



Operating Budget

State University System Education and General 2017-2018 Legislative Operating Budget Issue Form I

University(s):	Florida A&M University and Florida State University
Issue Title:	Integrated Advancement for the Joint College of Engineering
Priority Number	
Recurring Funds Requested:	6,600,000
Non-Recurring Funds Requested:	
Total Funds Requested:	6,600,000
Please check the issue type below:	
Shared Services/System-Wide Issue	<input type="checkbox"/>
2016-2017 Non-Recurring Issue	<input type="checkbox"/>
New Issue for 2017-2018	<input checked="" type="checkbox"/>

I. Description:

In the 2016-2017 academic year a new foundation was laid for the FAMU-FSU Joint College of Engineering (JCOE). University Presidents Elmira Mangum and John Thrasher committed to a

common vision of excellence and innovation, and to investing available resources to supporting that success. To that end, the Joint Management Council brought together the Presidents, Chancellor, the academic and business leadership of both universities and the Board of Governors staff to review and renew collegiate functions, policies and processes related to student success, faculty vitality and operations. The culmination of this process was the appointment of our new Dean, J. Murray Gibson.

With a new structure and leadership in place, the JCOE is poised to assume a unique role in the Florida SUS and nationally, by building its research reputation in key areas of strength, and contributing a well-prepared, diverse pool of graduates that advance innovation in technology and engineering in the state and beyond. The JCOE is uniquely poised to develop research centers that support key areas of technological emphasis, including health technology, materials, aerospace, biomedical engineering and energy sustainability. These research centers will in turn allow the JCOE to expand the size and diversity of its student body.

To meaningfully advance goals related to research, academic quality, and overall efficiency and effectiveness of the FAMU-FSU Joint College of Engineering, several critical investments must be made.

1) Five new faculty lines **5 x \$125,000 = \$625,000**

The recruitment of researchers of the highest quality are essential for the 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 line in sensors for healthy aging: “aging in place” will require technology for medical devices and sensors that would leverage existing strengths at the college.
- b. Faculty line 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.
- c. Faculty line in robotics: robotics has growing applications to improve manufacturing efficiency, assist loss of function in people and expand the “internet of things”. We will build new strength through hiring in the area of controls expertise within mechanical and electrical engineering.
- d. Faculty line in biomedical engineering: tissue engineering and synthetic biology are areas that address human health and manufacturing technology. Growing numbers of Florida undergraduates are excited by the potential of biomedical engineering.
- e. Faculty line in energy sustainability: the development of sustainable energy is vitally important to the state, and beyond. 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.

2) Start-up funds for new faculty **\$3 Million**

- a. Universities must provide “start-up” packages to attract outstanding researchers, give them what they need to succeed in their research, and add to the capabilities of the college in research and education.
- b. 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.
- c. 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.

Packages include funds for equipment, laboratory renovation and for technician support.

3) Support for (undergraduate) student success

\$1,225,000

- a. 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.
- b. 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.
- c. 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.
- d. 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.
- e. Internships: internships and co-ops are very attractive to students and employers, and the experiential learning helps students place in better higher-paid positions and gives employers better calibration of potential employee’s skills. Strengthening experiential learning will increase the graduation rate.

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

4) Strengthen graduate student programs

\$750,000

- a. 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.

5) **Market equity adjustments**

\$1 Million

- a. Faculty are the life blood of a college. In order to retain the best and brightest faculty some faculty salaries must be adjusted upwards to be competitive with the market. Using the Oklahoma State University survey of 114 public research universities, the College of Engineering salaries are below the market level for the disciplines.
- b. The cost to the state of Florida to replace lost faculty leaders is much higher than correcting market inequities, 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 faculty at the two institutions that must be addressed in order to improve morale.
- 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 bachelors 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 with higher wages based on their marketability and fit to areas of strategic interest and importance in the engineering profession.
- d. Improved research focus and outputs in the form of patents, startup companies and commercialization of research products in the identified strategic areas for the five faculty positions.
- e. Assistance to the state in diversifying its energy portfolio and meeting its goals with respect to biomedical research, environmental sustainability, aerospace and robotics.
- f. Enhanced business climate 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. Retaining engineers produced in Florida to stay and work for Florida’s growing field of technology based companies.
- h. Support for the state’s leading tourism and agricultural industries through additional research and connections to 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 and is on the Capital Improvement List complete the following table.):*

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