



University of South Florida
College of Engineering
2009-2010 Annual Report

*Prepared by Dean John Wiencek with the assistance of
Associate Deans Rafael Perez and Tom Weller*

OVERVIEW

Another year is nearly done and there is much to relish in the past year. The College of Engineering continues to push itself to excel in education and research, yet has significant challenges that must be addressed. The past three years have seen a significant growth in our faculty ranks as well as a concerted effort in the past year to increase our Ph.D. enrollment. We have been quite successful in these matters but, being a complex system, our ability to grow requires much more than faculty and graduate student salaries. Infrastructure, both hard and soft, is becoming a more and more dominant factor that deters us from achieving to our full potential. Hard infrastructure needs primarily revolve around space - labs for research, offices for personnel, classrooms for students, etc. Soft infrastructure includes IT support, financial services, support staff in programs and departments, and proper maintenance of our hard infrastructure. Unfortunately, many of these issues are endemic of the larger issues at USF, but that does not mean that we should shrug our shoulders and walk away. We will continue to chip away at these issues and make forward progress.

Look around and you will see that things are different now than they were in 2006. A time of rapid change provides opportunity for self reflection and for improvement. The College has this opportunity now and the completion of our strategic plan is timely. As we come to more fully understand how connected our research and teaching missions have become, we also see great hope in making a sharp transition in our reputation and perception by our peers and our customers. We have much for which to be grateful. Our faculty ranks have grown in a time when many programs have been eliminated or faculty have seen across the board salary cuts and furloughs. Our support for graduate students has more than doubled over the last two years. Concomitantly, our collegiate budget is at an all time high. As stated last year, these investments reflect the confidence of the USF leadership (President Genshaft and Provost Wilcox) in our College of Engineering. We all look forward to continued increases in research productivity and improvement in our undergraduate and graduate degree programs that such investments typically yield. As we take the view far down the road, our path is clear and the skies are bright.

Going forward, the annual report will be framed around our strategic plan and the sections below will use the major goals of the plan as a framework. The plan (in text form) is available on the same webpage as this annual report. We are working on graphics and layout for this report and the final printed version will be circulated to the College of Engineering community in early summer. A one page synopsis follows.



University of South Florida College of Engineering

Strategic Plan 2008-2013

“We Envision a Great Future”

OUR VISION

By providing a relevant, high quality educational experience for our students and by being a leader in innovative research in the areas of sustainability, renewable energy and biomedical engineering, the College of Engineering aspires to be a peer among engineering programs at research-focused public universities.

OUR MISSION

The Mission of the College of Engineering at the University of South Florida is to improve the quality of life in our community by:

- Providing a high quality education for our students and practicing professionals.
- Creating new knowledge and solving real world problems via innovative research.
- Engaging in effective community service and outreach.

OUR VALUES

Innovation

Collaboration

Collegiality

Commitment to Continuous Improvement

Student Centric

Service to Humanity

Diversity

Through the College’s support and emphasis of these values, we lead by example and pass these attributes on to our students, empowering them to be creative and innovative engineering professionals in the 21st century as their work influences and impacts humanity.

NATIONAL PEER INSTITUTIONS

University of Cincinnati
Rutgers University
University of Illinois, Chicago
University at Buffalo, SUNY

ASPIRATIONAL PEER INSTITUTIONS

AAU Public Institutions with Engineering Programs

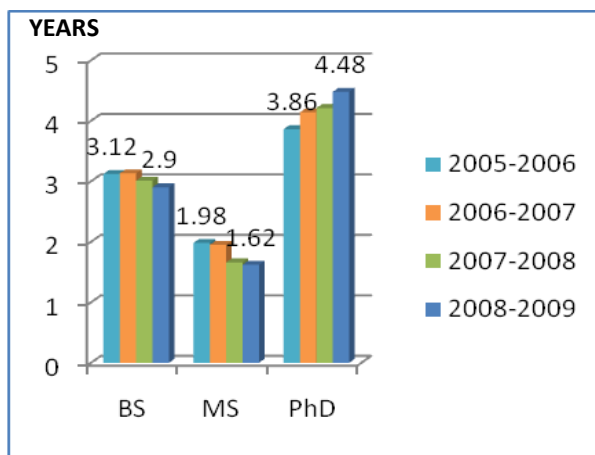
OUR GOALS

1. Ensure academic and future professional success for our students.
2. Achieve and sustain national recognition in research.
3. Establish essential operational infrastructure to achieve the College’s vision.

GOAL 1

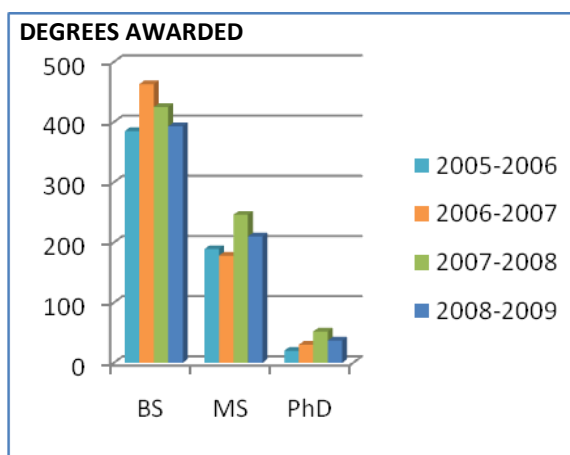
Ensure academic and future professional success for our students

Time to Degree in Mean Years



Source: USF Infocenter

Corresponding Degrees Awarded



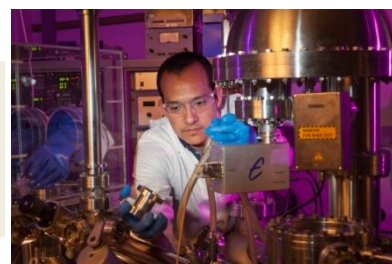
Source: USF Infocenter

RESEARCH EXPERIENCES FOR UNDERGRADUATES



Computer Science & Engineering Professor Miguel Labrador's Summer REU program ended with a soccer match with Wireless NXT Robots (left). Undergraduate Team beat Graduate Team 2-1.

