

**State University System  
Education and General  
2017-2018 Legislative Budget Request  
Form I**

<b>University(s):</b>	<b>Florida State University and University of Florida</b>
<b>Issue Title:</b>	<b>Center for Advanced Power Systems Expansion and Diversification</b>
<b>Priority Number</b>	<b>8</b>
<b>Recurring Funds Requested:</b>	<b>\$281,000.00</b>
<b>Non-Recurring Funds Requested:</b>	<b>\$900,000.00</b>
<b>Total Funds Requested:</b>	<b>\$1,181,000.00</b>
<b>Please check the issue type below:</b>	
<b>Shared Services/System-Wide Issue for Fiscal Year 2017-2018</b>	<input type="checkbox"/>
<b>New Issue for Fiscal Year 2017-2018</b>	<input checked="" type="checkbox"/>

**I. Description**

**What is the Center for Advanced Power Systems?**

The Center for Advanced Power Systems (CAPS) is a Florida State University (FSU) research center established in 2001. The Center is located in Innovation Park on the Southwest Campus of FSU. Since it was established its primary funding for research and testing has come from the U.S. Navy. Between 2004 and 2016 FSU / CAPS received over \$106M from the Navy for research supporting the development of an all-electric ship.

Many CAPS faculty have appointments in the FAMU-FSU College of Engineering, and undergraduate and graduate engineering students are trained in CAPS.

The center has developed a tremendous national reputation as a leader in Power and Energy Systems research and development. Now the Center is looking to grow and diversify into areas of interest outside the Department of Defense. Our specific plan is to leverage our existing talent pool to grow into a center of

excellence for research and development to support the nation's efforts in electrical grid modernization.

We will upgrade and augment the electrical power simulation and testing facilities and equipment at CAPS to allow for higher voltage and higher current operations. The modifications are essential for us to stay competitive for attracting new Federal funding from the Department of Energy (DOE), The Department's Advanced Research Projects Agency-Energy (ARPA-E), the National Aeronautics and Space Administration (NASA), and others.

Additionally, over the past 25 years industries have greatly reduced the amount of research they conduct at their own facilities and reach out to universities and national labs to conduct much of the research they need. FSU/CAPS plans to acquire additional equipment to become the number one choice for the industry to conduct power systems research and testing and attract the industry dollars. Augmenting the existing facilities will enhance CAPS competitiveness significantly in securing Federal and private sector funding in the research areas related to electric grid modernization.

### **What is required to make this growth a reality?**

In order to effectively and efficiently grow into this new research area, FSU/CAPS needs two additional staff members and new and upgraded equipment.

Initially, we plan to hire an individual with experience and strong ties to the electrical grid operators and local utilities. As with any plan to grow and diversify, some resources are needed to start and develop the momentum needed to make the effort self-sustaining. We believe the top priority is to obtain the person with the right knowledge and experience to obtain that momentum.

This growth will also require a dedicated technician for operating the high power facilities and to safely operate and maintain the new and upgraded equipment we will acquire.

Finally, upgrades to some current equipment, as well as acquisition of new equipment, will be needed to allow FSU / CAPS to continue to successfully compete for federal and industry funding, and complete research and testing in these new areas.

### **Timeline**

- Summer 2017
  - Hire new Electric Grid Research Manager.
- Fall 2018
  - Hire a Technician for the High Power Research and Test Facilities

- Acquire new equipment.
- Upgrade current equipment.

### **Budget Requested**

This proposal requests the funding necessary for the CAPS Expansion startup and implementation.

- **Personnel (\$281 K) Recurring**

Summer 2017

- Electric Grid Research Program Manager (\$140K + \$41K benefits)
- Facilities High Power Technician (\$70K + \$30K benefits)

- **Equipment (\$900K) Non-Recurring**

The new equipment and upgrades to current equipment will include:

- Upgrades to our digital simulation systems, both software and hardware.
- Purchase of new power and energy control devices
- Purchase of equipment needed to expand CAPS superconductivity capabilities.
- Purchase of a Utility Grade Systems Control and Data Acquisition (SCADA) system which will allow CAPS to conduct research and tests on state of the art systems already in the grid, and planned for the grid.
- Purchase of additional new equipment to allow Thermal Management research to increase the life span and resiliency of high current and high voltage devices.
- Large scale sensor tools.

## **II. Return on Investment**

The return on this state funding expenditure comes from the additional research and testing grants and contracts from National Agencies and industry that will result from the expansion of CAPS research in two areas: National electrical power grid research, and growth of our Industry Research and Collaboration. Between these two sources CAPS' goal is double the level of current funding (average of \$8M/year) within five years, which would mean an additional research funding of \$8M/year coming into FSU.

In addition to the increased funding opportunities, this expansion will allow CAPS faculty and researchers to increase the number of undergraduate and graduate engineering students from the FAMU-FSU College of Engineering in

the area of power and energy, support existing businesses in Florida, and attract and retain highly qualified power engineering research and teaching faculty.

**III. Facilities**

	<b>Facility Project Title</b>	<b>Fiscal Year</b>	<b>Amount Requested</b>	<b>Priority Number</b>
<b>1.</b>				
<b>2.</b>				

**State University System  
Education and General  
2017-2018 Legislative Budget Request  
Form I**

<b>University(s):</b>	<b>Florida State University</b>
<b>Issue Title:</b>	<b>Faculty Retention</b>
<b>Priority Number</b>	<b>2</b>
<b>Recurring Funds Requested:</b>	<b>\$11,500,000.00</b>
<b>Non-Recurring Funds Requested:</b>	
<b>Total Funds Requested:</b>	<b>\$11,500,000.00</b>
<b>Please check the issue type below:</b>	
<b>Shared Services/System-Wide Issue for Fiscal Year 2017-2018</b>	<input type="checkbox"/>
<b>New Issue for Fiscal Year 2017-2018</b>	<input checked="" type="checkbox"/>

**I. Description**

The Faculty Retention program is a multi-year Florida State initiative designed to address the challenge of retaining highly regarded faculty through competitive salaries. For purposes of retention and recruitment, as well as the standards and metrics that will move FSU into the Top 25 among public universities, Florida State’s faculty salaries must be in line with national norms to dissuade faculty from seeking positions at other institutions. This is critical for fending off attempts by other universities, particularly private institutions with large endowments, to lure our top faculty away. With additional funding we will be able to offer effective counter-offers to productive faculty who have received offers from other institutions.

Improving the compensation of key faculty would reduce faculty turnover and also the amount of funding needed to attract new faculty members and cover their startup costs. Plus, when a faculty member leaves, there is still a cost associated with augmenting the salaries of the faculty members in the departed member’s department who have to take on additional workload.

**Promoting Student Success**

As a residential “destination” campus – and evidenced by the university’s impressive undergraduate retention and graduation rates – classroom instruction

and faculty-centric experiences are essential parts of the FSU experience. Additionally, the Gallup-Purdue Index substantiates the high value student-faculty interactions have as predictors of student success. Reducing faculty attrition will affect FSU and its students in the following ways:

- Retaining faculty allows for reductions in average class size, which provide instructors with better opportunities to get to know their students and mentor them.
- By retaining our highly regarded faculty, the university is able to increase the number of classes offered and thereby reduce students' time to degree.
- Maintaining stability by keeping faculty from being lured to higher-pay institutions provides students with greater consistency, reliability and connectedness to the faculty and the institution.
- 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.
- Reducing faculty turnover will facilitate the development of more interdisciplinary programs, which have been shown to not only produce higher-quality research outcomes and unique solutions to problems, but also improve student engagement and learning, promote students' entrepreneurial activities, and enhance their critical thinking skills.
- Improving faculty retention means more students will be able to engage in high-impact practices such as directed individual study, undergraduate research, community and project-based learning, honors courses, entrepreneurial activities, and internships.

