



**College of Engineering
Annual Report
April 15, 2013**

OVERVIEW

It has been another stellar year for the USF College of Engineering. In the pages that follow, you will see a synopsis of some of our more significant accomplishments of the past year. Most notably, our faculty and our students continue to attract national and international attention for their excellence and have been duly recognized with a variety of awards and accolades. USF and the College take great pride in all of faculty and students but special mention is rightfully due to Professor Autar Kaw, who was awarded the US Professor of the Year by the Council for Advancement and Support of Education and the Carnegie Foundation for the Advancement of Teaching.

We are indebted and grateful to all our benefactors, many of which are faculty and staff within the College of Engineering itself. As part of the USF Unstoppable Campaign, the College of Engineering had a goal to raise \$19 million over the span of the six years of the campaign. With the campaign winding down this year, Engineering will exceed \$100 million raised toward the overall campaign goal of \$600 million. We have clearly done an excellent job and have much to celebrate. But even more precious to our community, is the outcome of our mini-campaign within the Unstoppable Campaign to raise sufficient funds to complete and to equip the sorely needed renovations to the first floor of Engineering II, the living room for our Engineering students. By the end of the fiscal year, we anticipate to have closed all naming gifts and to receive recognition gifts which will approach \$750,000 in total. It is inspiring to receive such a vote of confidence from folks within and outside of the university. Together we will continue to do great things!

As a College, we take great pride in planning and execution. Our careful planning and focus on key productivity measures as outlined in these pages has allowed us to move up the US News and World Report (USNWR) rankings of Graduate Engineering Colleges at a constant pace over the last four years. We recently moved up another 3 places to 69th among public engineering programs. We are closing in on our near term goal to be a top 50 public engineering program. We are tracking our productivity relative to AAU peers and implementing actions to the extent that resources allow us to move toward a profile similar to the AAU institutions. As noted here, we are performing well in terms of MS and PhD enrollment and graduation (nominally 75th and 25th percentile respectively) but we fall short in terms of research expenditures (below 25th percentile). Our current per faculty expenditure rate of \$270,000/yr falls approximately \$100,000/yr short of the 25% percentile level. In view of the Federal fiscal climate, the College understands that we need to renew our efforts to pursue industrial funding as well as other "limited competition" funding pools such as those funds restricted to classified research. We are very near to obtaining the needed security clearances for key personnel that should enable the College to pursue these

opportunities within the next year. Further, we clearly recognize that our graduate recruiting needs to be more focused on quality and admissions practices sharpened if we hope to continue to move up in the USNWR rankings.

We have spent some significant effort in the past year to improve the undergraduate program quality and we hope to continue these efforts in the coming years. With the guidance and active participation of our College of Engineering Advisory Board, we piloted a Engineering Teamwork and Leadership course this past spring. The course was well received by our students and those instructors and facilitators involved in its delivery and execution. The College will be scaling this pilot into a 3 hour elective to be offered next academic year. In addition, we discussed modifications to our curriculum organization to allow more direct interaction with undergraduate students during their first two years at USF. Our 6 year graduation rate is very low and we need to address this shortcoming. National case studies at other engineering schools points to the first year sequence in calculus and physics as being a critical intervention point. Our efforts would center round engaging our students during this critical juncture in their educational experience as an undergraduate. Although we have made limited progress in fleshing out these concepts due to budgetary uncertainty, we do intend to pick up this effort again once our budget pressures are behind us. In the meantime, we have instituted an early warning system, a student tracking system and peer tutoring to help mitigate losses inherent in our current curricular structure.

We have many successes to savor. But opportunities exist to continually improve. Our engineering accreditation processes speaks to continuous improvement and we are living and breathing that in our daily decisions within the College of Engineering. We are under the normal six year review for accreditation next fall and I am convinced that the accreditation team will be very comfortable with our approach based on the obvious progress we continue to make as a College of Engineering.