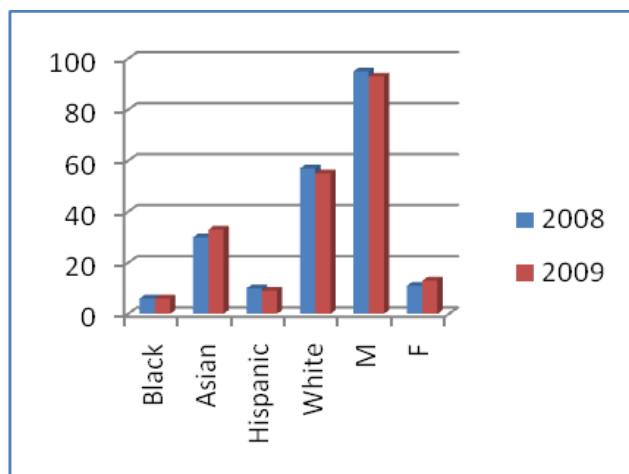
Electrical Engineering Professor Rudy Schlaf's Summer REU program "Preparation and characterization of layered materials back contacts for CdTe solar cells."



COMMUNITY OUTREACH – STEMS GRADES K-12

With a National Science Foundation grant, STARS (Students, Teachers and Resources in the Sciences) fosters systemic change in elementary curricula with the potential to fundamentally change math, science and long-term professional development of science and mathematics teachers, and infuse science and engineering principles as well cutting-edge technology (such as nanotechnology, optics, computer vision, etc.) into the elementary grade curriculum.

DIVERSITY AMONG T/TT FACULTY



Fourteen faculty were hired to start the 2009-2010 academic year. Of the 14, four are women (28.5%); one is Black; six are Asian (42.8%).

Data from 2009 ASEE Survey

COLLEGE OF ENGINEERING DIVERSITY HIGHLIGHTS

Three College faculty members - Dr. Tom Weller, Dr. Miguel Labrador, Dr. Maya Trotz - and staff member Robert Tufts, NNRC, were recognized for their support of diversity initiatives within the College at USF's seventh annual Diversity Summit.

According to *Hispanic Outlook*, 04/05/2010 issue, the College of Engineering placed 17th in the Top 25 Graduate Schools for Engineering Degrees (MS and PhD combined) and placed 6th in the Top 10 Graduate Schools Awarding Doctoral Degrees in Engineering. (Source: NCES-IOEDS, 2009).

STUDENT SUCCESSES HIGHLIGHTS

Doctoral students **Praveen Sekhar**, Electrical Engineering and **Vishnuteja Nanduri**, IMSE, received USF Graduate School 2008-2009 Outstanding Dissertation awards.

Cindy Bethel a summer Ph.D. graduate of the Computer Science and Engineering Department named a 2009 Computing Innovation Fellow at Yale University.

Pabitra Choudhury, Chemical Engineering, selected by the faculty for the Outstanding Research Assistant for the 2008-2009 year.

Adriana Chacon, Mechanical Engineering senior, awarded first place in the engineering category for best oral presentation during the 17th Annual NSF FGLSAMP Career Expo.

Nathan Quecan, Electrical Engineering senior, received the Allan R. Gondeck Memorial Scholarship.

FACULTY HIGHLIGHTS

Shekhar Bhansali, Professor of Electrical Engineering received Sloan Minority Ph.D. Program Faculty Mentor of the Year by the Southern Regional Education Board.

Sal Morgera, Professor and Chair of the Electrical Engineering Department in the College of Engineering, recently designated Dr. Morgera an *Eminent Engineer* by Tau Beta Pi.

Alberto Sagüés, distinguished university professor of Civil and Environmental Engineering, received a 2010 Technical Achievement Award from the National Association of Corrosion Engineers (NACE) International for his work in corrosion engineering.

Geoffrey Okogbaa, Professor of Industrial and Management Systems Engineering, has been elected Fellow of the Nigerian Academy of Engineering (Nigeria NAE),

Autar Kaw, Professor of Mechanical Engineering, received the 2010 Outstanding Teaching Award from the Southeastern Section of the American Society of Engineering Education (ASEE).

Ralph Fehr, Assistant Director of the Clean Energy Research Center (CERC) and Instructor in the Electrical Engineering department, named Outstanding Engineering Educator for 2009 by the Florida Council of the Institute of Electrical and Electronics Engineers (IEEE).

Nagarajan Ranganathan, Distinguished University Professor of Computer Science and Engineering, recently received an outstanding undergraduate teaching award at the 2009 Faculty Honors and Awards Reception.

Karen Seggerman, CUTR Senior Research Associate, awarded FSITE Transportation Professional of the Year.

Thomas Wade, Professor of Electrical Engineering named McDonald Mentor by Tau Beta Pi.

