functionality is also included in this cost estimate, i.e. additional safety features to reduce personnel exposure to high-power electrical equipment, power conditioning equipment to increase the capacity and improve the quality of the electrical power, and equipment to enhance the network connectivity at the National MagLab. The total estimated cost for the National MagLab's US1 electrical infrastructure upgrade is \$15,820,017.00.

#### Alignment with FSU Goals and the FSU 2020 University Accountability Plan

The National MagLab significantly contributes to FSU's strategic priorities and key initiatives, as well as many of its performance and preeminence metrics. This investment in critical equipment at the National MagLab addresses a need to replace aging infrastructure and modernize this world-unique facility to ensure that it is retained and continues to flourish in Florida.

Supporting this project will sustain the lab's ability to attract more than \$45 million annually in research investments from the National Science Foundation, Department of Energy, National Institutes for Health, Department of Defense, and other government and private funding sources, while bolstering FSU's



**academic and research excellence goals** on the path to becoming a **Top 10 public university**. Because this equipment investment fundamentally impacts the continued operation of the National MagLab, it also has important implications for **recruiting and retaining top-tier talent** across faculty, postdoc, and graduate student levels and for the lab's ability to **support the larger entrepreneurial ecosystem** both at the university and in the broader community. The National MagLab is also a critical training ground for educating thousands of students in diverse STEM fields, building a Florida-based workforce trained for **future high-tech jobs** or to launch their own **innovative entrepreneurial endeavors**.

## **II. Return on Investment**

In addition to being a world leader in high magnetic field research, the National MagLab is a huge economic driver for the state, yielding \$325 million in economic activity each year for Florida. A recent study by the Center for Economic Forecasting and Analysis indicates that for every dollar of state money invested in the National MagLab, \$6.44 is generated in economic activity. The National MagLab is partnering with the Tallahassee Office of Economic Vitality to attract business to Florida via its campaign to establish Tallahassee as the "*Magnetic Capital of the World*". Finally, with reliable infrastructure, the National MagLab will continue to attract thousands of visiting scientists from around the world whose travel to our FSU and UF campuses annually generates \$20 million in sales and revenue in the Tallahassee and Gainesville tourism economies.

Over the next twenty years, economists estimate that the National MagLab will generate \$6.5 billion in economic output in Florida while generating nearly 54,000 jobs. Funding this electrical infrastructure upgrade positions the National MagLab to be more successful in future funding proposals from the NSF and other federal agencies, which would bring even more money and jobs to our state. This upgrade of the National MagLab's main electrical infrastructure will also ensure that Florida will maintain worldwide preeminence at the rapidly growing scientific frontiers of high magnetic field research for the next three decades.

**III. Facilities** *(If this issue requires an expansion or construction of a facility, please complete the following table.):* **None**

**2021-2022 Legislative Budget Request  
Education and General  
Position and Fiscal Summary  
Operating Budget Form II**

**University:** Florida State University  
**Issue Title:** Critical Electrical Infrastructure  
at the National High Magnetic  
Field Laboratory

	<u>RECURRING</u>	<u>NON- RECURRING</u>	<u>TOTAL</u>
<u>Positions</u>			
Faculty	0.00	0.00	0.00
Other (A&P/USPS)	0.00	0.00	0.00
	-----	-----	-----
Total	0.00	0.00	0.00
	=====	=====	=====
Salaries and Benefits	\$0	\$0	\$0
Other Personal Services	\$0	\$0	\$0
Expenses	\$0	\$0	\$0
Operating Capital Outlay	\$0	\$15,820,017	\$15,820,017
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	\$0	\$15,820,017	\$15,820,017
	=====	=====	=====

**State University System  
Education and General  
2021-2022 Legislative Budget Request  
Form I**

<b>University(s):</b>	<b>Florida A&amp;M University and Florida State University</b>
<b>Request Title:</b>	<b>Integrated Advancement for the Joint College of Engineering</b>
<b>Date Request Approved by University Board of Trustees:</b>	<b>Pending approval at September 10-11 FSU Board of Trustees Meeting</b>
<b>Recurring Funds Requested:</b>	<b>\$6,551,700</b>
<b>Non-Recurring Funds Requested:</b>	
<b>Total Funds Requested:</b>	<b>\$6,551,700</b>
<b>Please check the request type below:</b>	
<b>Shared Services/System-Wide Request</b>	<input checked="" type="checkbox"/>
<b>Unique Request</b>	<input type="checkbox"/>

**I. Description**

Thirty-eight years ago the State of Florida boldly created the nation’s most unique shared college of engineering bringing together Florida Agricultural and Mechanical University, the leading public historically black university with Florida State University, one of the America’s 100 top research universities. Students graduate from either FAMU or FSU, but study engineering together on our shared engineering campus.