US News and World Report Best Engineering Schools Rankings
Ranking Metrics for University of South Florida

	2013	2014	Change (2013-2014)	
Rank	109	105	UP	4
Public Rank	72	69	UP	3
Score	22	20	UP	2
Total graduate engineering enrollment	792	822	UP	30
Research expenditures per faculty member	\$268,653	\$264,747	DOWN	\$3,906
Engineering school research expenditures	\$28,477,226	\$28,327,966	DOWN	\$149,260
Average quantitative GRE score of new entrants in both master's and doctoral programs	724	739 (old) 156 (new)	UP	15
Overall acceptance rate	47.20%	47.60%	UP	0.40%
Faculty membership in National Academy of Engineering	1.00%	.93 %	DOWN	0.07%
Peer assessment score (5.0=highest)	2.2	2.2	NO CHANGE	
Recruiter assessment score (5.0=highest)	2.5	2.4	DOWN	.1
Ph.D. students/faculty	3.4	3.1	DOWN	0.3
Ph.D.'s granted	40	53	UP	13
Fall FT TT Faculty	105	107	UP	2
Fall FT Master's Students	277	280	UP	3
Master's students/faculty	2.6	2.6	NO CHANGE	
Tuition	In-state, full-time: \$9,640 per year Out-of-state, full-time: \$19,760 per year	In-state, full-time: \$10,410 per year Out-of-state, full-time: \$20,600 per year	In-state, full-time: UP \$770 per year Out-of-state, full-time: UP \$840 per year	

Source: U.S. News & World Report 2014 Rankings

2013 Rankings of Florida Universities with Graduate Engineering Programs

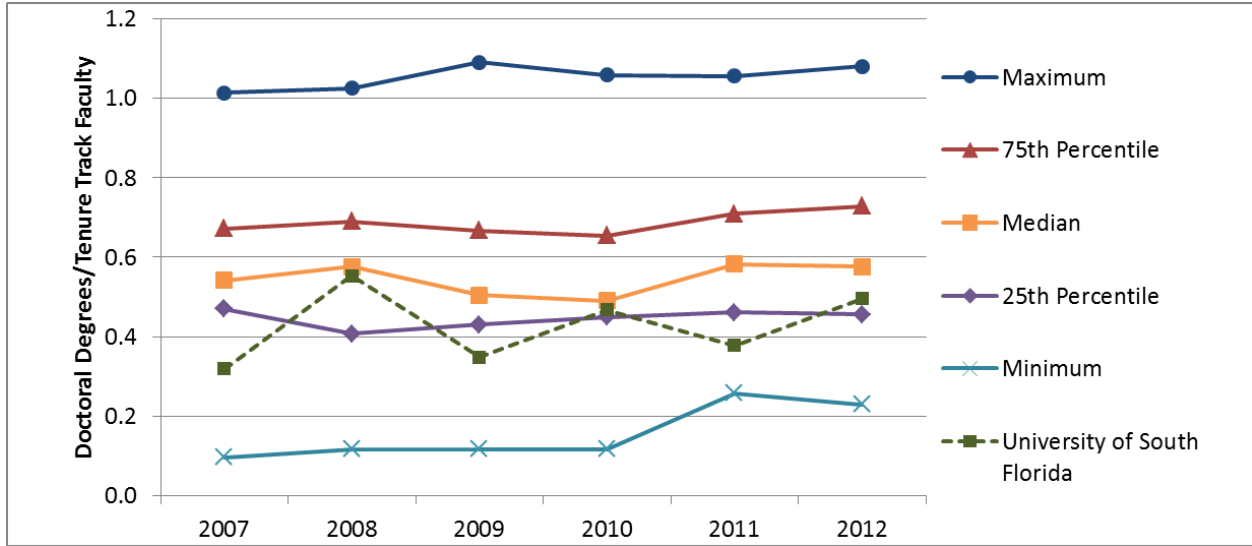
	Rank				
	2010	2011	2012	2013	2014
University of Florida	25	30	30	35	38
University of Central Florida	86	73	70	72	72
Florida State University/Florida A&M University		102	92	102	112
University of South Florida		119	112	109	105
University of Miami		116	122	121	116
Florida Atlantic University		RNP	RNP	RNP	RNP
Florida Institute of Technology		RNP	RNP	RNP	RNP
Florida International University		RNP	RNP	RNP	RNP
<i>Total Ranks</i>	<i>90</i>	<i>137</i>	<i>138</i>	<i>144</i>	<i>143</i>
<i>Total Schools Ranked</i>	<i>95</i>	<i>143</i>	<i>151</i>	<i>150</i>	<i>147</i>
<i>Total Schools</i>	<i>198</i>	<i>198</i>	<i>198</i>	<i>198</i>	<i>199</i>