Retention of highly regarded faculty will also allow FSU to increase its graduate student programs and enrollment. Compared to other Research I public institutions, Florida State has significantly fewer graduate students relative to undergraduate students. This imbalance is largely due to current insufficiencies in the number of faculty needed to grow FSU's existing graduate programs, and the ones being created.

Top graduate students are drawn to highly regarded programs with long-standing, stable and top-quality faculty. Faculty continuity will further improve the graduate experience by giving these students more research and engagement opportunities that prepare them for future careers.

When faculty members leave an institution, graduate student progress is negatively affected as the impacted students have to search for replacement mentors/advisors/major professors. In some cases, a graduate student or group of grad students leaves with their faculty mentor, which has a negative effect on retention rates.

## **Promoting Growth in Key Academic Areas**

Improving faculty retention will facilitate the development of new programs to meet the changing needs of Florida's workforce. This improvement will also elevate Florida State's national reputation as a destination campus for top faculty.

Florida State has already demonstrated its ability to recruit top talent through its cluster-hiring initiatives. Those successes, however, have centered around very specialized interdisciplinary collaborations. Broader faculty-recruitment efforts will grow and elevate all of the university's academic disciplines, and more competitive counteroffers will retain faculty who might otherwise leave for better pay elsewhere.

## **Supporting Faculty Retention**

Equal to if not more important than increasing the size of Florida State's faculty is the retention of its existing faculty. Faculty members and especially high-profile members who leave a university do not just diminish an institution's prestige, but can also result in accompanying decreases in revenue. Specifically, the likelihood of attracting federal funding (grants, contracts, etc.) can decline when top senior faculty are replaced by younger professors.

Retention strategies go beyond counter offers and improving compensation for top faculty. Through greater research support, increases in research-leave time, facilities maintenance and upgrades, and favorable benefits are among the cost-effective approaches to keeping faculty from leaving for institutions with far greater resources.

Retaining established faculty members, and especially those who have achieved fellows status in national and international academies, will allow Florida State to attract faculty, postdoctoral fellows, and graduate students of proven accomplishment, and thereby enhance access to an even stronger network of researchers.

## **II. Return on Investment**

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 25 among public universities as determined by *US News and World Report* and the *Annual Report of Top American Research Universities*
2. Enhance Florida State's standing for an invitation to join the AAU
3. Heighten the university's reputation as a STEM leader in Florida and the nation.
4. 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.
5. Improve academic program continuity and thereby graduate student retention and completion rates.
6. Achieve greater value for Florida families and state government as top faculty improve the learning outcomes and career opportunities for students
7. Establish affordable excellence across a wider array of disciplines and Florida State's centers of excellence, including its top-ranked programs in the arts, STEM, business, and other high performing fields of study.

### III. Facilities

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

**State University System  
Education and General  
2017-2018 Legislative Budget Request  
Form I**

<b>University(s):</b>	<b>Florida State University (in collaboration with UCF, UF and ERAU)</b>
<b>Issue Title:</b>	<b>Florida Center for Advanced Aero-Propulsion (FCAAP)</b>
<b>Priority Number</b>	<b>7</b>
<b>Recurring Funds Requested:</b>	<b>\$5,000,000.00</b>
<b>Non-Recurring Funds Requested:</b>	
<b>Total Funds Requested:</b>	<b>\$5,000,000.00</b>
<b>Please check the issue type below:</b>	
<b>Shared Services/System-Wide Issue for Fiscal Year 2017-2018</b>	<input checked="" type="checkbox"/>
<b>New Issue for Fiscal Year 2017-2018</b>	<input checked="" type="checkbox"/>

**I. Description**

**Aviation and Aerospace are vital employers in the State of Florida**

Florida is the 4th largest employer in Aerospace, Aviation and related fields with around 85,000 jobs (in 2,000+ companies) including aircraft assembly and parts, flight training, logistics, avionics, payload processing, global cargo, propulsion systems, guided missiles and air defense systems, rockets and spacecraft, UAS, and intelligence, surveillance and reconnaissance. Virtually all major defense contractors have operations in Florida. Combined industry assets include 22 airports with runways of 10,000+ feet, two spaceports, and advanced space vehicle launch/landing facilities (Enterprise Florida "Aviation & Aerospace," 2013).

**Aviation and Aerospace drive Florida's economy and image**

*Aviation and Aerospace* has played an essential role, not only in the state's economy but its very identity, especially through the one-of-a-kind launch operations at NASA's Kennedy Space Center and Cape Canaveral. With the revolution in space transportation and transition to commercial launch along with the dramatic growth and changes in aviation, it is critical that Florida

maintains its leadership and does all it can to grow this vital industry and maintain its ability to attract and grow high-skill, high-wage jobs in these high-tech areas. Florida's position is being challenged by the technological evolution in Aerospace, Aviation and Commercial Space Transportation and competition from other regions/states and nations. This is where the Florida Center for Advanced Aero-Propulsion (FCAAP) has been and will continue to be a significant *asset*.

### **What is the Florida Center for Advanced Aero-Propulsion?**

FCAAP is the *only statewide, multi-institutional, SUS Center of Excellence that focuses on the Aerospace Aviation and Commercial Space areas*. From its inception, the goal of FCAAP is to help Florida *reclaim its leadership as the hub of technical innovation in the aviation and aerospace industry*. It was established as a Center of Excellence (COE) in 2008 by the Florida Board of Governors, under the COE program created by the Legislature. After a highly competitive external review process that rigorously evaluated the scientific and economic impacts of the proposed COEs, FCAAP was selected as *only one of two Centers* out of 40+ proposals submitted. Over the last 7+ years, it has served as a model of multi-institutional, state wide collaboration to establish a *sustainable, collaborative center* that builds upon and greatly expands the state's strength in *Aerospace, Aviation, Commercial Space Transportation* and related areas, such as *Energy/Turbomachinery and Alternative Fuels for Aviation*.

FCAAP has made tremendous progress towards this goal by:

- Creating an unrivalled pool of *intellectual & physical resources* in Florida that is nationally and internationally recognized.
- Developing *innovative technologies* for the next generation of air and spacecraft and related areas in collaboration with and *rapidly transferred to*, industry partners.
- Helping build *high-wage, high-skill workforce* for the 21st century through *innovative education and training programs*.
- Fostering the creation of new businesses and new markets through the advancement of foundational science and enabling technologies.
- Helping build a diverse, knowledge-based economy in Florida that will expand, sustainably.