Vinay Gupta, Professor of Chemical and Biomedical Engineering received the 2009 Jerome Krivanek Distinguished Teacher award

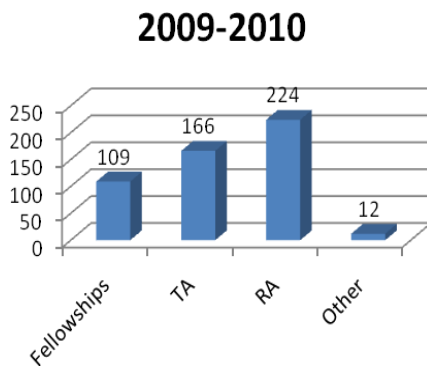
Ashok Kumar, Professor of Mechanical Engineering received an Honorary Professor award by the Universidad del Norte, Barranquilla, Colombia.



GOAL 2

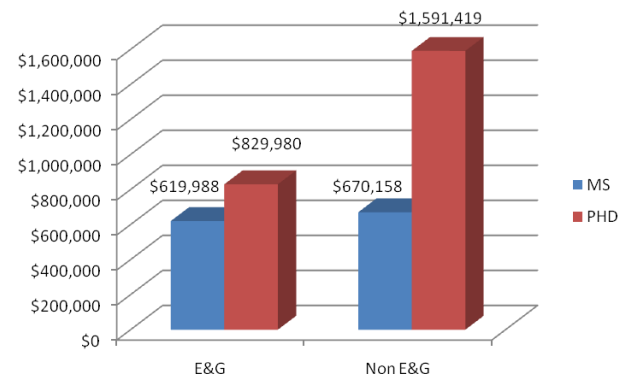
Achieve and sustain national recognition in research

