USF System STEM Highlights

College of the Arts:
Rolling Dance (Chair) Project
Pl: Rajiv Dubey (Mechanical Engineering), Stephen Sundarrao (Mechanical Engineering), Merry Lynn Morris (Theater and Dance)
Bringing together the Department of Mechanical Engineering (Rehabilitation Engineering Program) with the School of Theater and Dance to explore motion and mobility in innovative ways through reconceptualization of current wheelchair and assistive technology designs, as well as development of several mobility device options for use in dance and/or social settings.

College of Arts & Sciences:
Florida Cluster for Advanced Smart Sensing Technologies (FCASST)
Pl: Pritish Mukherjee, Physics
Funding agency: Florida Board of Governors New Florida Grant
Amount: $550,000
FCASST is directed at the discovery and development of advanced materials for the next generation of sensors that have a multi-billion dollar industrial impact globally in areas as diverse as communications, energy, environment, health and national security. It also provides STEM graduates for a technologically sophisticated workforce in Florida.

STEM Mart: Department of Mathematics & Statistics
Pl: Scott Campbell (Engineering), Gordon Fox (Biology), Arcadii Grinshpan (Mathematics & Statistics)
STEM Mart is a help center providing tutoring for students in Life Sciences Calculus I and II; Business Calculus; Engineering Calculus I and II; Calculus I and II; and Physics I and II. The center is staffed by undergraduate peer tutors and graduate students offering drop-in assistance up to 55 per week. In three semesters utilization of the center has nearly doubled, from 1,537 student visits in fall 2010 to 2,723 visits in fall 2011.

College of Behavioral and Community Sciences:
Picture Naming Electrified: Brian Electrophysiological Correlates of Psycholinguistic Planning in Adults Who Stutter
Pl: Nathan Maxfield
Funding agency: National Institutes of Health (NIH)
Amount: $300,000
Research aims to provide a better understanding of how speech production mechanisms operate in adults who stutter — a complex communicative disorder that affects as many as 4 million adults in the United States — as well as the condition’s impact on an individual’s social and vocational prospects, which potentially can be devastating.

College of Business:
Incorporating Complex Open Authentic Case Studies into a Capstone Course
Pl: Grandon Gill, Kaushal Chari, Manish Agrawal
Finding agency: National Science Foundation (NSF)
Amount: $171,718
The Information Systems and Decision Sciences department currently is developing case studies and faculty training materials designed to incorporate case studies of technology-related decision-making in complex organizations. The objective is to graduate students that can more effectively compete in the STEM workforce.

College of Education:
Partnership to Rejuvenate and Optimize Mathematics and Science Education (Florida PROMiSE)
Pl: Gladis Kersaint, Mathematics Education
Funding agency: U.S. Department of Education (DOE)
Amount: $22 million
Florida PROMiSE addresses the need to improve the mathematics and science achievement of students through professional development. Lays the foundation and leads development and implementation of large-scale, systemic professional development and teacher education programs to significantly improve learning in mathematics and science of all students by working collaboratively with a statewide network of stakeholders implementing new mathematics and science standards.
Leadership for Integrated Middle School Science (LIMSS)
Pl: Robert Potter (Biology), Dana Zeidler (Science Education)
Funding agency: DOE
Amount: $1.4 million
The goal of this three-year professional development program is to build a cadre of 30 Teacher Leaders in 10 middle schools in Hillsborough County. After two years of professional development, LIMSS' Teacher Leaders already have planned and facilitated a 4-day summer institute for their science colleagues (Second Generation Teachers) and are now mentoring these science teachers at their schools to implement inquiry-based science and increase student achievement in science.

College of Engineering:
FGLSAMP Bridge to the Doctorate
Pl: Thomas Weller, electrical engineering
Funding agency: NSF; USF
Amount: $5 million (NSF); $2.5 million (USF)
The Florida-Georgia Louis Stokes Alliance for Minority Participation (FGLSAMP) program provides two-year graduate fellowships for domestic underrepresented students enrolled in COE graduate programs. Twenty-five students have completed their graduate degrees to date, with 19 still in the PhD pipeline at USF. Graduates have received research positions in industry (Intel, Boeing, Texas Instruments, Honeywell), the federal government (NASA, FDA, etc.), as well as academic post-docs.