### **What has been already accomplished?**

#### **A Few Examples of our Efforts and Success:**

- ***FAA Center of Excellence on Commercial Space Transportation*** - Under FCAAP leadership, four Florida universities are core members of the team that won the national competition to establish this Center. It is the only Federal Aviation Administration Center of Excellence in Space Transportation, an emerging area that is critical to Florida's prominent role in aviation and aerospace. Florida has the *largest contingent in this multi-university consortium*, which was possible only because FCAAP was able to marshal the collective strengths of this consortium and lead the development of a winning proposal.
- ***Polysonic Wind Tunnel (Mach 0.3 to 5)***: This state of the art facility was recently commissioned in Tallahassee. It was built in part through a \$3.3 million competitive award from the National Science Foundation under the highly competitive Major Research and Instrumentation (MRI) program. This state of the art, one-of-a kind, test facility provides Florida a distinct advantage in Aerospace R & D over our competition. This FCAAP-led effort has significantly elevated the state's visibility and competitive edge.
- ***High-Temperature Sensors for Space Applications***: A multi-university team of FCAAP researchers won a large DOE grant to develop high-temperature sensors for space transport applications. The fundamental research that led to this accomplishment was funded by FCAAP and the FAA.
- ***Industry and Small Business R & D Projects***: In close partnership with small business and industry, FCAAP has won a number of contracts and grants, including projects under the Small Business Innovation Research program. Our researchers have participated in industrial projects totaling between \$3-4 million.
- ***Supersonic Tunnel Association International (STAI)***: FCAAP was recently admitted to STAI, an international association with a select group of members who are engaged in high quality research and technology development using supersonic wind tunnels. FCAAP is the *only university-consortium member* of the STAI.
- FCAAP has directly supported about **430 undergraduate and graduate students** at Florida universities engaged in cutting-edge research in Aero-Propulsion.
- Creation of ***start-up companies*** that added close to 300 jobs to the Florida economy.
- Although dollars alone do not capture the level and impact of the Center's productivity, over the last 7 years, FCAAP scientists, engineers and researchers have attracted close to **\$58 million in external funds** through competitive contracts and grants for research, technology development and education projects.

## **Who is involved in FCAAP?**

### **Consortium of leading Florida Universities**

FCAAP consortium is composed of *Florida State University, University of Florida, University of Central Florida* and *Embry Riddle Aeronautical University*. In addition, other Florida institutions (e.g. *University of South Florida, University of Miami* and *Florida Institute of Technology*) have participated in joint ventures with FCAAP.

### **Industry**

FCAAP is actively engaged in joint ventures with industry leaders within and outside the state. These include large companies such as Boeing, Lockheed Martin, Northrop Grumman, Siemens as well as many other smaller companies with a presence in Florida and nationally.

FCAAP will continue to engage these companies and grow these partnerships in research and development, where FCAAP has helped provide solutions to technical challenges. Equally important, we partner with industry in *workforce development* through education, training, and recruitment, helping train a highly skilled workforce that is ready to contribute to the state and nation's economy and leadership in aerospace. Our highly skilled graduates help attract and grow aerospace companies in Florida. Through joint ventures with our Center these companies have direct access to skilled workforce of extremely qualified young engineers seeking employment in aviation, aerospace and related fields.

### **Request for Recurring Support**

**Request:** \$5 million / year to be shared by the consortium of leading Florida universities as described above. Evaluated periodically to ensure that the Center continues to be effective and is meeting its performance targets.

In order to continue to build upon the success and momentum of the Center and its contributions to Aerospace research, technology development and transfer, and education and training in a sustainable manner, it is imperative that long-term support be provided. As in the past, the *resources will be shared* by the members of the FCAAP consortium (Florida State University, University of Florida, University of Central Florida, and Embry Riddle Aeronautical University) thus greatly multiplying the impact of these funds. Resources may be shared as well with other Florida institutions who participate in joint ventures with FCAAP (e.g. University of Miami and University of South Florida).

Funds will be used in the following broad categories:

- **Research & Technology Development** (\$ 1.5M/year)  
Research and technology development projects of direct relevance to industry, especially in Florida. Projects that involve direct industry participation will aim for a minimum of 15% of cost share from our industrial partners.
- **Maintenance and Enhanced Operations of Test Facilities** (\$ 1M/year)  
Investing in state of the art technology that allows us to study complex and realistic problems, promote fundamental science and make the Center highly attractive to industry and funding agencies. Some examples of one-of-a-kind facilities include: *Polysonic Wind Tunnel* (FSU), *Large Subsonic Wind Tunnel* (ERAU), Turbomachinery and Energy Laboratories (UCF) and the Sensor and Actuator facilities of the Inter-disciplinary Microsystems Group (UF).
- **National Center Initiatives** (\$ 1M/year)  
Pursuing large/complex projects involving multi-university and private industry participants; three to ten-year life span projects of national prominence.
- **High Risk, High Reward Research & Fundamental Sciences** (\$ 1M/year)  
Innovative/creative research in areas that have high risk/high reward value and push the boundaries of fundamental and applied science and engineering. These cannot be generally funded through traditional sponsors (here FCAAP's role is similar to that of DARPA for DOD research).
- **Education & Training/Workforce Development** (\$ 0.5M/year)  
Development of professional training/certification courses for aeronautical and aerospace industry in Florida (including through Distant Delivery). Enhancement of engineering courses, making them more relevant to today's problems. Outreach in STEM areas at middle/high school levels. Organizing symposia and seminars to foster collaboration between university and industry partners.

The above provides the broad thrusts where the state's investment will be allocated. The specific budget categories in which the funds will be expended are as follows:

- Fellowships & Scholarships for FCAAP students (graduate and undergraduate)
- Faculty and Scientist support (including Post-Doctoral researchers)
- Administrative Staff
- Continuing Lab Operational Expenses (materials, supplies and maintenance)

## II. Return on Investment

The return benefiting Florida on this funding will come in a number of areas:

- Expanded industry **collaboration** resulting in **greater employment** and **technological advancement**.
- Increased **access by industry to federal research funds** through cooperation with university partners (e.g., by small industry entities through the Small Business Innovation Research and the Small Business Technology Transfer programs, where FSU participation is required).
- State of the Art **professional training programs** for workers in aviation, aerospace and related areas (these programs will also directly benefit the energy, automotive and related markets due the significant overlap in technology and skill set).
- Improved industry **access to cutting edge test and research facilities and leading researchers** at FCAAP participating universities.
- Creation of a “recruiting hub” where industry and university partners will engage in a more **direct and effective recruitment** of Florida engineering graduates for high-skilled, high-paid jobs in aeronautical, aviation and related industries.
- **Enriched graduate programs** in aerospace, commercial space and aeronautics with the aim of attracting, retaining and nurturing the best and brightest students, researchers, and faculty to Florida, which is critical to the sustainable growth of Florida as a leader in these areas.

Over the first seven years of its existence (2008-2015), FCAAP has attracted nearly \$58 million in additional external funds to the partner institutions – over a fivefold ROI on the initial investment. During the same period FCAAP has financially supported with Center funds 430 graduate and undergraduate students, and attracted ‘star’ faculty to conduct research in its labs, which resulted in 26 inventions. FCAAP has also facilitated the creation of 6 start-up companies and close to 300 jobs. In order to continue this upward trajectory and maintain the leadership and visibility of our universities and the state, continued investment in this collaborative, successful venture is critical.

## III. Facilities

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

**State University System  
Education and General  
2017-2018 Legislative Budget Request  
Form I**

<b>University(s):</b>	<b>Florida State University</b>
<b>Issue Title:</b>	<b>Graduate Students and Postdocs</b>
<b>Priority Number</b>	<b>4</b>
<b>Recurring Funds Requested:</b>	<b>\$18,500,000.00</b>
<b>Non-Recurring Funds Requested:</b>	
<b>Total Funds Requested:</b>	<b>\$18,500,000.00</b>
<b>Please check the issue type below:</b>	
<b>Shared Services/System-Wide Issue for Fiscal Year 2017-2018</b>	<input type="checkbox"/>
<b>New Issue for Fiscal Year 2017-2018</b>	<input checked="" type="checkbox"/>

**I. Description**

**Introduction**

Graduate students and post-doctoral research associates (postdocs) are integral to the research mission of top universities. FSU has a disproportionately lower amount of graduate students and post-docs than our Public Research I peers. FSU's current graduate student-to-undergraduate student ratio places us at 59th out the 81 amongst these peers -- meaning we have a much lower percentage of graduate students than schools in the top 25 and the top 50. Our postdoc population is currently around 65% of the average Public Research I university. With FSU's commitment to dramatically growing its research activities it is imperative that we increase these populations.