Student Appointments



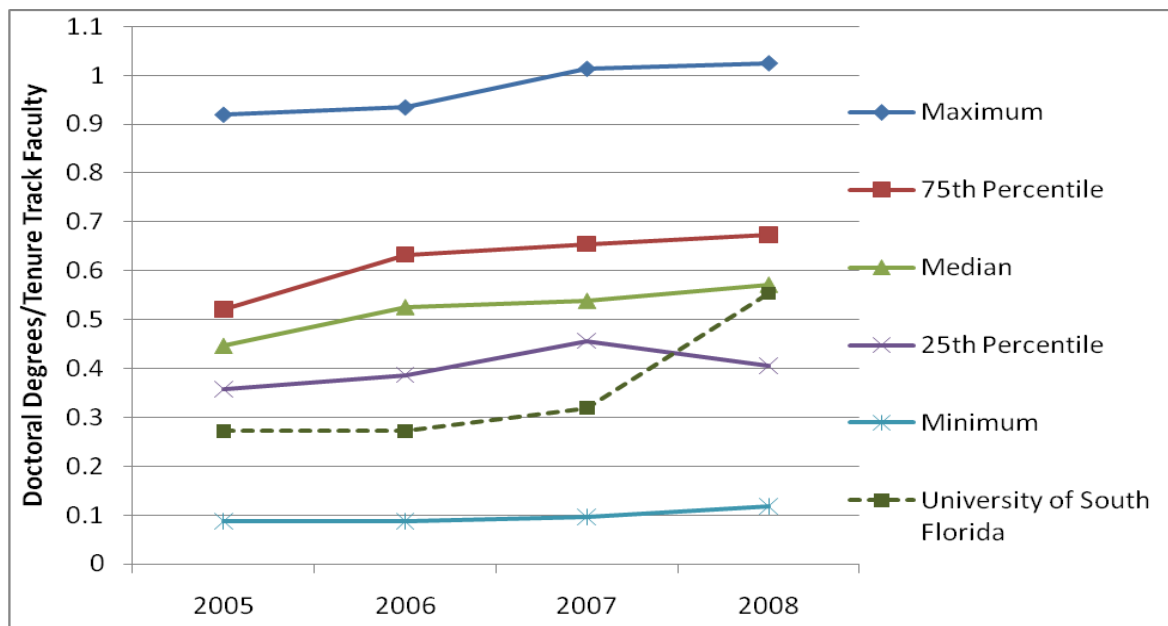
Data from 2009 ASEE Survey

Student Support



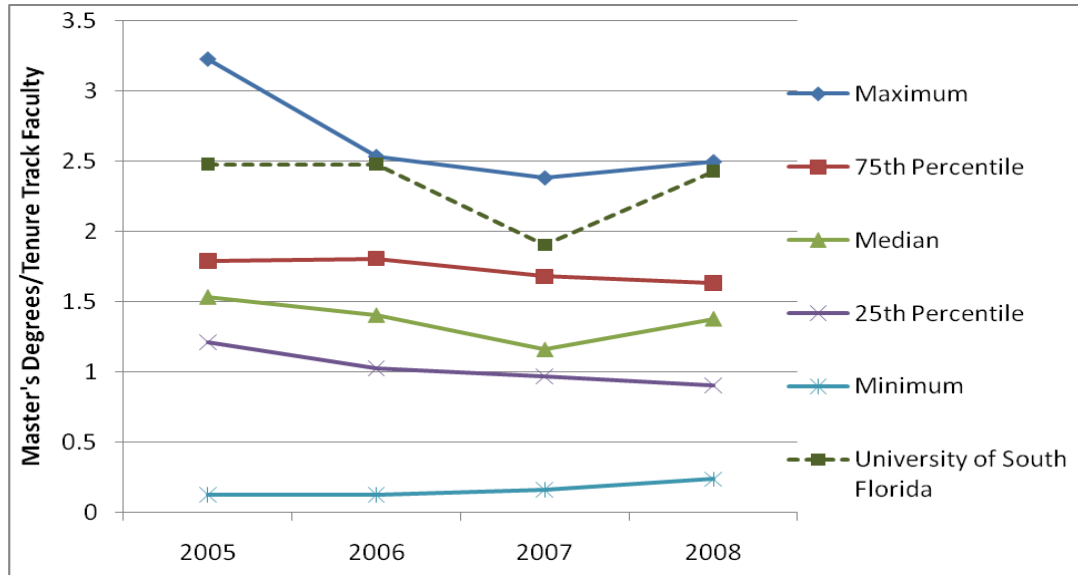
Data from FAST

AAU Public Engineering Programs Doctoral Degrees



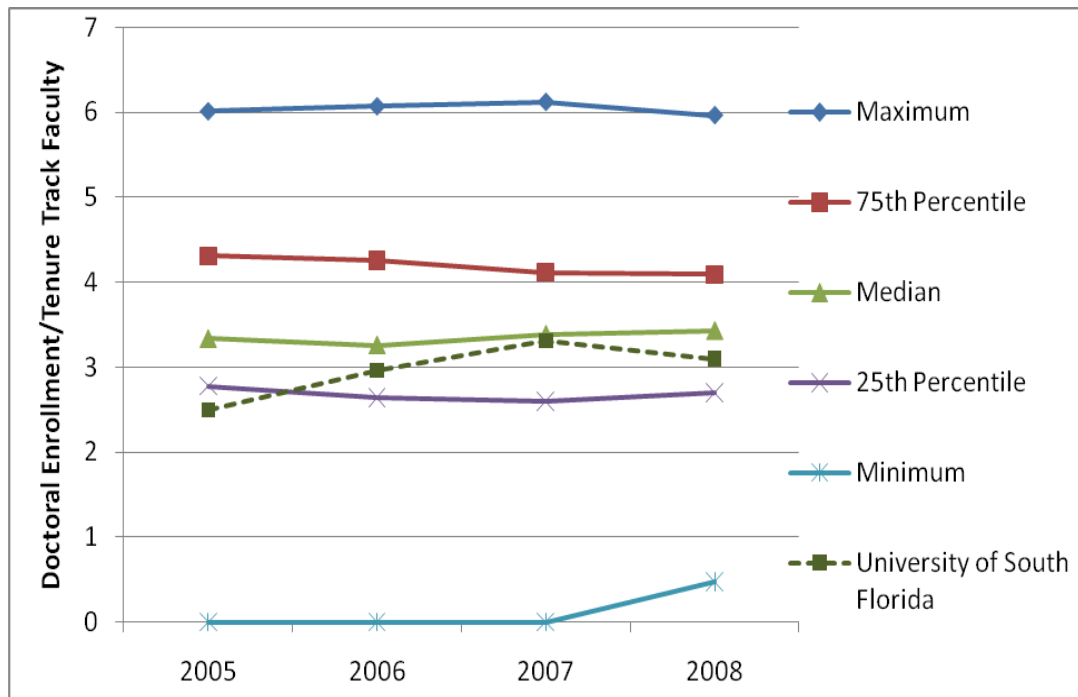
Data from 2009 ASEE Survey

AAU Public Engineering Programs Master's Degrees



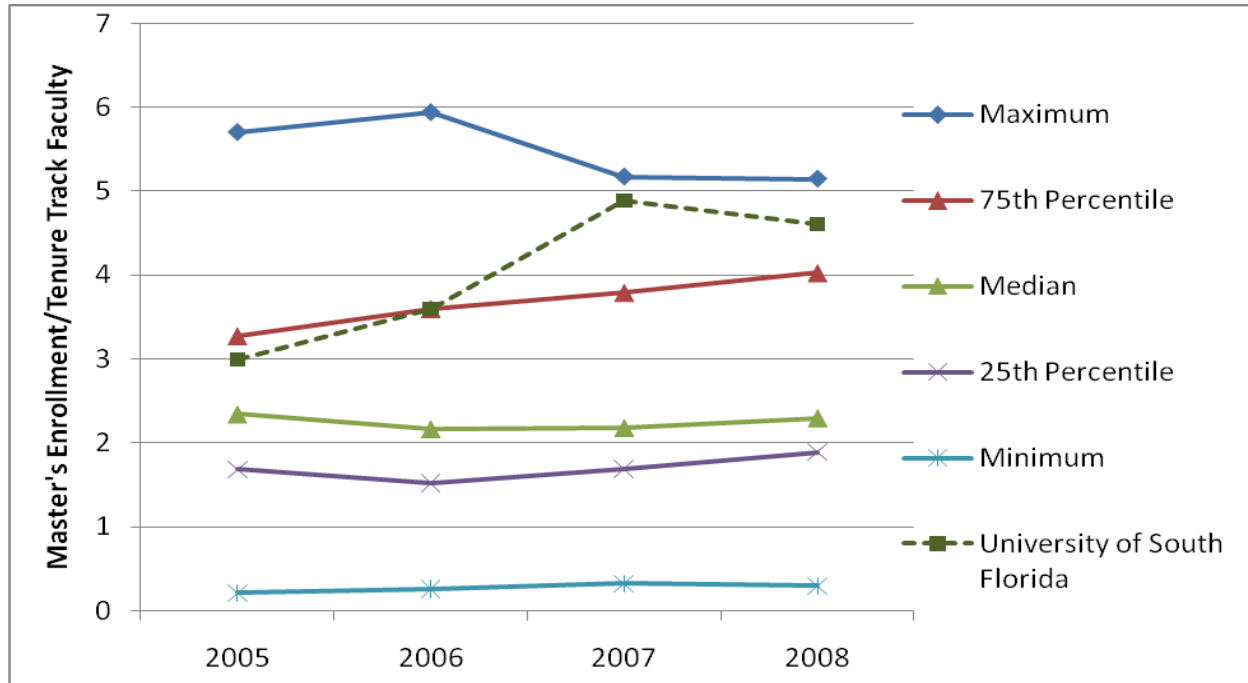
Data from 2009 ASEE Survey

AAU Public Engineering Programs Doctoral Enrollment



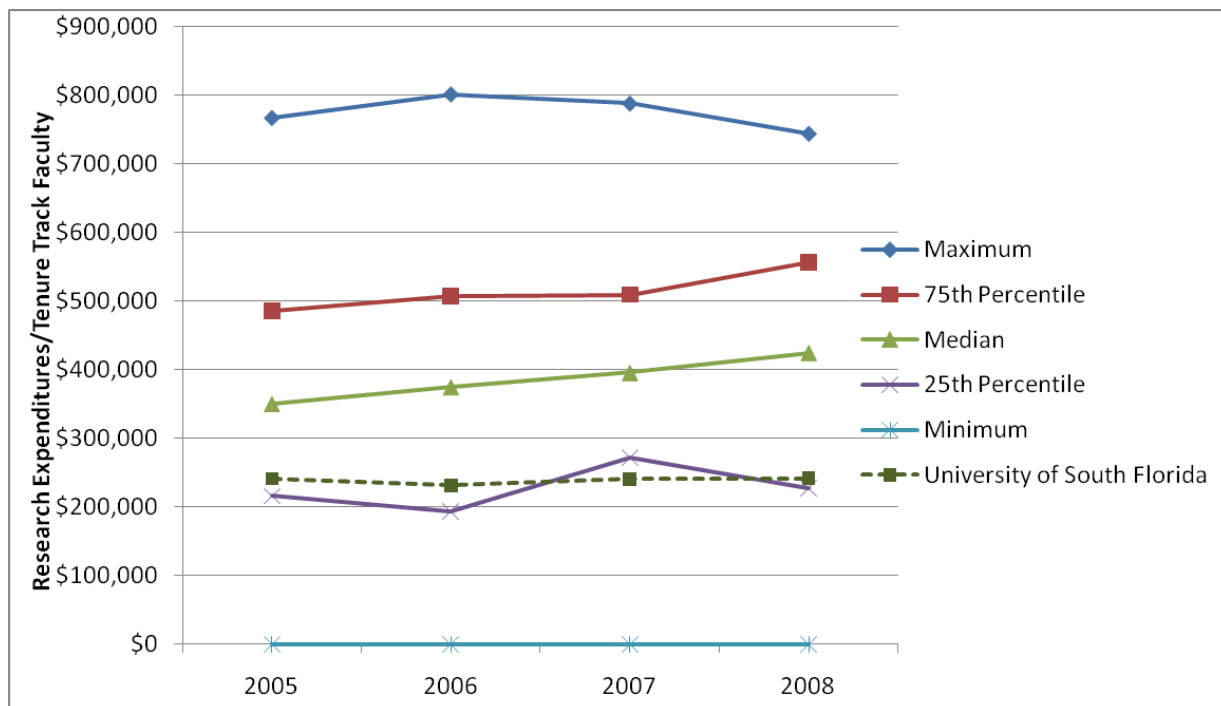
Data from 2009 ASEE Survey

AAU Public Engineering Programs Master's Enrollment



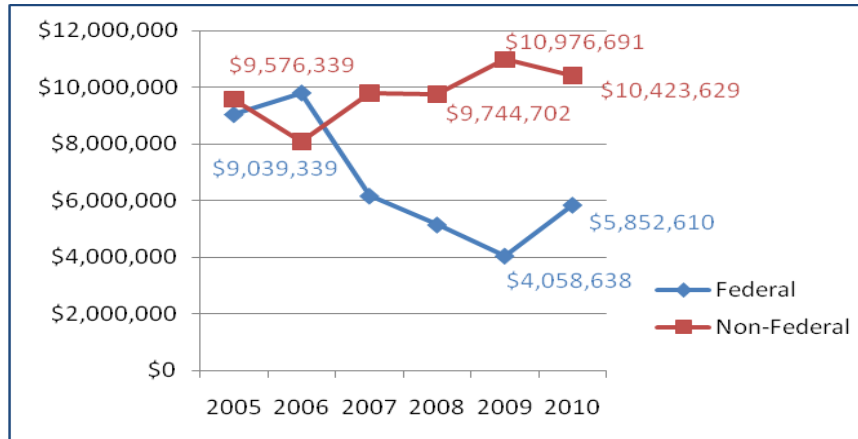
Data from 2009 ASEE Survey

AAU Public Engineering Programs Research Expenditures



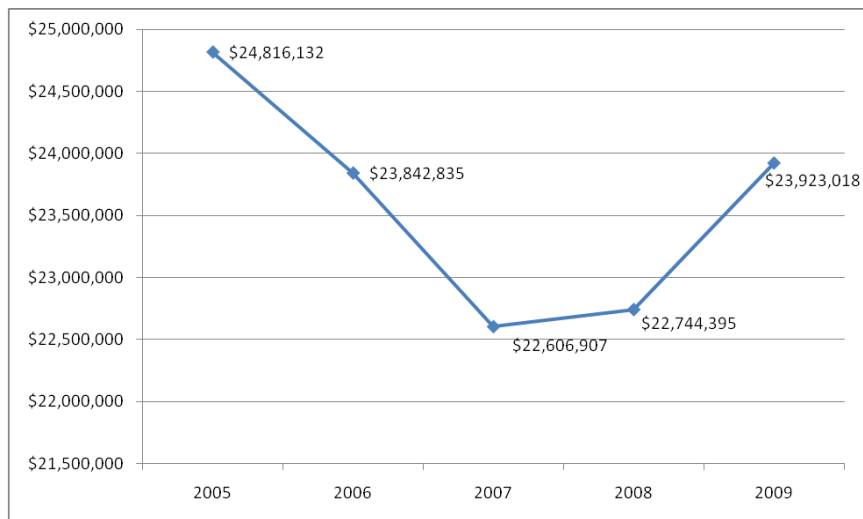
Data from 2009 ASEE Survey

5-Year Comparison Research Awards 1Q-3Q



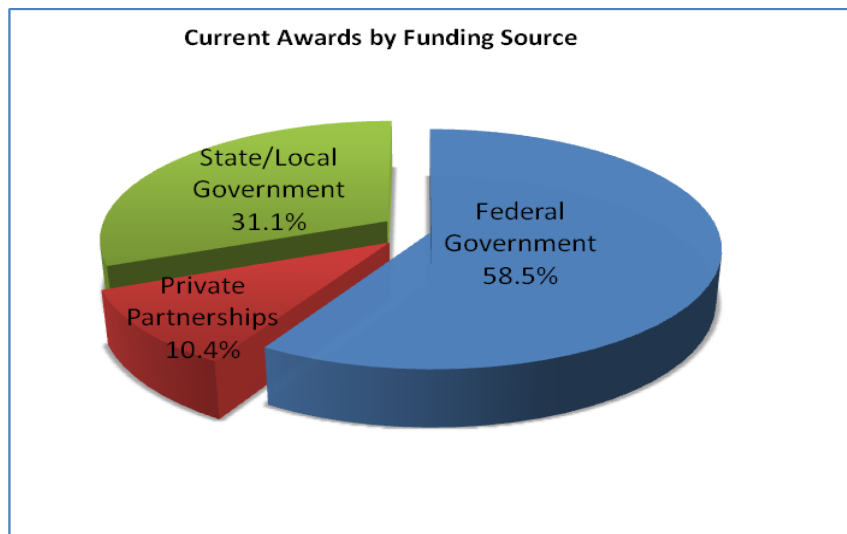
Source: USF Office of R&I

Research Expenditures



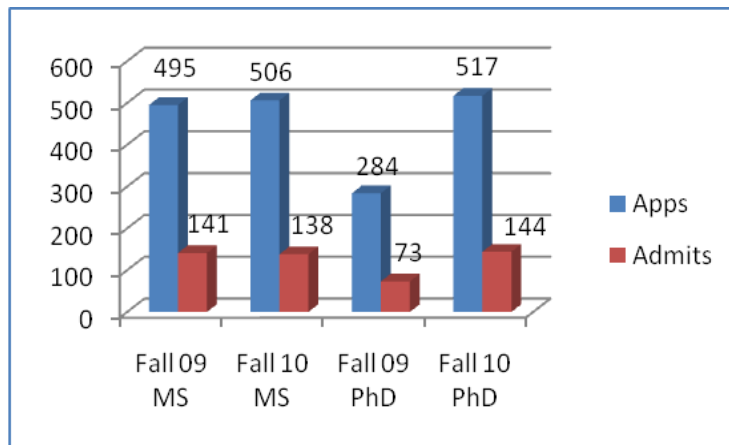
Source: ASEE Survey

Active Awards 2009-2010



Source: USF Office of R&I

2010 Doctoral Recruitments



Applications (517) for doctoral assistantships increased this year 82% through a concentrated, multi-channel marketing effort, resulting in a 97% increase in admitted students (144). (2010 Data shown is as of 4-5-10.)

