Florida Polytechnic University | **BUSINESS PLAN**

Rev. Fall 2013

FLORIDA POLYTECHNIC UNIVERSITY

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Section 01 | INTRODUCTION

Established on April 20, 2012, Florida Polytechnic University is a 21st Century institution, focused solely on applied STEM education and research. It is an institution of higher learning dedicated to the principle that "innovation occurs when research and creativity are applied to real-world challenges and opportunities." It is Florida Poly's contention that a university focused on innovation, research and building close business and industry partnerships will be more than an academic institution: it will be a powerful economic engine.

Florida Poly will be committed to problem-solving research and placing students in high-tech jobs through a cutting-edge curriculum dedicated to applied research in science, technology, engineering and mathematics (STEM) with areas of concentration that have been identified through comparative research and analysis of what competing institutions are providing and what the market is demanding. The curriculum will also emphasize business application, finance and leadership to ensure graduates are prepared to meet real-world challenges and help businesses compete in a global innovation market.

Florida Poly faculty recruitment will focus on members with industry experience. Faculty will engage in an integrated teaching approach to support interdisciplinary learning and real-world problem solving as soon as students begin their university experience.

For businesses that recognize the value of having an innovative university in an easily accessible location, Florida Polytechnic will be a powerful resource and research partner. The University will work to build partnerships with these businesses, and industry leaders will have the opportunity to help shape the skills and knowledge of future innovators and potential employees by participating in advisory board activities, internship programs, product development, job placement programs, employment cooperatives, joint research and joint teaching.

Florida Poly's cutting-edge mobile, integrated campus will be strategically located in Lakeland at the heart of Florida's I-4 High Tech Corridor. This location has over 8.6 million people within a 100 mile radius and an estimated 11,580 high-tech companies, creating opportunities for multiple business and academic synergies.[1]

1 Florida High Tech 2011, The Corridor by the Numbers, p. 1, 4.

MISSION

Florida Polytechnic University's mission is to educate students emphasizing Science, Technology, Engineering and Mathematics (STEM) in an innovative, technology-rich and interdisciplinary learning environment. The University is collaborating with industry partners to offer students real-world problem-solving, work experience, applied research and business leadership opportunities. Florida Polytechnic prepares students to assume leadership positions in the dynamic technological landscape in Florida, the nation and the world.

VISION

Florida Polytechnic University aspires to be a nationally and internationally recognized institution of higher learning serving the State by preparing students to lead Florida's high-tech industries. The student learning experience will focus on practical and applied research, internships with industry partners and hands-on leadership opportunities delivered by distinguished faculty who excel in their fields.

Much has been written over the last several years about whether Florida's economy and workforce are prepared for a future where knowledge, innovation and cognitive ability will be needed to grow our state's GDP. Governor Rick Scott, the Department of Economic Development, Enterprise Florida and the Chamber of Commerce often cite a workforce skilled in science, technology, engineering and mathematics as a critical need.

The only way to increase an economy's standard of living is to raise its productivity, and productivity comes from innovation in products, services and processes. Florida must assist its innovative businesses to compete if we are to increase our GDP, our real income and our wealth.

Innovation needs capital, infrastructure and talent to start and grow. Producing STEM talent will be a primary purpose of Florida Polytechnic University along with problem-solving research.

To reach the education level of the 10 most productive states within the next two decades, Florida will need 4.5 million adults with baccalaureate degrees (1.3 million more than expected at current attainment rates) and, within five years, will need at least 100,000 more science and technology professionals than currently projected. This demand exceeds the capability of Florida's existing institutions of higher education.[2]

The issue extends nationally as well. The President's Council of Advisors on Science and Technology has concluded that over the next decade the United States economy will need one million more STEM professionals than American colleges and universities will produce at their current rate.

Global and national challenges cannot be met without practical solutions. Florida must "future proof" its economy in order to remain competitive, and education must be part of the solution. The issue, however, is not simply the number of STEM classes and STEM-related degrees currently offered. The issue is the lack of applied research and learning in STEM fields that ultimately lead to innovation. Study after study shows the United States is falling behind in global competitiveness. Schools that simply offer STEM-related courses within the context of larger universities are not addressing the market needs. It is Florida Poly's position that there is a significant difference between having an "innovation center" as part of a university and having an "innovative university." Florida Poly will stand apart as an innovative university.