The interdependent relationship between faculty, postdocs and graduate students dictates that growth in one category will necessarily require growth in the other two. Our recent and future faculty hires, particularly those in the STEM areas, will necessitate a large increase in the number of talented and driven graduate assistants and postdoctoral scholars to support their research and instruction. Improving the research environment by hiring more faculty and supporting them with graduate assistants and postdocs will allow FSU to become more competitive in acquiring sponsored research funding/grants.

### **Attract, retain and graduate top graduate students**

Graduate students, and particularly doctoral-level graduate students, are key components of a competitive Research I University. At present, FSU is not as economically competitive as we need to be to attract these key students.

To accommodate the needed growth in faculty research, we must increase the number of recurring graduate assistantships by 250 - 300. This will provide at least one graduate student for each one of our new hires. The assistantships will help us to attract graduate assistants to complement our recent and future faculty hires.

We have also determined that we have trouble getting a sufficient number of graduate assistants because we are not offering a large enough stipend. The OSU Graduate Assistant Stipend Survey provides the best available national data on graduate stipends. Unfortunately, most of the universities in the survey are lower-tier institutions. Even when compared to this sample of schools, FSU is nonetheless below the average when it comes to the amount of money graduate assistants receive in their stipends. Increasing the stipends will allow us to compete economically for the very best students. A side benefit is that enhancing the quality of our graduate students and their level of support will increase their retention and completion rates and reduce time to graduation. This will also decrease the debt burden of students.

### **Attract, retain and prepare postdoctoral scholars for tenure-track positions**

FSU's current number of postdoctoral scholars situates us at 45th place out of 81 among the nation's public research I institutions, which highlights the need to dramatically expand our current efforts directed at recruiting and retaining postdocs. Our goal is to bring in an additional 100 postdoctoral researchers to not only get on par with our peers, but also to help strengthen the scholarship of existing faculty members, to promote the research of new cluster hires, and mentor graduate and undergraduate students.

In order to attract and keep top postdoctoral scholars, we need to further develop our current initiatives and launch some new ones. FSU plans to expand our innovative Arts and Sciences Postdoctoral Fellowships program to other colleges at FSU. The program currently mentors up to 20 new postdocs on how to conduct research and teach. We have also launched and wish to grow an incentive and support program to encourage pre- and postdoctoral scholars to apply for extramural funding. FSU expects cluster hire faculty to hire postdocs with their startup funding. We have also invested in an Office of Postdoctoral Affairs which works with the Postdoctoral Association (organization of postdoctoral scholars) to offer programming and guidance to postdocs and their

mentors. Finally, spurred by the new Fair Labor Standards Act, FSU is raising the salaries of our postdocs to \$47,667. This will help elevate FSU's ability to compete for top postdocs and encourage their retention.

## II. Return on Investment

This strategic investment will result in a significant success story for Florida:

1. Increasing the number and quality of graduate students and postdocs will help FSU recruit and support outstanding new faculty, most notably those representing our STEM and cluster hires.
2. Aligning FSU with peer institutions which are members of the prestigious Association of American Universities (AAU) in terms of the proportion of students who are graduate students and the average number of postdocs.
3. Growing and improving our scholarly research and commercialization enterprises.
4. Ensuring that FSU is performing as a preeminent university in the State of Florida as well as a national leader in preparing graduate students and postdocs for career readiness and placement.
5. Finally, achieving affordable excellence for students pursuing graduate or postdoctoral experiences.

## III. Facilities

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

**State University System  
Education and General  
2017-2018 Legislative Budget Request  
Form I**

<b>University(s):</b>	<b>Florida State University</b>
<b>Issue Title:</b>	<b>Development of the Next Generation Ultra-High Field Magnets</b>
<b>Priority Number</b>	<b>6</b>
<b>Recurring Funds Requested:</b>	
<b>Non-Recurring Funds Requested:</b>	<b>\$300,000.00</b>
<b>Total Funds Requested:</b>	<b>\$300,000.00</b>
<b>Please check the issue type below:</b>	
<b>Shared Services/System-Wide Issue for Fiscal Year 2017-2018</b>	<input type="checkbox"/>
<b>New Issue for Fiscal Year 2017-2018</b>	<input checked="" type="checkbox"/>

**I. Description**

**Introduction**

The National High Magnet Field Laboratory (NHMFL) is the only national laboratory in the State of Florida. Its funding base is the single largest National Science Foundation grant award in the State. More importantly, it has a tremendous impact on research and discovery in a broad spectrum of disciplines from biology and biomedicine to chemistry and physics to engineering around the world.

While the NHMFL is primarily housed at Florida State University in Tallahassee, additional facilities are found at the University of Florida (Gainesville) and the Los Alamos National Lab (Los Alamos, New Mexico). Both UF and LANL are partners with FSU in the NHFML and bring unique expertise to our capabilities. Evidence of importance and reach of the NHMFL can be seen in ~1,500 scientists and engineers from around the world who visit each year to utilize our world-leading facilities. Literally, 100's of scientific papers are published each year from work conducted in Tallahassee.

## Development of the Next Generation of Magnets

The NHMFL, also known as the MagLab, is the premier facility in the world where users have access to very high field sophisticated magnets that are not found anywhere else. Our long range plan, essential if we are to keep the MagLab in Florida in the coming years, is to expand the capability of our existing facilities. This is absolutely necessary to address increasing competition from Europe and China, who seek to attain world leadership in magnetic science by displacing us. The improved magnet performance will be accomplished via the parallel materials development of high-strength, high-conductivity materials for resistive magnets and high-temperature superconductor materials tailored for use in superconducting magnets. We have this expertise and capability in Florida.

Specifically, the NHMFL's upcoming effort has two components- (1) The upgrade of the existing 45T magnet to 50T; and (2) The construction of a revolutionary new DC magnet to achieve 60T. *Both of these goals have been strongly endorsed by two successive reports from the National Academy of Sciences.*

Access to these higher magnetic fields will allow the user community, consisting of users from over one hundred universities and laboratories per year, to uncover unique properties of matter heretofore invisible using current experimental techniques. *These new developments will maintain US leadership in magnet science and technology and, furthermore, enable the NHMFL to continue to provide the world's most intense magnetic fields to our user community*

### Components of the Magnet Development Effort

There will be parallel efforts in superconducting materials development and testing as well as prototype magnet design, construction and testing. These efforts will lead to the upgrade of the 45T magnet to 50T and ultimately the construction of the revolutionary and one-a-kind 60T system. It is anticipated that the NHMFL will obtain federal funding for design and construction of both, currently estimated for a total cost in the \$100M range. However, significant infrastructure enhancements at the NHMFL facilities in Tallahassee will be needed to accomplish these ambitious magnet development programs. Two enhancements to existing facilities will be required:

1. **Extension of the Primary Laboratory Building.** This will provide additional experimental space and, most importantly, free up necessary and now-occupied laboratory space to use for fabrication and testing of prototype magnets. Furthermore, issues with existing space (electromagnetic interference, ceiling height, foundation configuration) constrain functionality and need to be addressed.

2. **20 MW power supply.** All magnets require intense power supplies to function. The current power source at the NHMFL is at its limits with respect to accommodating user needs and in-house programs. To achieve the ambitious goal of building and operating the 60T hybrid magnet, it will be necessary to construct additional capacity.

The extension of existing facilities as well as the 20 MW power supply are linked and are highly complex projects. Building design standards and technology have advanced considerably over the years. The current LBR requests funds for the development of a Basis of Design (BOD) for these two enhancements to the NHMFL facility.