Alfred P. Sloan Foundation Minority Graduate Program
Funding agency: Alfred P. Sloan Foundation (private)
Amount: $1.5 million
Provides PhD funding, professional development seminars and leadership/outreach activities for domestic African-American and Hispanic students enrolled in PhD programs within the college. Eighteen Sloan Scholars have completed their doctoral degrees and are now well placed in academic positions at institutions including Rutgers University, University of Illinois-Urbana-Champaign and Carnegie-Mellon University.

Graduate School:
The USF Graduate School recently became a Core Institutional Member of the National Science Foundation Center for the Integration of Research, Teaching and Learning (CIRTL), joining 24 other prestigious institutions of higher learning in the group and the only member invited from Florida. CIRTL's focus is STEM Education with a special emphasis on research. Peer members include the University of Wisconsin-Madison, Vanderbilt University, Johns Hopkins, Cornell, the University of Pittsburgh and Purdue University.

College of Marine Science:
Gulf Research Initiative
Pl: Steve Murkowski, David Hollander
Funding agency: Gulf Research Initiative
Amount: $11 million
STEM-related initiatives include continued research on biological and chemical impacts of Deepwater Horizon blowout and outreach education via at-sea telecommunications/videos/blogs, podcasts, audio slideshows, teacher professional development, a mystery station exhibit at Pier Aquarium and a virtual classroom for undergraduate Honors College courses.

College of Public Health:
Museum of Science and Industry partnership
Pl: Amy Stuart
Funding agency: NSF
Amount: $400,000
Dr. Stuart has partnered with MOSI to create an exhibit that teaches about air pollution and urban sustainability while highlighting full-life profiles of people involved in related STEM careers. The objective is to enhance interest of girls in STEM. One of those full-life profiles could be about Dr. Stuart, herself:
COPH Global Health Infectious Diseases Research Program
Pi: John Adams, Tom Unnasch, Dennis Kyle, Wil Milhouse
Funding agency: NIH, Gates Foundation, others
Amount: $25 million +
Program plays a leading role in controlling and eliminating insect-borne infectious diseases including malaria, dengue and viral encephalopathies, which continue to claim millions of lives each year. Promotes synergies between scientists from multiple disciplines across the USF campus.

University College:
STEM Pre-College Summer
University College is working with seven academic units (Mechanical Engineering, Math, Marine Science, Chemical and Biomedical Engineering, Electrical Engineering, Computer Science and Engineering and the Patel School of Global Sustainability) to develop and deliver six STEM Pre-College Summer Programs in 2012 for rising high school juniors and seniors.

“USF Poly Team Redesigns Solar Panel:” A new design for photovoltaic roofing panels could markedly improve solar energy technology by reducing current limitations in collecting the sun’s energy. At the University Of South Florida Polytechnic, Dr. Roderic Brame, assistant professor of education and director of STEM Education, Dr. Ralph Fehr, visiting assistant professor of engineering, and three undergraduate engineering students are creating a new roofing panel design that could deliver more efficient solar energy and improve solar energy collection by as much as 2 percent. Called Let the Sun Shine In: Photovoltaic Roofing Panels, the project encompasses multiple disciplines, student education, industry affiliations, business incubation, and patents - elements that form the basic premise of a polytechnic venture.

BSIT at USF Sarasota-Manatee: Within the past year, USF Sarasota-Manatee’s Information Technology (IT) faculty has restructured the IT curriculum to allow students to choose from among six concentrations, benefitting from specialized course work serving industry needs or their own business. Those concentrations include Enterprise Application Development, Information Security, Information Technology Management, Systems Administration, Web Design and Development,

Girls STEM Summit at USF Sarasota-Manatee: Annual daylong event exposes nearly 150 middle school girls to studies and jobs in science, technology, engineering and math. Attendees at the 2011 summit participated in nine different workshops led by experts in their respective fields, ranging from exploring electronics and the musculoskeletal system to health care and engineering professions.