The Florida Department of Economic Opportunity recognizes that expanding engineering education is critical to Florida’s future growth. Thanks to our partnership that merges excellence in research and diversity, we are the only engineering school in the US that provides top research educational opportunities to a student population that reflects the diversity of Florida and our nation. We are also far above national averages with 28% females in our undergraduate class. Since engineering is a team sport, the diversity of our design teams provides experiences that are highly prized by corporations and these benefits accrue to all of our students, whether majority or minority.

In the four years since the legislature and partner university leadership recommitted to the joint college, we have seen an increase in most areas by 20%: to a faculty of 120, graduating 500 engineers each year and securing \$25M

external research funding annually. We secured 30 patents in 2019, and contribute to the economy and society in so many ways, including nationally recognized research on waste disposal associated with the COVID-19 pandemic.

This growth was fueled by carryforward that is now depleted, and the future is jeopardized by the inadequate E&G funding to the college's joint budget. The State University System Board of Governors identified our \$6.5M LBR request last year as a top system-wide priority in their 2020-21 budget request. If we are to sustain the recent very positive momentum, we must have increased financial support. Growing national recognition for the power of this grand experiment in the State of Florida will be disrupted if we do not receive an increase this year. The investment will pay off handsomely for FAMU, FSU and the State of Florida. The wonderful thing is that success of the FAMU-FSU College of Engineering helps both our partner universities achieve their strategic goals. Florida State reached the top twenty national public universities, yet the college of engineering is only 1/3 the size of the average in the top 20 and must grow to fuel FSU's longer-term advancement in the rankings. And FAMU is already one of the leading HBCU's in research and doctoral degree production, but aims to become the first Historically Black College to reach the elite of top research universities with the help of the joint college of engineering. Together FAMU and FSU can do something that no other university in the US can accomplish by training an inclusive, diverse and excellent workforce to fuel our state's engineering labor needs. Both universities have generously provided financial support to help the college, but the joint LBR is the only sustainable way of ensuring that the partnership endures and flourishes.

We have programs planned that will significantly improve the success of our students - retention rates, graduation rates, degree and employment opportunities. For example, we know how to improve student retention but do not have the resources for programming and support to make this available to all our students.

We will increase opportunity for our students through hiring new faculty, introducing new courses and degrees in strategic areas for the State, such as Aerospace, Computer, Systems and Biomedical Engineering, and aggressively recruit the best and most diverse cadre of doctoral students. We will attract and retain outstanding faculty in strategic areas of research, and provide them with state-of-the-art facilities and staff support to enable them to compete for, and win, research grants and contracts from government agencies, corporations and foundations. To do this we need to offer competitive salaries and equipment start-up investments that will be rewarded over the years through external grant funding into the institution.

The joint college is uniquely positioned to develop new and larger research centers that support key areas of technological emphasis, including health

technology, materials, aerospace, biomedical engineering computer engineering, energy sustainability, resilience, and disaster recovery. These research centers will in turn allow the joint college to expand the size and diversity of its student body and will lead to new intellectual property and spin-off companies in the region.

To meaningfully advance goals related to research, academic quality, overall efficiency and effectiveness of the FAMU-FSU Joint College of Engineering, several critical investments must be made. In 2017, the Legislature provided \$1M of the \$7.168M LBR that was requested. That \$1M was allocated by the college to deal with market equity adjustments to salaries, and to pay salaries for new faculty and staff in the areas of undergraduate and graduate student success. We are grateful for the legislature's support, but the funds requested are absolutely more essential in order to meet strategic goals for both FAMU and FSU. This new funding will enable the college to grow to the next level and compensate for nearly a decade of underinvestment.

**1) Additional Joint College Faculty Researchers (\$1M Salary + \$330K Fringe)**

The recruitment of 8 researchers of the highest quality are essential for the Joint College of Engineering to deliver the education and impact needed by the state of Florida, while increasing its reputation to the benefit of graduates and the region.