Source: USF Graduate School

Marketing efforts included:

- A dedicated recruitment webpage was created
- Graduate program brochures were created in both electronic and print formats
- An e-mail outreach effort by the Department Chairs and Professors to colleges of engineering at other universities in Florida, the United States and abroad with a link to the website
- Purchased banner ads on the University of Florida and University of Central Florida websites.

Weekly Google Analytics reports for the webpage provided excellent data on visitors to the site and their geographic locations.



AUGUSTINE

Spring 2010 Eminent Scholars Lecture Series

Dr. Mark Powell, Jet Propulsion Lab and USF grad

Dr. Leonard Polizzotto, Draper Labs

Dr. Jerald Schnoor, University of Iowa

Mr. Norman Augustine, Ret. Chair & CEO Lockheed Martin

Dr. Mark Somerville, Olin College of Engineering

Dr. Ramesh Jain, University of California, Irvine

College of Engineering Sustainability and Community Outreach Highlights



Civil & Environmental Engineering - International Capstone Design

Undergraduates - Planning and Design of Wastewater Systems in Bolivia

Linda Phillips and Dennis Magolan, Instructors

Civil & Environmental Engineering “Water Awareness Research and Education in East Tampa”

Interdisciplinary / EPA funding - Project transforms storm water pond areas into community-friendly green spaces.

Undergraduates and Graduates work with community organizations, middle and elementary schools, USF School of Architecture and Community Design, and others.

Maya Trotz, Assistant Professor



Peace Corps Masters International Program in Civil and Environmental Engineering

Real-world engineering experience defined by sustainability, technology and socio-economic needs. In country – Sub-Sahara Africa, Central and South America, Pacific Rim

Jim Mihelcic, Professor

USF Biomass Fuel Project Places Fourth in the World at the Global Venture Challenge 2010

A process developed by a team of USF researchers which converts common organic materials such as sawdust, yard clippings and even horse manure into jet fuel placed fourth in the prestigious Global Venture Challenge 2010, second among U.S. teams. The team comprised of chemical engineering professor John T. Wolan; chemical engineering graduate student Syed Ali Gardezi and Jaideep Rajput, a manager in USF's Division of Patents and Licensing and COB graduate.