2 Closing the talent gap: A business perspective, 2010, The Florida Council of 100, p.1

MARKET OVERVIEW

In 2012, 3.816 million workers were employed in computer and mathematical occupations while 2.846 million were employed in architecture and engineering occupations. Together, these STEM workers accounted for 21 percent of the national professional labor force in which Florida must compete.[3] The U.S. Bureau of Labor Statistics anticipates that between 2010 and 2020, employment in these STEM fields plus additional STEM jobs in professional, scientific and technical services will grow by 29 percent or 2.1 million new jobs.[4] The demand for STEM-trained workers indicates a larger macroeconomic need: the need for innovation.

The future of how Florida works and contributes to global innovation is determined by how well Floridians respond to four macro trends:

- Globalization of mobility and communication
- Demographic change
- Technological progress
- Productivity

In terms of technological progress, we are experiencing a period of change in how man's relationship to machine is creating and destroying economic, business and workforce models faster than we could have ever imagined. There are three fundamental drivers of technological change that we know have modified our world:

- Artificial Intelligence
- Big Data
- Info-Structure

3 U.S. Department of Labor, Bureau of Labor Statistics, Current Population Survey, 2013, Monthly Averages, Table 9, http://www.bls.gov/cps/cpsaat09.htm.

4 U.S. Department of Labor, Bureau of Labor Statistics, Overview of 2010-20 Projections, p.7, http://www.bls.gov/ooh/About/Projections-Overview.htm

We live in a "do-it-yourself" (DIY) world where "intelligent" machines like GPS, iPhone's, drones, robots and automated warehouses support our efforts to do more and do it faster. As scientists find more effective ways for machines to communicate with other machines through the Internet and wireless networks, one can only imagine what DIY will look like in a decade.

In terms of data, we now measure in Petabytes instead of Gigabytes. Google uses 25 billion Petabytes per day, which is equivalent to 100 copies of every book in the Library of Congress. More than 93 percent of data is now digitized, up from 25 percent just 10 years ago. However, only one percent of this digitized data has been analyzed. New industries in data mining, storage, security and analysis are emerging every day to take advantage of the opportunities this data can have on productivity.

Info-structure is the new infrastructure. The Internet is reducing the need for physical proximity to collaborate and be productive. Technology like cloud virtualization, digital decision making and interactive media will change the way we see and apply interpersonal communications.

Florida Polytechnic University's curriculum will focus on developing students' knowledge and skills in these key innovation areas and encouraging research that will drive greater innovation. Our mission is not solely about supplying companies with graduates for today's growth industries; it is about supplying innovative talent that will lead their companies as markets continue to evolve in the future.

THE GAP

The United States is ranked only fifth in the world for innovation.[5] Moreover, the United States ranks last among 40 nations at improving innovation capacity and competitive position over the past decade.[6] The nation has fallen behind in the race for global innovation in part because our ability to efficiently translate research into competitively produced products has slowed. This contributes to international trade deficits in advanced technology products and a loss of competitive advantage in the global marketplace.

Many American universities pride themselves on being research institutions, and these institutions are among the best in the world in scientific discovery. However, as important as pure scientific discovery is, it is not sufficient alone to keep a nation ahead of the innovation power curve in today's global economy. It is when scientific discovery is applied to solving immediate real-world problems that innovation occurs.

Currently only 35 institutions in the nation are viewed as "STEM-focused," awarding 50 percent or more of their degrees in STEM Programs. These institutions are responsible for approximately seven percent of all STEM degrees awarded in the United States. In addition, only 17 institutions within the entire United States are graduating 2,500 or more students with STEM degrees annually.[7]

Even as many research institutions are working to enhance their STEM programs and to create various centers for innovation on their campuses, there is – and will continue to be – a significant gap between supply and demand for STEM graduates. The percentage of STEM graduates in the United States is among the lowest of developed economies. In 2008, approximately 15 percent of degrees awarded in the United States were from STEM programs, compared to 41 percent in China, 33 percent in South Korea and 30 percent in India. Germany, France, Mexico, Japan, Spain, Sweden, United Kingdom, Canada, Italy, Australia and Turkey all have higher rates of STEM degree production as a percent of total degrees awarded.[8]

In addition, a center for innovation on a large multidisciplinary campus must compete with all of the university's other colleges and schools for financial and physical resources and for the attention of leadership and alumni. This dynamic distracts and dilutes the institution's ability to truly focus on innovation.