- a. Faculty in sensors and biomaterials for healthy aging ("aging in place") will require technology for medical devices and sensors that would leverage existing strengths at the college, the FSU School of Medicine and the FAMU School of Pharmacy.
- b. Faculty in materials for aerospace: ultra-light and strong materials are critical to the development of a growing commercial aerospace industry, and to entrepreneurial approaches for efficient high-speed transportation. Through the college, both FAMU and FSU are funded for deep space development, and new faculty will enable us to seek larger funding opportunities.
- c. Faculty in robotics: robotics has growing applications to improve manufacturing efficiency, assist loss of function in people, and expand the capabilities of networked devices, popularly known as the "internet of things." We will strengthen our industry standing through additional hiring in the area of controls expertise within mechanical and electrical engineering.
- d. Faculty with expertise in resilience and sustainability including storm related resilience, efficient and safe transportation systems suited for evacuation and quick recovery, and pandemic resistance. We will be seeking to add to our expertise in civil and environmental, industrial and biomedical engineering.

- e. Faculty in cybersecurity for energy resilience: the development of sustainable energy is vitally important to the state, and beyond to the global marketplace. We would expand on our strength in power systems to design a robust renewable energy “microgrid” and enhance the systems side of renewable energy capture, storage, and transportation.
- f. Additional faculty to complement those listed above.

**2) Start-up funds and research equipment for faculty (\$2.5M)**

- a. Universities must provide “start-up” packages to attract outstanding researchers, provide the resources they need to succeed in their research, and add to the capabilities of the college in research and education.
- b. Packages include funds for equipment, laboratory renovation and for technician support. Faculty hires will require an average of \$600K each, numbers based on averages of ACC engineering schools shared by the ACC Deans council. We hope we will be able to keep these costs down, but the packages in engineering will need to be competitive to hire faculty with the desired credentials.
- c. Faculty hired in the College of Engineering embrace the interconnected missions of teaching, research and service. New faculty and capabilities expand the learning and career opportunities for students, and add to entrepreneurial capabilities in the community and the state.
- d. Research activity is essential to the mission of a leading engineering school, and benefits the students who need access to state of the art tools and ideas. The state benefits from the best trained students, and from the entrepreneurial culture that is fostered. Start-up investments are leveraged many-fold through the external funding attracted by top faculty. Recurring funding is needed to address continuing need for faculty replacement and equipment obsolescence.

**3) Support for (undergraduate) student success(\$1.374M)**

- a. Salary & Fringe (**\$280K Salary + \$92K Fringe**)
  - i. These activities require the hiring of four dedicated staff members for advising and mentoring.
- b. Non-Salary Expenses Related to Student Success (**\$1,010,000**)
  - i. Retention: To improve the retention rate of students we must provide bridge programs and peer-based tutoring to prepare students for pre-engineering science and math needs and ensure their success.

- ii. Successful transfer into major: Almost 50% of incoming undergraduates fail to continue on to the major, and transfer to other majors or drop out. Enriching the pre-engineering experience with major-based projects and activities will increase the motivation of students and the successful transfer rate.
- iii. Reduce time to degree: After transferring from pre-engineering the graduation rate is over 70% but the time to graduation on average exceeds 4 years. Flexibility through the provision of more courses in each semester, and online courses, will reduce the average time to degree and improve the 4-year graduation rate.
- iv. Recruiting: additional resources for recruiting will encourage talented and well-prepared students to enroll in the College of Engineering. In addition, we aim to connect with talented high-school students in their junior year to secure their interest and guide them to make full use of their senior year for pre-engineering preparation.
- v. Internships: internships and co-ops are very attractive to students and employers, and the experiential learning helps students find better higher-paid positions and gives employers better calibration of a potential employee's skills. Strengthening experiential learning will increase the graduation rate.

These activities require the hiring of four dedicated staff members for advising and mentoring, along with the renovation and equipping of three new laboratories for design projects, and the expansion of online distance learning capabilities.

**4) Strengthen graduate student programs (\$641K)**

- a. **Salary & Fringe (\$70K Salary + \$23K Fringe)**
  - i. These activities require the hiring of one dedicated staff member for advising and mentoring.
- b. **(\$550K)** Graduate students provide the highly-skilled labor for engineering firms in Florida, provide a backbone for in-house research efforts, and leverage the opportunities for undergraduates to engage in research activities. In turn, undergraduate research, a best practice at top engineering schools, exposes engineering undergraduates to exciting "beyond the textbook" experiences that will strengthen their abilities and marketability. Funds will support student fellowships to recruit the best talent and support a staff member to assist in coordination and recruiting.