### **Budget Requested**

#### **Basis of Design Development (\$300,000)**

The services of an architectural and engineering (A&E) team will be contracted. The A&E team, working with stakeholders, will prepare a program in which the elements of the two projects will be defined and detailed. Design options will then be developed by the team. Input from electromagnetic interference and vibration consultants and other professionals will be taken into account. Ultimately, the BOD will provide the road map for construction. In addition, this document will provide cost projections, with realistic escalation factors, for the projects which will be used to scale and stage subsequent funding requests.

### **II. Return on Investment**

The multiplier impact of State investment in the NHMFL is significant due to the substantial NSF core grants and allied grants and contracts that the MagLab attracts. In fact, a recent economic impact study by the Center for Economic Forecasting and Analysis has found that, for every \$1 invested by the State in the MagLab, \$6.57 in economic activity is generated in the State of Florida. As indicated above, upgrading the 45T magnet to 50T, as well as the construction of the 60T hybrid, represent bold and challenging efforts for the NHMFL to maintain preeminence in the world. This LBR requests funds to begin the process of upgrading infrastructure to achieve these goals.

### III. Facilities

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

**State University System  
Education and General  
2017-2018 Legislative Budget Request  
Form I**

<b>University(s):</b>	<b>Florida State University</b>
<b>Issue Title:</b>	<b>FSU College of Medicine Primary Care Initiative</b>
<b>Priority Number:</b>	<b>9</b>
<b>Recurring Funds Requested:</b>	<b>\$644,500</b>
<b>Non-Recurring Funds Requested:</b>	<b>\$3,000,000 FCO</b>
<b>Total Funds Requested:</b>	<b>\$3,644,500</b>
<b>Please check the issue type below:</b>	
<b>Shared Services/System-Wide Issue for Fiscal Year 2017-2018</b>	<input type="checkbox"/>
<b>New Issue for Fiscal Year 2017-2018</b>	<input checked="" type="checkbox"/>

**I. Description**

The FSU College of Medicine (COM) is requesting funds for creation and operation of an interdisciplinary teaching clinic near campus. The COM's statutory mission is to focus on primary care practice with an emphasis on service to senior, minority, underserved and rural populations. The medical school faculty have been actively engaged in the delivery of clinical services, while also teaching students and residents, in a variety of venues in the Tallahassee area for years. Medical school faculty and students have worked in the FSU Student Health and Wellness Center, at the local community health centers (Bond and Neighborhood Medical Centers), TMH Transition Center, physician offices, and other sites. FSU *Primary Health* will consolidate efforts to teach students and serve patients in one clinical setting hosting interdisciplinary health care teams.

Aligning with the 2016 Work Plan, the FSU COM Primary Care Initiative will "increase opportunities by expanding partnerships." The new facility will also align with 2016 Work Plan strategic priorities by encouraging interdisciplinary collaboration, increasing research opportunities in STEM fields, and enhancing student career readiness. The proposed clinic will enhance the COM academic program by providing a clinical setting for teaching and learning near campus.

Initially, the College of Medicine did not have its own practice plan and focused primarily on the education mission for students. With full student enrollment and expansion of faculty numbers to support them, it is critical to have a clinical site to provide clinical practice opportunities for young faculty members, expand opportunities for teaching students hands-on care to a diverse population, and to help offset salary expenditures. Efforts to accomplish this with contractual relationships with community practices and agencies have been insufficient to meet the financial and educational needs of the college. A clinical practice site staffed by college faculty will provide an excellent model practice for teaching and learning, and meeting the medical needs of the Big Bend community.

**II. Return on Investment**

The FSU COM Primary Care Initiative would provide an interdisciplinary clinical teaching site for several of the University’s programs. There will initially be 4-5 primary care clinicians and a behavioral/mental health professional providing services. These clinicians will be faculty of the FSU COM and will include physicians, physician assistants, nurse practitioners and psychologists. The site also serves as a training site for nursing, pharmacy, social work, and medical students. It will provide affordable access to quality health care to underserved populations. The practice will serve 8-10,000 active patients, providing over 15,000 visits per year. FSU *Primary Health* will improve access to healthcare for uninsured patients as well as those who have an insurance plan. Services provided will include preventive care, management of acute and chronic illnesses, mental health care and counseling, prenatal care, health promotion, smoking cessation classes and community outreach.

Primary care services would be available to residents of Leon, Gadsden, Wakulla, Jefferson and Jackson Counties who are uninsured. Quality primary care services would be expected to reduce unnecessary emergency room usage and hospitalizations, decrease delays in patients’ accessing care, and significantly reduce overall health care costs. In conjunction with health care and community partners, the medical school will also solicit support, grants and charitable donations to support these operations.

**III. Facilities**

	<b>Facility Project Title</b>	<b>Fiscal Year</b>	<b>Amount Requested</b>	<b>Priority Number</b>
<b>1.</b>	FSU COM Primary Care Clinic	2017-18	\$3,000,000	
<b>2.</b>				

**State University System  
Education and General  
2017-2018 Legislative Budget Request  
Form I**

<b>University(s):</b>	<b>Florida State University</b>
<b>Issue Title:</b>	<b>Preeminence Funding</b>
<b>Priority Number</b>	<b>1</b>
<b>Recurring Funds Requested:</b>	<b>\$20,000,000.00</b>
<b>Non-Recurring Funds Requested:</b>	
<b>Total Funds Requested:</b>	<b>\$20,000,000.00</b>
<b>Please check the issue type below:</b>	
<b>Shared Services/System-Wide Issue for Fiscal Year 2017-2018</b>	<input type="checkbox"/>
<b>New Issue for Fiscal Year 2017-2018</b>	<input checked="" type="checkbox"/>

**I. Description**

**Introduction**

With the support of the Legislature, Board of Governors, and private philanthropy, Florida State has made considerable investments to advance the quality and stature of the university.

FSU's goals of becoming a national Top 25 public university and a leader in student career readiness are moving forward. The university has invested in a comprehensive strategy that builds on past preeminence appropriations and the spectrum of high quality programs offered at Florida State.

The university's strategic investments are achieving higher levels of excellence – and with greater efficiencies – than nearly every other public research university in the country. With the understanding that Florida State's rank and reputation are highly dependent on investment in faculty, particularly in the STEM fields, the university is now successfully competing for some of the nation's most esteemed faculty candidates. In addition, FSU continues to invest in its Entrepreneurial University Program, which is integral to becoming a state and national leader in students' career readiness.

Preeminence funding has allowed Florida State to significantly enhance its mission of providing students with a challenging academic environment that leads to successful and rewarding careers.

## **The Challenge**

While recent preeminence and performance-based funding has substantially elevated the university, Florida State still has far fewer dollars for faculty resources and research than the institutions that currently separate FSU from a Top 25 ranking.

Although Florida State has shown incremental improvements in recent years, there is growing recognition that the university needs a bold hiring initiative like it was able to initiate in 1949 (two years after the university became a coeducational institution). That group of faculty hires is still referred to as the '49ers because of the profound effect this large influx had on the growth and trajectory of FSU.

Moving the needle on *US News and World Report* rankings is rather straightforward, as this is 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. As such, these metrics influence Florida State's funding requests for the coming fiscal year.

## **The Investment**

In recent years, Florida State has clearly been able to make a number of strategic investments that address the *USN&WR* metrics, and additional funding directed toward the following will further improve its rank and reputation.