Research Awards Highlights

CUTR Federal Transit Administration \$1,701,875

NBRTI Technical Assistance and Research

Alasdair Cain, Jennifer Flynn, Robert Gregg , Victoria Perk, Cheryl Thole

Rajiv Dubey Florida Department of Education \$1,459,131

Rehabilitation Engineering and Technology Program

Tennyson Wright

Domijan, Alexander Florida Energy and Climate Commission \$1,422,364

Smart Grid with Renewable Strategic Load Pocket

Jim Mihelcic Department of Education Support of 6-8 Graduate Students \$600,000+

Graduate Assistance in Areas of National Need (GAANN)

Maya Trotz, Delcie Durham

Das, Tapas National Science Foundation \$559,896

Students, Teachers, and Resources in the Sciences (STARS2): A NSF/NSF GK-12 Continuation Project

Grisselle Centeno, Ashok Kumar

Jay Ligatti National Science Foundation \$200,000

CT-ISG: Collaborative Research: Trustworthy Enforcement of Domain-Independent Run-Time Policies

Yeh, Daniel US Green Building Council \$149,525

Integrated Building Water Management (IBWM) Modeling - A Proposed Tool for LEED

Assessments and Education

Ryan Toomey National Science Foundation \$92,000

CAREER: Responsive, Surface-Attached Networks with Built-in Logic - An Integrated Research and Education Plan

Lingling Fan Workforce Training for the Electric Power Sector or Smart Grid.

Assistant Professor of Electrical Engineering and her research team is one of the collaborating universities of University of Minnesota's recent awarded \$2.5 million proposal from DOE entitled "A Nationwide Consortium of Universities to Revitalize Electric Power Engineering Education by State-of-the-Art Laboratories".

FACULTY HIGHLIGHTS

Venkat Bhethanabotla, Professor and Chair of Chemical and Biomedical Engineering received the USF 2009 Outstanding Research Achievement Award. He received NSF funding in 2008 for a biosensor based on these principles to detect ovarian cancer biomarkers. He has been actively researching acoustic wave sensors for chemical and biological applications for the past five years. His initial work resulted in a hydrogen sensor technology which was funded by NASA and NSF. The resultant technology has been patented and was licensed by USF in 2007.

Jay Ligatti, Assistant Professor of Computer Science and Engineering received the USF 2009 Outstanding Research Achievement Awards. His research group investigates foundations of computer security.

Ashok Kumar, professor of mechanical engineering, has been named director of Director of Nanomaterials and Nanomanufacturing Research Center.

Florida ITE Newsletter/Magazine Outstanding Paper Award: **Dr. Pei-Sung Lin**, CUTR Senior Research Associate, and **Aldo Fabregas**, CUTR Research Associate, for their Paper, "The Effect of Detection and Communication Failures on Traffic Signal Performance."

37 Faculty Members Inducted in as Charter Members in the USF Academy of Inventors.

Dmitry Goldgof, Professor of Computer Science and Engineering, named to the Institute for Electrical and Electronics Engineers (IEEE) Systems, Man & Cybernetics (SMC) Society Board of Governors.



Goal 3.

Establish essential operational infrastructure to achieve the College's vision

Re-engage with Alumni and Advisory Board



Eugene Balter, P.E.
Mr. Eugene Balter holds an engineering degree from USF. He joined HDR as the national director for transportation construction services and operations for the HDR Construction Control Corporation. He has 29 years of experience in construction management and construction engineering and inspection for roadway, bridge and airfield projects. A registered professional engineer, Balter is a member of the American Society of Civil Engineers, American Society of Highway Engineers and the Florida Engineering Society.



Charles "Chuck" Black, P.E.
Mr. Charles Black joined Tampa Electric Company in 1973 and in 1991 was named Vice President, Project Management for Tampa Electric Company. In 2003 he was named Senior VP – Generation with responsibility for all of TECO Energy's generating assets. He received a B.S. in Chemical Engineering in 1973 from the University of South Florida.



Fermin Diaz, P.E.
Mr. Fermin Diaz holds a civil engineering degree from USF. He joined WilsonMiller, Inc. a then 40-person firm based in Naples, FL, as an entry-level design engineer. Fermin's civil engineering career has centered on all aspects of land development and public infrastructure improvements for both public and private sector clients. Fermin is now President of WilsonMiller which is currently a multi-disciplinary consulting firm with a staff of 425 in offices located throughout Florida.



Robert Garcia, P.E.
Mr. Robert Garcia is a graduate from the University of South Florida with a bachelor's degree in Mechanical Engineering. He is currently the Vice President of Business Development at Tampa Bay Trane. Robert is a member of the American Society of Heating, Refrigeration and Air Conditioning Engineers and is very experienced in building HVAC systems.



Sandy Pettit, P.E.
Ms. Sandy Pettit is the Chair of the USF Engineering Alumni Society. Sandy has over 15 years of engineering experience, working for Jacobs Engineering, TECO Energy, and Hillsborough County. She received her B.S. Ch.E. magna cum laude in 1994 from the University of South Florida. Recently, she has returned to USF to pursue a graduate degree in Chemical Engineering. Sandy is currently conducting research in the Applied Surface Science Lab, specializing in synthetic fuel production. She has been honored by the Society of Women Engineers as a National Distinguished New Engineer in 2003 and recognized by the American Institute of Chemical Engineers for her outreach efforts with an Impact Award for Excellence in Education.