**5) Retention and Vitality (\$590K + 106K Fringe)**

- a. Faculty continuity and retention are essential to growth of the college. In order to retain the best and brightest faculty select faculty salaries must be adjusted to assure retention of those individuals. Using the Oklahoma State University Survey of 114 public research universities, the college of engineering salaries are lower than the average for comparable disciplines, making our best faculty targets for poaching by other institutions.
- b. The cost to the state of Florida to replace lost faculty leaders is much higher than retaining existing faculty, since new faculty also require significant start-up investments and their productivity takes a few years to reach full potential because of the disruption in establishing a new research laboratory.
- c. Because of the unique joint nature of the college of engineering there are some inequities between the faculty at the two institutions that must be addressed in order to improve morale. In the 2017-2018 additional allocation from the state we were able to address immediate inequities – in 2018-19 we used the joint college funds to offset the inequities therefore eating away at our operating budget - these additional funds would permit us to continue this process through the following three years.
- d. Salary adjustments would not be across the board – adjustments would be made based on a review of performance of faculty in teaching and research relative to peers at other institutions.

**II. Return on Investment:**

These additional resources will allow each of the two universities to improve on several key performance metrics: academic progress rates, graduation rates, production of undergraduate and graduate degrees in areas of strategic emphasis, employment and salary outcomes for students, and metrics related to research and grant production. Specifically:

- a. Increase (by 100 students annually) the number of bachelor's and advanced degree graduates in the strategic STEM research areas of energy, biomedical engineering, environmental sustainability, transportation and energy, with graduates better prepared for success in industry due to improvements in advanced training.
- b. Significant increases (by 1000 graduates over five years) in the number of degrees awarded in the core engineering disciplines of civil, chemical, biomedical, electrical, computer, industrial and mechanical engineering – all engineering areas of strategic and critical importance to the state.



- c. Graduates earning higher wages based on their marketability and fit to areas of strategic interest and importance in the engineering profession.
- d. Improve the research focus and outputs in the form of patents, startup companies and commercialization of research products in the identified strategic areas for the faculty positions.
- e. Assist the state in diversifying its energy portfolio and meeting its goals with respect to biomedical research, environmental sustainability, aerospace and robotics.
- f. Enhance the business climate by attracting companies to Florida with significant research interest in the identified strategic areas - especially companies in the energy and power, materials, biomedical, environmental, robotics and medical devices fields.
- g. Retain engineers produced in Florida to stay and work for Florida's growing field of technology-based companies.
- h. Support the state's leading tourism and agricultural industries through additional research and interactions with companies doing business in Florida, by supporting sustainable infrastructure, aging in place, medical devices and aerospace.

**III. Facilities** *(If this issue requires an expansion or construction of a facility, please complete the following table.):* **None**

**2021-2022 Legislative Budget Request  
Education and General  
Position and Fiscal Summary  
Operating Budget Form II**

**University:** FAMU-FSU College of Engineering  
**Issue Title:** Integrated Advancement for the Joint College of Engineering

	<u>RECURRING</u>	<u>NON-RECURRING</u>	<u>TOTAL</u>
<u>Positions</u>			
Faculty	8.00	0.00	8.00
Other (A&P/USPS)	5.00	0.00	5.00
	-----	-----	-----
Total	13.00	0.00	13.00
	=====	=====	=====
Salaries and Benefits	\$1,795,500	\$0	\$1,795,500
Other Personal Services	\$0	\$0	\$0
Expenses	\$0	\$0	\$0
Operating Capital Outlay	\$0	\$0	\$0
Electronic Data Processing	\$0	\$0	\$0
Financial Aid	\$0	\$0	\$0
Special Category (Specific)	\$0	\$0	\$0
Retention	\$696,200	\$0	\$696,200
<u>Undergrad Student Success</u>	\$1,010,000	\$0	\$1,010,000
<u>Grad Programs</u>	\$550,000	\$0	\$550,000
<u>Research Equipment/Start-Up</u>	\$2,500,000	\$0	\$2,500,000
	\$0	\$0	\$0
	-----	-----	-----
Total All Categories	\$6,551,700	\$0	\$6,551,700
	=====	=====	=====