5 The Global Innovation Index 2013, World Intellectual Property Organization, http://www.wipo.int/econ_stat/en/economics/gii/.

6 Robert D. Atkinson and Scott Andes, The Atlantic Century: Benchmarking EU & U.S. Competitiveness (Washington, D.C.: Information Technology and Innovation Foundation, 2009), http://www.itif.org/files/2009--atlantic-- century.pdf.

7 Parthenon Group, February 5, 2013, presentation to Florida Polytechnic University Board of Trustees, Science, technology, engineering & mathematics (STEM) landscape: Trends and models, p. 23.

8 Accenture Report on STEM, No shortage of talent; U.S. Congress Joint Economic Committee; taken from The Parthenon Group, February 5, 2013, presentation to Florida Polytechnic University Board of Trustees, Science, technology, engineering & mathematics (STEM) landscape: Trends and models, p. 10

The situation in Florida mirrors the national average. A state-level analysis indicates that STEM jobs will make up four percent of all jobs in Florida in 2018 (385,010 jobs in 2018, up from 322,560 jobs in 2008). This represents a 19 percent increase in STEM jobs.[9] As of 2011, more than 20 percent of all jobs require a high level of knowledge in a STEM field, and nine percent of jobs require knowledge in more than one STEM field. These are referred to as "super STEM jobs."[10] Demand for workers to fill STEM occupations continues to grow, and the advantages for those employed in STEM fields include higher wages, lower unemployment rates and continuous career growth opportunities. A bachelor's degree or higher translates to a 14 percent wage advantage for STEM workers and an 18 percent wage advantage for super STEM workers over workers in non-STEM jobs with similar educational requirements.[11]

Since the graduating class of 2004, overall interest in STEM majors and careers among high school seniors has increased by more than 20%. Arguably the most disconcerting trend with students interested in STEM is the increasing gender gap. Female students express STEM interest at 14.5% compared to 39.6% for their male counterparts.

Florida Poly's goal is to recruit the best and brightest students regardless of background. Diversity among the University's student body will provide a cultural environment that is reflective of the state and the broader world. The University will actively recruit women and other underrepresented groups to prepare them for the challenges of the 21st century STEM economy.

Based on a 2012 report from the Census Bureau, 34 percent of the nation's people now list themselves as belonging to a minority population group – 11 percent higher than in 2000. Hispanics now account for 15 percent of the U.S. population, African Americans 13.5 percent, and Asians 5 percent.

Since 2011, interest in STEM has grown and is projected to continue rising for Asian, Hispanic, American Indian and White students. The Southern region of the U.S. has the highest concentration (36%) of students interested in STEM.[12]

9 Carnevale, A.P., Smith, N., and Melton, M, 2011, STEM, State--level analysis, Washington, DC: Center on Education and the Workforce, Georgetown University, p.21

10 Rothwell, J. (June 2013). The hidden STEM economy. Metropolitan Policy Program at Brookings, p. 5.

11 Ibid, p. 10.

12 STEMconnector, Where are the STEM Students?, myCollegeOptions, p. 4.

Given that Florida Poly's students will be expected to serve as leaders in their respective industries, exposure to a diverse student population will help to prepare them for interacting effectively with people of various backgrounds.

Despite the strong demand for STEM degrees and STEM-educated graduates, STEM degrees awarded by Florida institutions actually declined as a percentage of total Florida degrees from 15 percent in 2005 to 13 percent in 2011.[13] In 2011, public and private colleges and universities in the United States awarded approximately 342,000 STEM degrees. Public and private colleges and universities in Florida awarded approximately 15,000 STEM degrees, of which approximately 12,000 were awarded by State University System institutions.[14]

THE OPPORTUNITY

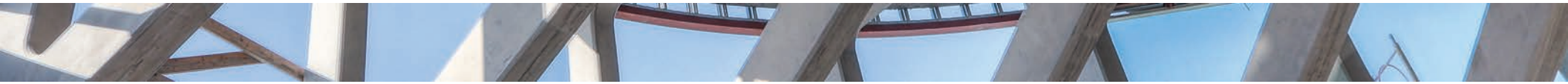
Currently Florida's economy is far too concentrated in industries that are cyclical, volatile and have low economic multipliers. In order for Florida's GDP to grow and produce meaningful gains in wages and net worth, the state must increase innovation within business and higher education institutions.