From 2013 to 2014...					
Schools USF moved above:					
Brigham Young University (Fulton)		102	107	114	124
University of Georgia		126	107	114	119
Clarkson University		107	112	121	116
University of Louisville (Speed)		129	112	121	126
Utah State University		119	112	131	119
University of Alabama		137	122	109	112
Oklahoma State University		102	112	109	112
Schools USF moved up to tie with:					
Tulane University-New Orleans		107	112	102	105
West Virginia University		113	102	102	105
Wichita State University		94	107	102	105
Schools that moved up to tie with USF:					
CUNY--City College (Grove)		129	102	109	105
University of Arkansas--Fayetteville		115	107	109	105
University of Maryland-Baltimore		107	118	119	105

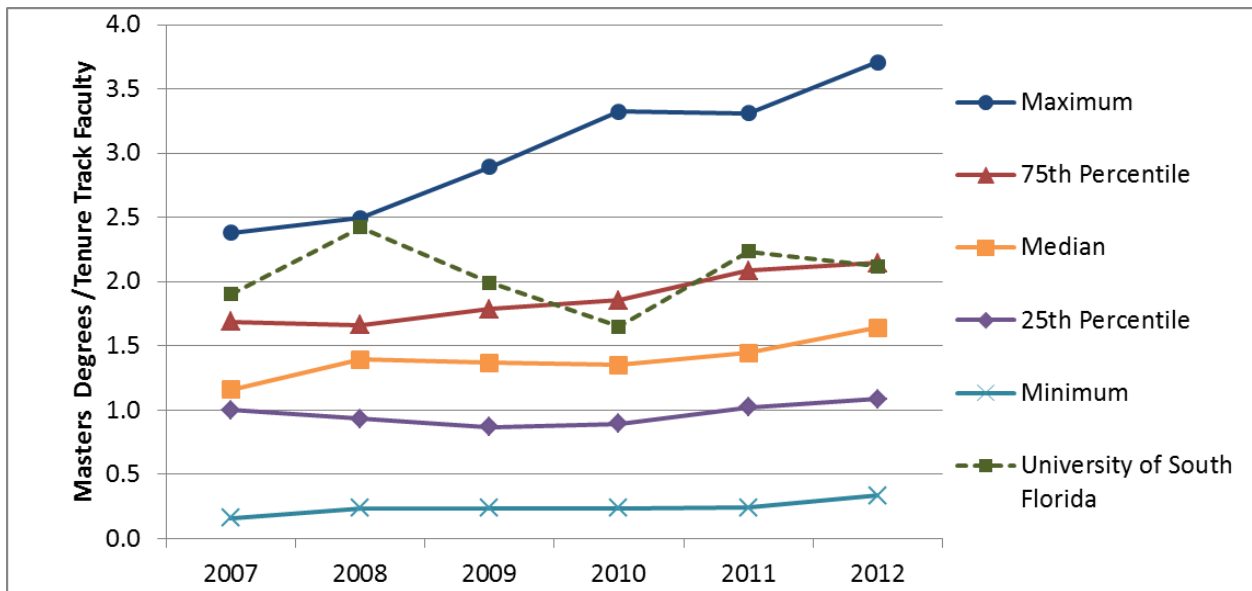
Source: U.S. News & World Report 2014 Rankings

AAU Public University Performance Comparison (Source 2011 ASEE Survey)