### **1. Increasing the number of esteemed faculty members**

- A. Florida State will further enhance the quality of its faculty through the hiring of additional STEM researchers, particularly in interdisciplinary fields like brain health and disease, coastal and marine ecosystems, and energy and materials disciplines. Recent hires prove that FSU can attract and retain the premiere faculty members in these and other areas of study by offering nationally competitive salaries and start-up packages. Furthermore, by rewarding faculty members for their outstanding research and prestigious honors and awards, Florida State proves its commitment to faculty excellence. This support comes in the form of resources that identify and assist in the applications for research funding, travel grants that allow research findings to be presented at national and

international conferences, and the development and maintenance of shared-use research facilities.

- B. Cluster hiring – the recruitment of highly rated faculty of similar talent and research agendas – is an important strategy for hiring highly rated faculty. Florida State will maintain its efforts to attract nationally recognized and emerging scholars through cluster hiring, and expand on these efforts with additional funding.
- C. Research infrastructure– research, and especially STEM research is a team-based effort involving faculty, graduate students, postdoctoral scholars, and staff that depends upon the availability of cutting-edge technology, labs and other research space.

## **2. 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 93.2%, which is 23rd among public universities in the most recent *US News and World Report* rankings. For the next set of *USN&WR* rankings, Florida State is projected to place at or around 15th in the country.

The six-year graduation rate at FSU has risen from 69.6% to 79.4% – and our four-year graduation rate from 46.2% to 62.4% – since 2002. That puts Florida State’s four-year graduation rate at 21st among the nation’s public universities.

In Fall 2015, FSU began “Think 15” initiative to encourage students to graduate in four years. This funding request will help accelerate the university’s four-year graduation rate to 68% among students entering in Fall 2016, which would move FSU into the Top 10 among public universities. Note: The campaign was rebranded to “Take 15” earlier this year.

Preeminence funding will further advance student graduation rates and post-graduation success through:

## **3. Increased Student Support**

Previous preeminence dollars have allowed Florida State to invest in the Education Advisory Board’s (EAB) Student Success Collaborative, a project designed to increase persistence (and thereby retention) 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.

Speaking of advisors, Florida State's current student to advisor ratio is 400:1, which far exceeds the national standard of 300:1. The university would commit some of the preeminence funding requested here to hire scores of additional advisors to bring student support levels to the national average. 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 also uses Campus 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 cannot adequately attend to the number of students who would benefit from this level of support. Preeminence funding would allow FSU to hire additional Campus Life Coaches to support these at-risk students.

Additional preeminence funding will also allow the university to expand its Graduation Specialists initiative. This pilot program brings together a team of specialized staff members who guide and assist approximately 1,200-1,400 students with excessive credit hours on a clear and timely path to graduation.

#### **4. Increased Levels of Student Engagement**

In line with the Board of Governor's Strategic Plan - and Florida State's Work Plan - the university intends to increase its recruitment of high-achieving undergraduate students including Bright Futures and Benacquisto Scholars. Increasing FSU's preeminence funding will enhance the existing framework of engaged-learning experiences that enrich traditional classroom instruction. (Engaged-learning experiences include undergraduate research, community and project-based learning, and other high-impact practices that provide students with the knowledge and skills needed in today's workforce.)

In this regard, Florida State has already made considerable advances, as the university was recently recognized by the national Council on Undergraduate Research as one of its top institutions. In Fall 2016, FSU will launch its Center for Teaching Excellence, which promotes proven educational practices and assists faculty in its adoption of leading-edge educational technology. Scaling up these practices, however, requires more faculty and staff members, and additional preeminence funding will provide the dollars necessary to make that happen.

## II. Return on Investment

An increase in preeminence funding will provide strategic investments that benefit the State of Florida:

- Elevate Florida State University into the Top 25 among public universities as determined by *US News and World Report* and the *Annual Report of Top American Research Universities*
- Solidly position FSU for invitation to the Association of American Universities (AAU)
- 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 arts, science 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 generate discoveries that may directly impact Floridians.

More importantly, state investments will allow Florida State to elevate its standing in every metric of Florida's preeminence initiative, enhance its National Impact plan, and enable Florida State University to achieve world-class distinction.

Each of the metrics below will be impacted by this funding. Key metrics that *US News and World Report* and *Top American Research Universities* measures include:

- Student retention and graduation rates (especially 4-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
- Median SAT
- Postdoctoral Fellows
- Alumni Giving Rate
- National Reputation

### III. Facilities

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

**State University System  
Education and General  
2017-2018 Legislative Budget Request  
Form I**

<b>University(s):</b>	<b>Florida State University</b>
<b>Issue Title:</b>	<b>Student/Faculty Ratio</b>
<b>Priority Number</b>	<b>3</b>
<b>Recurring Funds Requested:</b>	<b>\$20,000,000.00</b>
<b>Non-Recurring Funds Requested:</b>	
<b>Total Funds Requested:</b>	<b>\$20,000,000.00</b>
<b>Please check the issue type below:</b>	
<b>Shared Services/System-Wide Issue for Fiscal Year 2017-2018</b>	<input type="checkbox"/>
<b>New Issue for Fiscal Year 2017-2018</b>	<input checked="" type="checkbox"/>

**I. Description**

**Improving the Student-Faculty Ratio**

Florida State's current student-to-faculty ratio is 25 to 1, which places the university at 168th in the country according to *US News and World Report*. This dismal standing puts FSU at third to last among national public universities. More importantly, this ranking, relative to peer institutions, negatively affects the university's level of instruction, research and student success.

In response, the dollars requested here would allow Florida State to hire an additional 160 instructional faculty members. Combined with the planned hire of new faculty clusters - those groupings of esteemed faculty members proposed in FSU's Preeminence LBR - would bring the university's student-to-faculty ratio to 21 to 1.

Florida State's goal is a ratio of 17 to 1, which is the level that current Top 50 universities enjoy. The proposed 21 to 1 ratio would at least bring the university halfway to this benchmark.

Achieving this 21 to 1 ratio would merely put Florida State on par with the following institutions, which currently rank higher in student/faculty ratios than FSU:

- Georgia Southern University
- Georgia State University
- Kent State University
- Lamar University
- Oakland University
- Sam Houston State University
- University of Alabama
- University of Nebraska – Lincoln
- University of New Mexico
- University of New Orleans
- West Virginia University

It should also be noted that in order to compete with universities already in the Top 25, Florida State would need to bring its student-to-faculty ratio down to 15 to 1.

FSU aspires to this 15 to 1 ratio – and even a lower one – but achieving that level will require a substantial commitment of time and money; specifically, it will necessitate the hiring of an additional 600 faculty members. Consequently, a 17 to 1 midterm goal is not just more reasonable, but will also allow Florida State to implement corresponding changes to its student enrollment and course offerings.

### **Promoting Student Success**

Essential to the college experience for undergraduate students at Florida State is the university's ability to offer a residential (dormitory-based) campus, superior classroom instruction, and faculty-led experiences. These essentials are among the components that not only make FSU a “destination” campus, but also contribute to the university's outstanding student retention and graduation rates.

A national measure of student success called the Gallup-Purdue Index places a high value on student interactions with faculty members. By increasing the number of the faculty members at Florida State, student success rates will be enhanced in the following ways:

- Average class size (student-to-faculty ratios) will be reduced to approximately 20 students per instructor, which will allow faculty members greater opportunities to get to know students and mentor them.
- Florida State will be able to attract increased numbers of high-achieving undergraduate applicants, including Bright Futures and Benacquisto Scholars – the very students who largely choose a college based on opportunities to engage with highly regarded faculty members.