The law establishing Florida Polytechnic University as the State's 12th public university took effect on April 20, 2012. The University is Florida's only public polytechnic university and is dedicated exclusively to STEM learning and research, giving it the unique ability to become Florida's "University of Innovation" rather than a university with just a center for innovation. This critical distinction means the University is focused completely on developing and engaging its students in a unique curriculum that yields innovation.

Florida Poly will collaborate with industry partners to engage students in solving real-world problems, gaining hands-on work experience, and engaging in applied research and business leadership opportunities. Florida Poly will prepare students to assume available leadership positions in the dynamic technological landscape in Florida, the nation and the world, thereby helping to bridge the innovation gap that both the state and nation are at risk of widening.

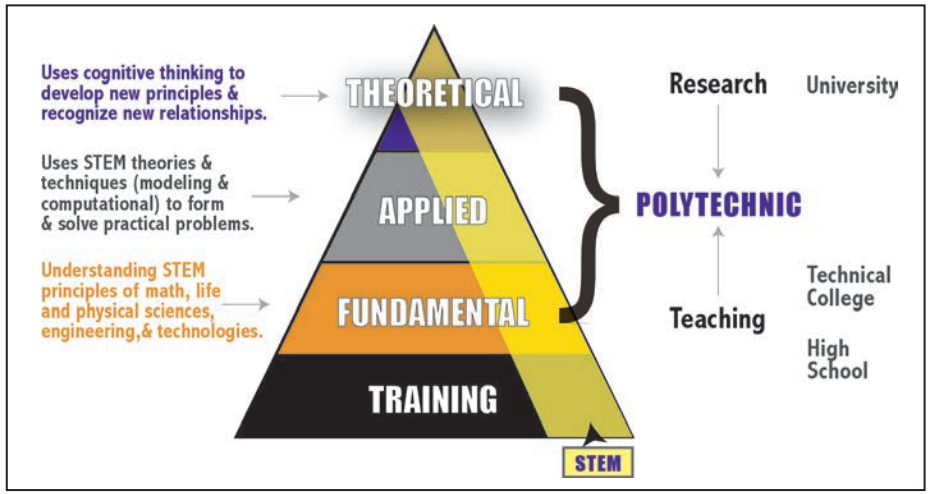
13 IPEDS, US National Science Foundation. Taken from The Parthenon Group, February 5, 2013, presentation to Florida Polytechnic University Board of Trustees, Science, technology, engineering & mathematics (STEM) landscape: Trends and models, p. 16.

14 IPEDS, US National Science Foundation. Taken from The Parthenon Group, February 5, 2013, presentation to Florida Polytechnic University Board of Trustees, Science, technology, engineering & mathematics (STEM) landscape: Trends and models, p.54.



CURRICULUM

Applied STEM education can be viewed as residing in the middle of a pyramid describing the types of higher education teaching, with fundamental teaching at the base and theoretical research at the top. Fundamental teaching is the understanding of basic STEM thoughts and principles, while theoretical research uses cognitive thinking to develop new principles and relationships. Between fundamental teaching and theoretical research is applied education - the most important type of education for STEM innovation. Applied education uses STEM techniques and theories via modeling and computational applications to form and solve practical problems. This is where education produces innovation.



Existing STEM focused institutions fall into three broad groupings. (Based on research of schools that met a filter of having more than 50% of graduates completing degrees in STEM and high-volume schools having more than 2,500 students complete STEM degrees each year.)

- Global Research
- Elite Undergraduate
- Industry Engaged

Based on Florida Polytechnic's selectivity of programs, focus on applied research in cutting-edge fields and mission to produce ready-to-innovate graduates, the Industry-Engaged Model best describes the University's method of curriculum delivery.