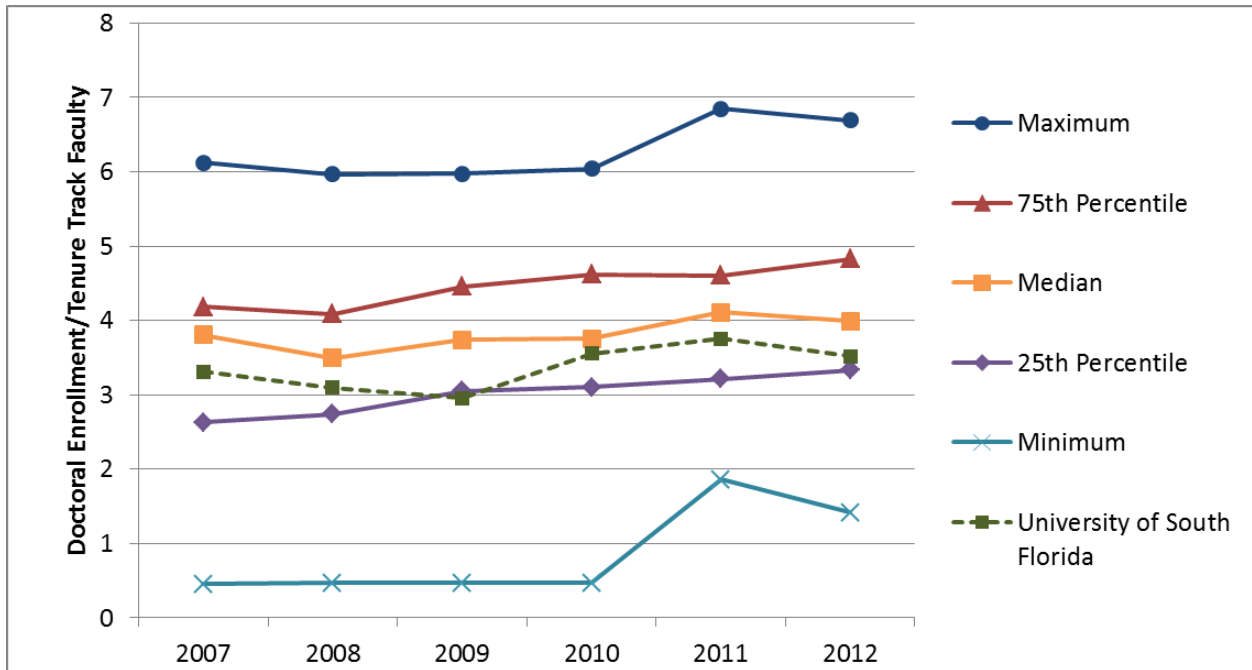
Doctoral Degrees per Tenure Track Faculty



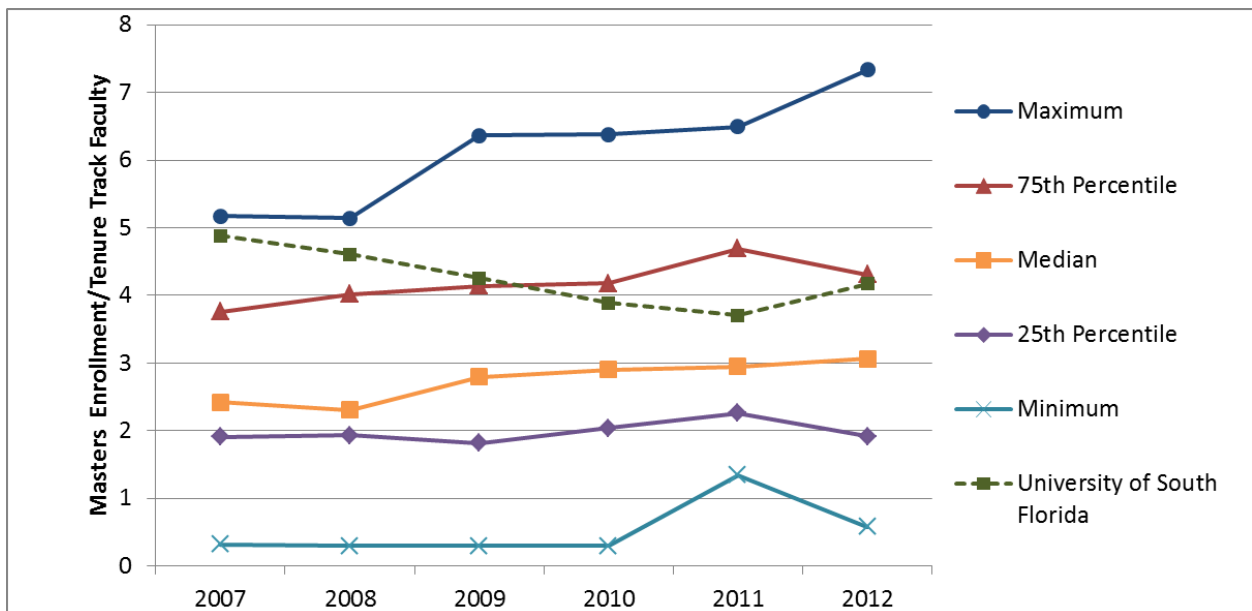
Master's Degrees per Tenure Track Faculty