Charles "Charlie" Touchton
Mr. Charlie Touchton has a Bachelor of Science degree in physics from the Georgia Institute of Technology, and a Master of Science degree in electrical engineering from The George Washington University. He is a former Lieutenant Commander in the U.S. Naval Reserve, with active duty in the U.S. Armed Forces Special Weapons Project and the U.S. Navy's Special Weapons Unit/Atlantic, and with reserve duty in the U.S. Navy's Naval Reserve Naval Security Group Program.

Relations with the alumni continue to get stronger through many activities that bring us together – such as athletic events, funding raising events such as Bull-arney, and the Heart of Gold Scholars luncheon that brings together alumni, donors, faculty and students.

Working with the Director of Development, 50 face-to-face meetings with business leaders are scheduled by year end to re-engage the College to the community and business leaders.

We have identified approximately 30 immediate prospective visits. Several have been conducted, several have been lined up and more are planned to help him achieve our goal. Meeting with departmental advisory boards has provided a valuable opportunity to see how the outside views the College and its students. These observations are being documented and will be incorporated into our strategic plan.

The Advisory Board has been re-established under a new name, Dean's Council. The initial seven members, six comprising the Executive Committee, have strong ties to the university and the community. The remaining members of the Council will be added throughout the year with a goal of 20-25 members.

Participate in USF Comprehensive Campaign

The College successfully identified and recruited its Campaign Cabinet Representative to represent the College at all USF Unstoppable Campaign meetings and external constituent-events. Gene Balter, P.E., '77, President of HDR Construction Control Corporation represented the College at his first USF Unstoppable Campaign Cabinet meeting in March 2010. In tandem with the Development Office, identification has been made of a number of constituents that Gene will work with to engage in the life of the College. Gene has made initial contact with a number of these individuals and corporations thus far.

The College fully participated in the public announcement of the Campaign in October via the Unstoppable Showcase. The College featured the Center for Assistive and Rehabilitative Robotics Technologies. Our presentation drew great interest and was featured pictorially on the front page of *The Oracle* the next day.

One of three goals set for the College is that of raising funds for a new undergraduate building. Initial discussions have been conducted with the Dean, the College fundraising staff and the Communications Officer to prepare strategy and refine the “case for support” for the new facility.

Comparative number April 2010 vs. same time last year: YTD fundraising \$ 660,989 We are at 29% of Goal for the Campaign.

Continue to focus on marketing and public relations

The College hired its first Communications & Marketing Officer in 2009, fulfilling a strategic goal of 2008-2009. The first 10 months of the academic year have focused on analysis of the past, setting a path to the future, and implementing essential marketing and communications tools whose absence has impacted the College’s ability to establish relationships with its varied constituencies. In addition to the three major projects featured numerous brochures, media interviews and other tactics were implemented.

Envision Magazine

The College has revised and revitalized its magazine now named *Envision Magazine* (formerly *USF Engineer* and *The Bridge Builder*) after a four-year hiatus. The twice-yearly publication focuses on departmental research activities; faculty, students, alumni and staff recognition; and other news presented in a creative story format. *Envision* is direct-mailed to 16,000 alumni, friends of the College and approximately 200 engineering colleges in the United States.



Branding

The College is developing a brand that represents the innovation, ingenuity and vision of the College's faculty and students. The brand will gain greater presence over time. The art element, a stylized spark representing the six departments symbolizes the energy of the College. The design was created under the direction of Professor Franco Lodato, USF Designer in Residence.

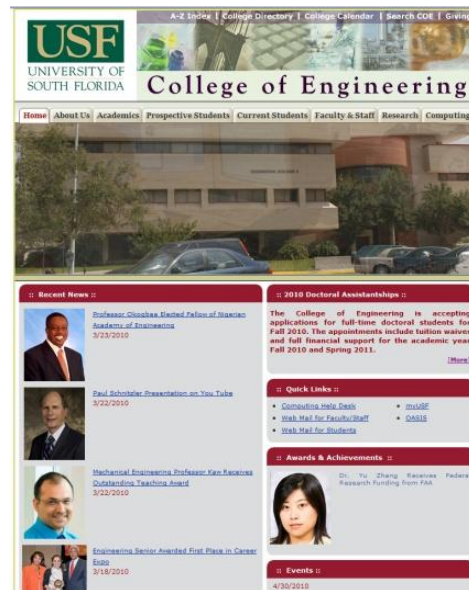


Website

After a seven-month development period that included input from 25 faculty, staff and students, the College recently launched a new website. The project's major goals included a modern design with increased use of color, easy access to information that is well-organized, increased prospective student access to personnel through e-mail, and breaking the stereotype of engineering students. Through a home page video as well as stories of student projects and successes, the site shows engineers are many types of students that engage in various activities.



New Website Home Page



Former Website Home Page



Key Action Items for 2010-11

Going forward, key action items will be defined by our Strategic Plan. The plan provides a framework, but the tactics and operational details must be driving across all units (see action item number one). However, there are clearly some initiatives that must be driven primarily by the Dean's office. Thus, the key action items here are not meant to be all inclusive but, rather, to indicate initiatives that will be of primary concern.

1. Develop operational plan across all units to allow the College to make progress toward our vision and to fulfill our mission.
2. Continue to build on the initial work of this year's faculty governance council to revisit and update our governance documents to allow a more formal means for shared governance.
3. Continue to build relationships with key constituents and to further flesh out our Capital Campaign strategy
4. Continue to engage faculty personally and to build morale
5. Sustain and build on our investment in the College of Engineering Ph.D. programs
6. Manage, in a transparent fashion, our limited physical resources, particularly space
7. Continue to grow our research enterprise, especially in the Biomedical, Sustainability and Renewable Energy research areas
8. Invest in a more robust support service for students seeking meaningful educational experiences outside the classroom such as co-ops, internships, study abroad or REU.