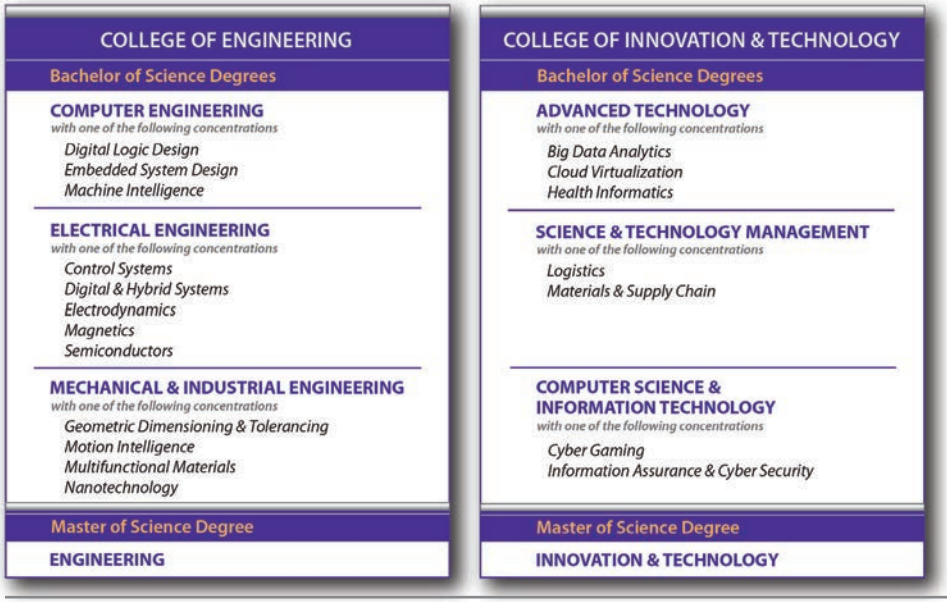
STEM Models			
Globally, STEM-focused institutions fall into three broad groupings based on their mission and focus:			
	GLOBAL RESEARCH INSTITUTION	ELITE UNDERGRADUATE INSTITUTION	INDUSTRY-ENGAGED INSTITUTION
PRIMARY CUSTOMER	***Faculty / Academic***	***Students***	***Employers and Economy***
DESCRIPTION	Known for high research funding and high quality faculty	Very selective (high admission requirements)	Very selective (high admission requirements)
	Receive high rankings on research dimensions	Produce graduates who are hired into top firms	Produce graduates who are hired into top firms
	Typically focused on Doctoral degrees	Typically focused on Bachelor's and Master's degrees	Focus on cutting-edge, applied research
			Closely aligned with industry
			Higher percentage of faculty who come from industry
			Emphasis on applied, hands-on learning and co-ops / apprenticeships for students

Innovative STEM education, however, cannot be achieved by simply defining a program or delivery model. It must be guided by a philosophy of applied research in order to produce doers, makers, analysts and innovators. In Florida Polytechnic's applied research environment, faculty will engage, explore, explain, elaborate, evaluate and discover right alongside students. As the industry-engaged model implies, industry is directly aligned with the program and industry involvement will be heavily solicited and welcomed to provide the optimum learning experience for the student.

In short, the main product produced by Florida Poly is the talent needed by STEM companies and the innovation that drives economies forward.

Additionally, Florida Polytechnic University graduates will have a strong exposure to management methods and processes in order to be especially attractive to potential employers. All students will complete junior and senior year design projects giving them hands-on experience with real-world processes, and all courses will emphasize business application.

Florida Polytechnic's BOT approved curriculum, focused on making, researching, analyzing, moving and creating, will be distributed between two colleges – the College of Engineering and the College of Innovation and Technology.



STUDENTS

Students will be immersed in a cutting-edge polytechnic environment and prepared for positions in high demand. They will gain experience solving real-world problems through hands-on learning, research, exposure to industry leaders and coveted internship opportunities. In addition, students will also be directly exposed to finance and leadership making them more attractive to employers.

The Center on Education and the Workforce (CEW) Forecast of Occupational Growth for 2018 projected the following growth in STEM occupations: Computer Occupations, 51 percent; Engineers and Engineering, 28 percent; Life and Physical Science Occupations, 13 percent; Architects, Surveyors, and Technicians, 6 percent; Mathematical Science Occupations, 2 percent. Florida Poly will prepare students to work in many of these fields.