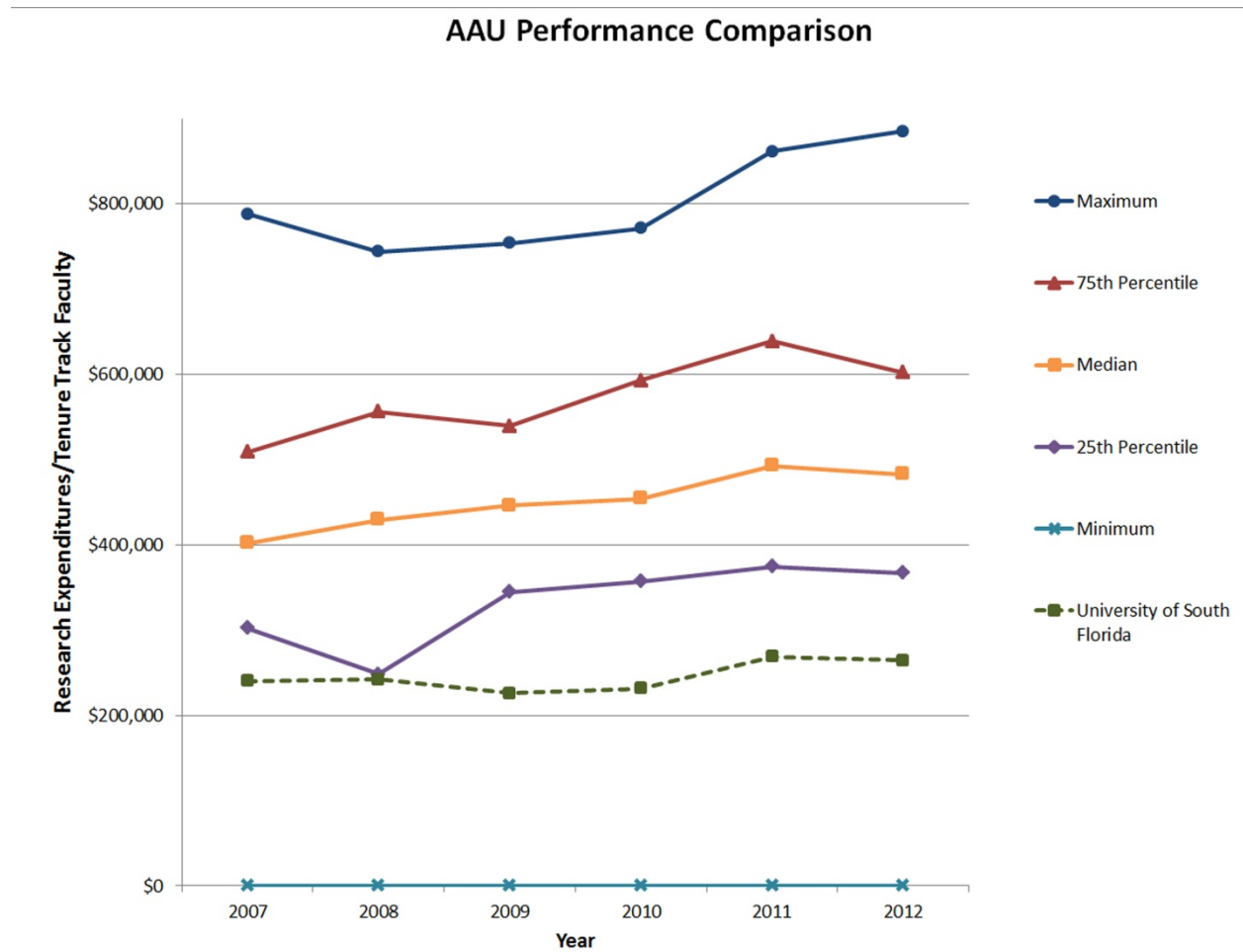
Doctoral Enrollment per Tenure Track Faculty



Master's Enrollment per Tenure Track Faculty



Research Expenditures per Tenure Track Faculty



2012-2013 KEY ACTION ITEMS FOR THE COLLEGE OF ENGINEERING

Prepare for the next accreditation visit (Fall 2013)

A pre-evaluation of self-studies for every bachelor's degree program and a pre-evaluation visit occurred during the fall 2012 semester. Several excellent recommendations to improve self-studies and the assessment process were implemented for the official accreditation visit in fall 2013.