- FSU will be better able to assist faculty in adopting proven instructional and research-guidance practices that improve student engagement and learning.
- A significantly greater number of faculty members will be able to engage in high-impact student-success practices including directed individual study, undergraduate research, community and project-based learning, honors courses, entrepreneurship activities, and internships.

The national Council on Undergraduate Research has recognized Florida State for the impressive advances it has already made toward the above initiatives, and provided FSU with a recent award for being one of the top institutions for undergraduate research. Scaling up these types of instructional practices, however, requires substantial increases in the number of faculty and staff.

Central to further improvements will be growth in the overall faculty population. This expansion, in particular, will allow Florida State to increase its graduate student enrollment and programs, and bring FSU on par with its public Research I university peers. Presently, FSU is in the bottom third of this peer group on the proportion of the student population that are graduate students.

Florida State has made some strides in the last few years in adjusting its proportion of doctoral students to undergraduate students. An imbalance remains, however, because the university does not currently have enough faculty members to grow its existing graduate programs (to say nothing of the graduate-level programs we wish to create). Additional faculty are needed to improve the graduate-student experience, provide these students with greater research and engagement opportunities, and better facilitate their preparation for meaningful careers.

### **Promoting Growth in Key Academic Areas and Supporting Faculty Retention**

Florida State is already one of the top universities at graduating undergraduate students who go on to earn PhDs, according a national data set known as the Undergraduate Origins of Doctoral Recipients. This is partly the result of FSU's large undergraduate population but also a testament to the sustained quality of its faculty and students.

There is an enormous group of PhD scholars in U.S. higher education today whose undergraduate experience originated at Florida State. Since many such scholars retain an affinity for their "first school," FSU has an inherent advantage in growing its faculty from among this base, particularly those whose current field of study aligns with their undergraduate major.

Enticing these and other faculty to Florida State from their current institutions – in order to achieve the high faculty-growth numbers outlined above – will require the hiring of tenured, tenure track and specialized faculty.

National data on student-faculty ratio pertain to classroom-based instructors, which includes most tenured and tenure-track faculty, as well as instructional faculty. Naturally, tenure/tenure-track faculty are involved in teaching and research – benefiting both of the university’s missions – although specialized faculty can typically be hired more quickly.

Florida State will have to determine which types of faculty members to recruit for its multiple areas of need. It would likely be better to apply recurring state dollars, however, toward increasing the number of tenured and tenure-track faculty.

A large-scale hiring initiative will not just enhance key academic areas but also increase faculty diversity, which has been shown to result in a more inclusive campus climate. Furthermore, faculty diversity and an inclusive campus have been shown to be critically important for institutional excellence.

Academic departments with diverse faculty are apt to produce higher-quality research outcomes and unique solutions to problems, as well as improved learning environments for students of all types. An inclusive climate also helps retain existing faculty and students, ensuring that the university graduates a workforce that meets state workforce needs.

## **II. Return on Investment**

New faculty members can enhance the vitality of an already vibrant institution like Florida State, and stimulate a buzz within U.S. higher education that can make FSU an even more desirable destination for veteran and beginning faculty.

Bringing on new faculty can be an expensive endeavor, however, with competitive startup packages sometimes climbing into the six-figure realm. Plus, new faculty members are usually more expensive to employ during their first few years until they start attracting research funding.

But the returns on these initial investments can be immense. Increasing the number of faculty members will not just increase student success outcomes – including reductions in time to degree – but also allow Florida State to develop new interdisciplinary programs that meet the changing needs of the Florida workforce.

Moreover, in the STEM fields alone, each new faculty member can be expected to generate more than \$150,000 in contract and grants a year, and be central players in FSU securing new patents and creating new businesses spinoffs. Recent return-on-investment studies for show that for every dollar Florida invests in its state universities, a return of nearly \$11.00 is produced.

Florida State also continues to raise private funds for new faculty hires and infrastructure needs, and the development of state-of-the-art teaching and laboratory facilities.

Faculty growth and retention will also further FSU's goal of being invited to join the prestigious Association of American Universities. AAU member institutions include just 62 of the leading research institutions in the United States and Canada. Joining this preeminent group of top graduate research institutions will allow Florida State to substantially increase the amount of federal funding it receives.

Strategic investment by the state will allow FSU to:

1. Achieve a Top 25 public university rank by organizations such *US News and World Report* and the *Annual Report of Top American Research Universities*
2. Place Florida State in an enhanced position to join the AAU
3. Elevate its status as a national leader in the STEM fields
4. Elevate its status as a leading graduate research institution.
5. Ensure that FSU maintains its prestige in Florida and the nation as a recognized leader in student career readiness and placement
6. Achieve significant savings for Florida families and state government through high retention and timely graduation rates.
7. Attain affordable excellence across a wider spectrum of disciplines and add significantly to Florida State's existing centers of excellence, including its top-ranked programs in the arts, STEM, business, and other high performing fields of study, thus enabling the university to elevate its standing as a world-class institution.

State investments in FSU through Preeminence and Student/Faculty Ratio funding 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
- Median SAT
- Postdoctoral fellows
- Alumni giving rates
- National rank and reputation

### III. Facilities

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

**State University System  
Education and General  
2017-2018 Legislative Budget Request  
Form I**

<b>University(s):</b>	<b>Florida State University and University of Florida</b>
<b>Issue Title:</b>	<b>Themed Experience Institute (TEI)</b>
<b>Priority Number</b>	<b>10</b>
<b>Recurring Funds Requested:</b>	<b>\$1,163,000.00</b>
<b>Non-Recurring Funds Requested:</b>	
<b>Total Funds Requested:</b>	<b>\$1,163,000.00</b>
<b>Please check the issue type below:</b>	
<b>Shared Services/System-Wide Issue for Fiscal Year 2017-2018</b>	<input type="checkbox"/>
<b>New Issue for Fiscal Year 2017-2018</b>	<input checked="" type="checkbox"/>

**I. Description**

**Introduction**

- **Tourism is a vital industry for the State of Florida.**
  - 100 million visitors drive the \$51.14 billion Florida tourism industry (2012, Florida Tax watch study by Center for Competitive Florida).
- **Themed experiences drive Florida’s tourism.**
  - Seven out of the ten top theme parks in North America are in Florida with an attendance of over 66,369,000 visitors annually (2011 Themed Entertainment Association Global Attractions Attendance Report).
- **Themed experiences provide jobs.**
  - Walt Disney World Resort is the largest single-site employer in the country with over 55,000 employed full-time. Other major themed experience destinations like Universal Studios are undergoing major, multi-year expansions that have precipitated significant increases in hiring.

**What is the Themed Experience Institute?**

The Themed Experience Institute is an academic/industry partnership dedicated to developing the next generation of designers and production artists for Florida's themed experience industry. Through teaching, research, and practical experience, Florida State University and the University of Florida will collaborate via new tools to educate students on the concepts, techniques, and career opportunities in themed experience.

### **What is themed experience?**

Themed experience is the design and production of physical spaces that create a compelling narrative experience. In a themed experience the audience is transformed from viewer to participant or "guest." Interaction with the environment creates an engaging, immersive, and often nonlinear narrative. Although theme parks are a prime example, themed experiences are often created for retail spaces, museums, restaurants and hotels, zoos, aquariums, and a variety of other venues.

### **Why is the Themed Experience Institute important?**

Themed experiences are vital to Florida's economy. The themed experience industry requires designers, artists, engineers, and skilled craftspeople with a variety of specialized skills. No university in the country has a coordinated approach to addressing the needs of this industry.

Approved by Florida State University in June of 2016, the Themed Experience Institute (TEI) gives Florida a unique opportunity to start meeting industry needs. The Institute will be an incubator for continuing and advancing Florida's leadership in themed experiences. .