ECONOMIC VALUE

"**Florida's economy** is built upon the three-legged stool of **agriculture, tourism and growth.** While those sectors have helped to build the state that we know, it is obvious that **we need to do more** to create the future that we desire. While they are and will remain vital to Florida's economy, the existing three-legged stool needs a **fourth leg that creates a more stable economic foundation** and the capacity to thrive in the coming decades."

(New Florida, Board of Governors State University System of Florida, January 2010)

That fourth leg is the high tech industry, it brings high-paying jobs and the ability for the state's high-tech firms to compete on the global stage.

Research of Florida's businesses has identified the following high growth industries as important to the state's future (www.eflorida.com/contentsubpagefull.aspx?id=52):

- Clean Technology
- Life Sciences
- Information Technology
- Aviation and Aerospace
- Defense and Homeland Security
- Logistics and Distribution
- Advanced Manufacturing
- Financial / Professional Services
- Emerging Technologies

Of the sectors that produce innovative products and services, more than 85% are based on STEM fields. It is very difficult to envision how any product, service or process can be made better without the application of one of the STEM fields.

Florida Poly is committed to responding to that need and graduating students who not only have the technical and research ability that employers seek but who also are able to function as productive members and leaders in those companies.

Since our focus is on the student experience we will provide them a degree program at the lowest feasible cost where they can quickly engage in the learning process. We will seek the most experienced teachers who know how markets work and function so that our students will understand the environments that will follow their educational years.

Florida Poly will begin to have an economic impact almost immediately. With a target of 500 students on campus by the fall of 2014, the University will engage with business partners who will have input on the curriculum and learning experience, become members of the Industry Advisory Board, collaborate on research and draw from a pool of talented and trained students for internships and cooperatives.

The University will add jobs, talent, and money into the local economy. With an ultimate target student population of 5,000 students and more than 200 faculty and staff members, Florida Poly will attract a new population of talented young professionals who will consume resources such as real estate, shopping and entertainment. There is also the potential to attract high tech businesses that wish to partner with Florida Poly for continuous research and development projects, bringing an even bigger wave of well-paid technology professionals to the area.

LOCATION

Florida Poly is strategically located in the heart of Florida's High Tech Corridor, easily accessible to both the Tampa and Orlando metro areas, with a combined population of nine million residents. Five Florida state colleges are located within 50 miles of the Florida Poly campus.

The Florida High Tech Corridor includes 23 counties in Central Florida connected by three research universities (UF, UCF and USF). This region is estimated to be home to 70 percent of the state's high tech employment and more than 11,580 high tech companies. The industry mix is unique and includes agrotechnology, aviation and aerospace, digital media and interactive entertainment, information technology, simulation and training, modeling, optics and photonics, sustainable energy, life sciences and medical technology, microelectronics, nanotechnology and financial services.[15]

CAMPUS AND FACILITIES

Overview and Growth Strategy

The primary campus facility is the Innovation, Science and Technology building, which was under construction when the independent Florida Polytechnic University was established. This structure will provide adequate academic, research and operation space during Florida Poly's first two to three years of operation. However, Florida Poly's facility needs will grow rapidly over the next 10 years as student enrollment and applied research expand.

There is no reliable means of precisely predicting research expenditures during that time. However, it is expected that research expenditures will increase significantly because of the caliber of faculty being hired and the interest shown by companies wanting to conduct joint research with the University's faculty and students. Ultimately, additional facilities will be needed for academic, research and operational uses. Those facilities include:

- Student Achievement Center
- Applied Research Center
- Admissions Center
- Student services space *(e.g., bookstore, food establishments, student housing, etc.)*

15 Florida.HighTECH 2011, The Corridor by the Numbers, p. 1,4.

In addition to providing the funding for the University's primary academic building (IST), the Legislature and Governor created and signed into law Florida Poly's authorization to use unexpended funds from prior years for the construction of buildings and infrastructure on the campus. The University will also seek funding from all available sources and will explore all avenues provided by law to partner with private companies and individuals for the purpose of financing and constructing necessary facilities.

Innovation Science and Technology Building

The focal point of the Florida Poly campus is the iconic Innovation Science and Technology (IST) Building designed by Dr. Santiago Calatrava, the internationally renowned architect. The 160,000-gross-square-foot structure is the cornerstone of Florida Poly's campus. The new campus combines elements of light, air, open views and reflecting water to foster a culture of bright, open communication and collaboration.