Increase participation in internships and co-op opportunities

Undergraduate admissions to the college were reviewed and revised.

- Created an internship course for freshmen
- Students are notified via list serve about jobs and internships

- Required all FTIC students to register with the career center, create a resume, and attend a career fair
- Currently, finalizing a website for companies and students to both submit and apply for internships

Increase experiential learning experience overall

Bulls Engineering Success Training BEST Program

Started by Professor Ken Christensen, computer science and engineering, to provide seniors who are completing their capstone projects the opportunity to work with organizations and complete a real-world project. It also gives the companies involved a chance to see the upcoming graduating class.

Students work with NASA's Jet Propulsion Lab to create a website that will help the general public navigate and express interest in photographs produced by the Mars Curiosity Rover

Students developed an Android application that measures vital signs for Raytheon that can be used with a 911 system and with Medevac. The capstone project utilized the Raytheon engineering design process, exposing the students to identical design reviews that all Raytheon teams experience.

Leadership in Engineering Pilot Program

College Advisory Board members, mainly comprised of engineers with leadership roles in organizations, hire many engineering graduates. While students' technical skills were top-notch, it usually took several months for them to assimilate into the work environment because they lacked soft skills.

The Leadership Committee, a subset group of the board, developed a leadership pilot program that ran for seven weeks during spring semester, for a total of seven, four-hour sessions, with zero credit. The course objectives:

Increase awareness of leadership and teamwork competencies and strengthen ability to apply that knowledge. Competency areas covered:

- Leveraging personality differences
- Effective communication
- Influencing direction
- Establishing effective teams
- Continual organization and personal improvement

Introduced the College's Peer Mentoring Program

Program was implemented in fall 2012 through the Engineering Living and Learning Community and the female ELLC as well as a course-based community. The female ELLC doubled its membership this year.

Create an Early Warning System for all first year engineering students

Implemented in fall 2012, the Early Warning System identifies students struggling in the first 4-6 weeks and increases interaction between their advisors and instructors.

Create an orientation course for all first year engineering students

All FTIC students enrolled in an orientation class for the first time in the fall 2012 took this course. The orientation course included topics covering skills to help become a successful student, topics on all the various engineering majors and career development, including registering with Career Services, submitting a resume and attending a career fair.

Initial results of the above activities are showing improvements in the GPAs for calculus and a significant reduction in changing majors (over 30%). The result is a 25-31% reduction in students who received less than a 2.00 in calculus I and II. Over 20% reduction in students receiving an "F" calculus I and II and increase in GPA performance of 11% in Calculus I and an 18% increase in GPA performance in Calculus II.

Graduate and Undergraduate Student Awards

Vinicio Carias (Biomedical Engineering) Fulbright

Shamara Collins (Electrical Engineering) NSF Fellowship

Ibrahim Nasser (Electrical Engineering) IEEE Fellowship

Sandra Pettit (Chemical Engineering) USF Fellowship

Nuvala Fomban ('07MSBE) NIH Fellowship

Olukemi Akintewe (Chemical Engineering) United Negro College Fund/Merck Graduate Fellowship

Frank Alexander, Jr. (Electrical Engineering) NSF/ASEE Engineering Innovation Fellowship Program

Bryce Hotalen (Electrical Engineering) IEEE Scholarship

Camille Ramseur (Computer Science & Engineering) NSF REU internship and UPenn

Matthew Morrison, computer science and engineering doctoral student under Distinguished University Professor Nagarajan Ranganathan, received the Provost's Award for outstanding teaching by a graduate teaching assistant.