By providing a mechanism to sync the needs of the themed entertainment industry to academic programs, the TEI will help realize the goals and missions of the State University System by increasing graduate level enrollment and placement. The Institute's industry-relevant interdisciplinary curriculum will increase the number of graduate students who will become the next generation of Florida's themed experience producers and designers.

### **Who is involved in the Institute?**

Two groups will be involved in the Themed Experience Institute programs:

- **Universities.**

The Institute is a collaboration between Florida's Preeminent universities: Florida State University and the University of Florida. The Institute will allow each university to focus on its own strengths. FSU will focus on the

creation of physical spaces and environments. UF will leverage its expertise in digital media and work through its Digital Worlds Institute to develop virtual experiences. The TEI will offer extended collaborative opportunities between the universities, the Environmental Storytelling Specialized Study. This initial offering will be built into a Master of Science in Themed Experience, followed by an undergraduate degree and a specialized study. The Institute will eventually engage and include all interested institutions within the State University System.

- **Industry.**

In addition to industry leaders such as Disney, Universal Studios, Sea World, Legoland, and Busch Gardens, there are hundreds of Florida-based companies creating and operating themed experiences. TEI will engage this constellation of companies as participants in its programs. Companies will be recruited to partner in education designed to develop the next leaders in themed experience. In exchange, these Florida based firms will gain access to skilled, well-trained and well-prepared candidates who are seeking careers in themed experience design and production.

### **What are Themed Experience Institute programs?**

FSU has successfully run a pilot program in themed experience for the last two years. The number of students and courses have been limited. Nevertheless, that program has already resulted in 5 full-time jobs and 7 internships in the themed experience industry in Florida.

- **Masters of Science in Themed Experience**

The initial curricular component in TEI will be the Master of Science in Themed Experience. This 32-hour master's will focus on both the research and practical components of themed experience design and production.

- **Themed Experience Specialized Study**

Specialized Study in Themed Experience will be an interdisciplinary program consisting of 17 credits – 14 of which will be required courses. The courses will cover the history and industry structure of themed experience as well as teach the design and production skills. At the conclusion of their program, students will work in teams on projects that closely emulate model industry practices. The Specialized Study will be offered in a traditional in-person format at FSU. Hybrid courses will be developed that allow students to complete their specialized study at either FSU or UF.

- **Themed Experience Undergraduate Major**

Finally, the Institute will launch a Bachelor of Science in Themed Experience. This 46 hour undergraduate degree will build upon the coursework in the Specialized Study to create a specific curriculum dedicated to all components of themed experience.

- **Themed Experience Partner Program**

The Institute will ensure industry relevance through the creation of the Partner Program. The Themed Experience Partner Program will consist of companies and organizations involved in the creation and operation of themed experiences. Partners will serve as mentors for students and teams providing guidance and feedback on projects and other student work. Partners will also have the opportunity to sponsor projects related to their expertise.

### **Timeline**

- Summer 2017
  - Master of Science in Themed Experience
- Fall 2018
  - Themed Experience Specialized Study Launch -- FSU
  - Hybrid course development -- UF
- Fall 2019
  - Online Specialized Study - FSU & UF
- Spring 2019
  - Bachelor of Science in Themed Experience

### **Budget Requested**

This proposal requests the funding necessary for IES startup and implementation.

- **Personnel**

Summer 2017

- Director / Instructor (\$100K + \$30K benefits)  
The Director will manage TEI programs and teach courses. The Director will hold an academic appointment with FSU.
- FSU Tenure Track Faculty (\$85K + \$25.5K benefits)  
A tenure track faculty position will be required to develop and teach the courses required for the Institute's MS in Themed Experience. This faculty member will be housed in a College of Fine Arts (CFA) unit at FSU.
- FSU Specialized Faculty (\$70K + \$21K benefits)

A faculty position will be required to teach the TEI courses required for both the Specialized Study and the BS. This faculty member will be housed in a CFA unit at FSU.

- FSU Support Staff (\$30K + \$9K benefits)  
This position will manage Institute's FSU resources and facilities.

#### Fall 2018

- Specialized Instructor (\$70K + \$21K benefits)  
An additional faculty position will be required to teach the FSU courses required for both the Specialized Study and BS. This faculty member will be housed in a CFA unit at FSU.
- Specialized Instructor (\$70K + \$21K benefits)  
An additional faculty position will be required to teach the UF courses required for both the Specialized Study and BS. This faculty member will be housed in the Digital Worlds Institute at UF.
- UF Support Staff (\$30K + \$9K benefits)  
This position will manage Institute's UF resources and facilities. In addition, this position will support the development of online course materials for the hybrid courses.

#### Fall 2019

- UF Tenure Track Faculty (\$85K + \$25.5K benefits)  
A tenure track faculty position will be required to develop and teach the courses required for Institute's Digital Media coursework in Themed Experience. This faculty member will be housed in the Digital Worlds Institute unit at UF.
- UF Specialized Faculty (\$70K + \$21K benefits)  
A faculty position will be required to teach the TEI courses at UF. This faculty member will be housed in the Digital Worlds Institute at UF.

- **Expense Items:**

- **Materials**

TEI's courses will require specialized materials:

- Cement
- Rebar
- Paint
- Software
- Computer Hardware
- Lumber
- Plaster
- Glass
- Hardware
- Large tools owned by the programs

**Programming**

These funds will enable the Institute's Showcase, Practicum, and Partner's Program.

**Travel**

These funds will enable travel between FSU and UF and to academic conferences, industry partner charrettes, lectures, critiques and symposiums.

**Promotion**

These funds will be used for the creation and distribution of IES promotion and information materials including print brochures as well as online elements.

- **FSU Operational Infrastructure**

The Institute will require 25,000 to 30,000 square feet of space at FSU to provide:

- Faculty and Staff Offices
- Teaching Facilities
- Production Facilities
- Exhibition Space

- **UF Operational Infrastructure**

TEI will require 2000 to 3000 square feet of space at UF to provide:

- Faculty and Staff Offices
- Specialized online production and teaching facilities
- Specialized post-production facilities

**II. Return on Investment**

The return on this funding expenditure comes in two areas: Expanded Industry Collaboration, and Meaningful Creative Employment for Graduates.

- **Expanded Industry Collaboration**

The Themed Experience Consortium will provide an opportunity for industry partners to participate in educational programs that provide a greatly needed workforce.

- **Employment for Graduates in Florida**

The Themed Entertainment Association and the International Association of Amusement Parks and Attractions both maintain there is a persistent demand for graduates skilled in the creation of themed experience. Most of the key positions, craftspeople and leadership in Walt Disney

Imagineering will be retiring in the next ten to twelve years creating significant opportunities for a new generation. The themed experience industry continues to diversify and grow. There are not enough established academic programs to provide qualified graduates seeking employment in the creation of themed experiences. There are several indications that point to continued high levels of employment opportunities for the foreseeable future:

- Expansion of themed experience approaches into new fields and new locations.
- The growth of theme park construction.
- The expansion of companies providing contract work for large industry players.
- The critical mass of theme park and themed experience jobs in Florida. Currently the two largest theme parks in Florida employ 67,000 employees.
- Florida’s track record in attracting themed experience jobs. The State of Florida is #4 nationwide for the number of employees in the Arts, Design, and Entertainment category of jobs, as reported by the US Department of Labor. More than 88,500 individuals were employed in these fields.

**III. Facilities**

	<b>Facility Project Title</b>	<b>Fiscal Year</b>	<b>Amount Requested</b>	<b>Priority Number</b>
<b>1.</b>				
<b>2.</b>				