Steel stanchions, operable louver arms, hydraulics and control systems and aluminum pergolas distinguish the IST building. The University's first building includes classrooms, auditoriums, research and teaching labs, meeting rooms, faculty and academic administrative offices, conference rooms and a work and study commons/library. It is designed to create an inspirational environment for the students, professors and everyone working at Florida Polytechnic. In addition to the new campus, Florida Poly will also have shared space on the Polk State College/ Florida Poly campus. Business offices for administrative services will be housed at this location about the same time the IST building is complete. This location is approximately 15 minutes from the main campus.

Florida Polytechnic recognizes the value of an enriched environment for students in which learning is extended from the classroom into their living environment. The University has a two-phase plan for student housing. Phase 1 housing options, which include limited on-campus housing as well as off-campus housing, will be available for students in August 2014. Phase 2 housing, which will expand on-campus capacity, is planned for 2016. On-campus housing will be increased as demand dictates and financial resources allow.

In addition to the facilities, the Florida Poly campus will feature scenic lakes, trails, recreation and gathering areas and a perimeter road with bike and running paths.

Admissions Center

Opening in November 2013, the Admissions Center will give prospective students and families a tangible sense of the Florida Poly experience before all of the facilities are ready, thereby helping prospective families visualize what it means to be part of Florida Polytechnic University.

Home to the University's admissions and financial aid staff, the Admissions Center will allow prospective students and their families to see a typical classroom and go on guided tours of the campus, including closer looks at the landmark IST building.

Campus Services

Campus Services will provide the following essential contracted services: dining, bookstore, snack and beverage vending, postal operations, copy center, ID card services, convenience store (C-store) and transportation and parking services. Additionally, copiers and printers will be installed at six locations throughout the Innovation, Science and Technology building. The University plans to provide some outdoor activity opportunities for students, faculty and staff, such as bicycle and walking paths and nature trails adjacent to the lakes in order to enhance student life on campus. The University is also planning for outdoor structured activities such as basketball, soccer, tennis and volleyball.

Housing

The majority of Florida Poly students are expected to come from beyond its immediate geographic area, because the University's unique STEM curriculum, applied research environment and hands-on academic approach will be attractive to students around the state, nation and world. Surveys of potential students have already shown that nearly 70 percent expect and desire on-campus housing options. Additionally, on-campus housing will provide students better access to campus facilities, technology and interdisciplinary learning opportunities that are vital to their coursework and academic experience. Therefore, it is important Florida Poly provide ample housing options as early as possible.

The University has already conducted a very thorough review of student housing options, which yielded these findings:

1. ***Option:*** Contract with nearby hotels and apartments to house students.

   Feasibility: The nearest opportunity is a hotel seven miles away from the Florida Poly campus. This option also requires establishing a transportation system to move students to and from the campus.

2. ***Option:*** On-campus University housing that is typically owned by the University and funded with bond proceeds.

   Feasibility: This option is unfeasible because the state's elected leadership is committed to less reliance on debt to finance construction of public facilities.

3. ***Option:*** Off-campus housing on land immediately adjacent to the University.

   Feasibility: This option is also unfeasible because commercial developers cannot rely on historical demand data for housing in the adjacent area. In addition, there are no apartments within six miles of the construction site.

4. ***Option:*** Providing a ground lease on University land to a third party developer wherein the developer assumes all of the financial risk.

   Feasibility: This option is most feasible and reasonable for providing on-campus student housing because not having to pay the cost of land or provide certain infrastructure (because it already exists) reduces financial risk for the developer, giving them a viable and attractive business option. In addition, the University is freed to focus the bulk of its attention on its core mission while allowing the private sector to build, manage and maintain the residential facility.

TECHNOLOGY

Technology is critical to creating an enriched learning environment for Florida Poly students. The University will leverage technology to provide a unique, advanced, accessible and highly sought after 21st century learning environment.

Florida Poly envisions an environment that provides e-learning opportunities in a variety of formats, most of which will be accessible on-demand and at the pace that best suits individual students. Technology will be integrated into traditionally taught courses to enhance learning by making lectures more interactive and collaborative. There will also be components of courses and complete courses that are fully online to be accessed by individual students based on their schedules and the pace at which they learn the material. In addition, the University plans to offer blended courses that are a mix of traditional in-class learning and online, individually paced learning. Finally, Florida Poly will have entire degree programs that are fully online which can be completed with no need for the students to attend in-person classes.