FACULTY AWARDS

Chemical & Biomedical Engineering

- Venkat Bethanabotla – Fellow AIChE

- Yogi Goswami – Distinguished University Professor
- Scott Campbell – Jerome Krivanek Distinguished Teaching Award

Civil & Environmental Engineering

- Rajan Sen – Jefferson Science Fellow

Computer Science & Engineering

- Miguel Labrador – COE Outstanding Research Achievement Award
- Nagarajan Ranganathan – Fellow AAAS
- Sudeep Sarkar – Fellow IEEE
- Lawrence Hall – Fellow AAAS; Norbert Weiner Award

Electrical Engineering

- Richard Gitlin – Charter Fellow, National Academy of Inventors

Industrial & Management Systems Engineering

- Alex Savachkin – Outstanding Undergraduate Teaching Award

Mechanical Engineering

- Autar Kaw – 2012 U.S. Professor of the Year
- Rasim Guldiken -Outstanding Undergraduate Teaching Award; ASME 2012 Engineer of the Year

Center for Urban Transportation Research

CUTR helped Florida DOT launch the first Statewide Pedestrian and Bicycle Safety Coalition. The Coalition will engage in over \$1 million in project activities to reduce pedestrian and bicycle fatalities across the state. This project is critical at the state level, but also on the national level as it reflects the importance of the work CUTR performs.

SIGNIFICANT GIFTS TO THE COLLEGE

The College continues to receive support from alumni, faculty and local organizations. The Engineering Building II Renovation Fund, the first-ever fundraising effort of its kind at for Engineering II, has raised \$314,508 to date, with a verbal commitment for a named space anticipated to be signed this month, which will raise the total to \$564,508. The four named spaces are:

**Mini-Circuits - \$250,000 Open Design Lab
(verbal commitment) from Harvey Kaylie, Brooklyn, NY**

Tampa Armature Works - \$150,000 Hall of Flags

J.A. "Bubba" Turner, III, Tampa

H S A Engineers & Scientists – \$150,000

Educational Epicenter, COE alumni Nick Albergo and Dave Scott

USF Engineering Alumni Society \$75,000 – Conference Room

In addition, numerous donations were made from individuals, faculty and Staff:

Emerald \$25,000+

Bracken Engineering

Manjriker Gunaratne

Katherine Johnson

Rafael Perez

Diamond \$10,000 - \$24,999

John & Lida Wiencek

HDR Engineering, Inc.

Elias K. Stefanakos

Genevieve and Danny Winters

Sapphire \$2500 – 4,999

Mary Goodwin

Pearl Level \$500 - \$999

Consulting Engineering Associates – John Wells

Jennifer Collum

Ruby \$1,000 - \$2,499

Brett J. Annette

Charles R. Black

John Bucher

Ferman Diaz

Richard Gitlin

Linda and Ron Federspiel

Elizabeth Creed Fontes

Ajit Mujumdar

Thomas M. Weller

This fiscal year brought the addition of two new endowed scholarships. Rosalee Roberts created the **Jack W. Roberts Endowed Memorial Scholarship** in Civil Engineering Fund. Her late husband, Jack, received his PE without any formal college education. Although he didn't have the financial means to attend college, he worked for the FLDOT as the project manager on the Sunshine Skyway project. Through her donation, Rosalee would like students like Jack, who could not otherwise afford an education, to be able to get their degree in engineering at USF.

The **Society of American Military Engineers**, who have been donating scholarship funds each year, was able to establish an endowed scholarship through funds raised at a conference.

The following additional projects have been funded:

Mini-Circuits has given a verbal commitment to fund two BEST Projects (Bulls Engineering Success Training). The Best Program represents a joint effort between the University of South Florida and non-university entities to provide meaningful design experiences within the context of realistic project

constraints. Harvey Kaylie, President of Mini-Circuits, a supporter of the College of Engineering for many years sees the value in this experience for our students. In addition, Harvey is funding a 3D RF Design and Manufacturing Initiative for advancing the design, modeling and manufacturing of 3D wireless-enabled systems. The combined gift represents \$695,000 in donations from Mini-Circuits.

Progress Energy is funding the Power and Energy Systems Teaching Lab for \$110,000. This lab will serve to enhance the academic experience of engineering students at USF.

Maxi-Blast has agreed to sponsor the Student Automotive Engineers with a gift of \$25,000. SAE is planning to race in Germany and Austria in the summer of 2014.

Bracken Engineering \$20,000 to support the Bracken Engineering Lecture Series, which will consist of support for the current COE Eminent Scholars Lecture Series as well as professional engineering-based fall lecture series that will be focused toward continuing education credits for engineers holding the PE.

Several in-kind gifts were received as well, including another annual donation of 100 design software licenses of totaling \$26 million from **Agilent Technologies**. **Sciperio** donated an Anechoic Chamber valued at \$300,000 to the Electrical Engineering Dept. which will be used for antenna research.