The University will also evaluate emerging online strategies such as Massive Open Online Courses or MOOCs and how they can be delivered in a manner that enhances learning, provides access to an expanded student enrollment while maintaining the quality academic environment that is the cornerstone of the University.

Modern technology vendor sources, accessibility and usage paradigms will be integrated throughout the Florida Poly campus. The University will take a new streamlined approach to identity management, human resources, student records, asset management, utility and cost controls. By taking advantage of the green field environment and the opportunity to start fresh with advanced software and hardware, the campus will require fewer staff and resources to operate while still providing a safe, secure and sustainable learning environment. Florida Poly will develop advanced technology for its own use and for potential commercial and higher education industry markets in an entrepreneurial approach.

Florida Poly's classroom technology will incorporate today's most advanced systems as well as the most efficient traditional tools to facilitate hands-on learning, applied research and collaboration among students, faculty and staff. Students will gain broad experience with the most current technology, and because of that, they will graduate ready to compete in the high tech market.

The University's technical plan supports both our academic and applied research missions. To make this extraordinary learning experience available to our students, our campus has a pre-defined underground infrastructure with enough spare capacity to ensure reliability and enough bandwidth to deliver communication anywhere in the world. Specifically, we will leverage the following systems:

- **Modern cloud computing** models will be used for both personal and multi-user systems for appropriate software applications. These will be emphasized in order to gain efficiency, speed in implementation and vendor-supported models for administrative computing and academic technology systems.
- **Open Source software** that has been collaborated on through worldwide contributors will be leveraged for our purposes. We envision a cost savings over commercial/proprietary technology and will seek innovative uses at Florida Poly. We will develop our own enhancements to open source platforms and applications in order to gain increased campus efficiency, automation and differentiation among peer institutions.
- **Large capacity conduits** to create multiple entry and exit points within each building allowing for massive optical and broadband connections. This supports high-capacity fiber optics and creates the redundancy required for programs and sensitive research projects.
- **The latest in high-capacity fiber optic media** capable of managing massive communications to, from and within the campus. To foster social and collaborative interaction, students will use personally owned devices as well as university equipment. We will partner with national networks for our specific research and collaboration purposes including major lambda networks and Internet 2.
- **The lastest in firewalls and high-capacity switching and routing equipment** will create the inter bandwidth to foster learning, on- and off-campus collaboration and the reliability necessary to support time-sensitive research and real-time big data transfers that will be needed by concentrations such as Big Data Analytics, Cyber Gaming, Logistics, Embedded System Design, Cyber Security, Cloud Virtualization, Health Informatics and Information Assurance.
- **A "plug and play" infrastructure** that allows for autonomous systems to be replaced and upgraded as technology advances, enabling Florida Poly to stay ahead of evolving technology and keep fresh, up-to-date networks, services and equipment.

Classroom technology will create a learning environment that brings program and course objectives to life while encouraging application and collaboration. Florida Polytechnic University will leverage technology to create a smart classroom that will be flexible and scalable to the needs of each program. Every classroom will be equipped with:

- **Large, integrated smart screens** that broadcast to mobile devices and leverage cutting-edge IP document cameras connected to personal computers and laptops to encourage long-distance and business collaboration. Students will also be able to capture the learning experience and revisit that material as often as necessary.

We will develop a mobile campus strategy that uses industry standards-based network equipment and supports a "Bring Your Own Device" environment that allows students to customize their learning experience.

To create a seamless classroom environment, Florida Poly will use lecture capture systems to record and recreate each lecture or lab experiment, making it possible for students to replay lectures as needed on and off campus. In addition, the University will implement a Learning Management System that integrates classroom materials on and off campus to deliver the same learning experience for both face-to-face and distance delivery.

Students must be in a position to monitor their grades, track their progress and communicate with faculty and counselors. Florida Polytechnic University will deploy a Student Information System that is available to students, faculty and staff from anywhere in the world and via all popular personal access devices. This ubiquitous environment allows students access to their records at any time and gives them the ability to communicate with faculty or fellow students around the clock.

PROGRAM IDENTIFICATION

Florida Polytechnic will serve the needs of Florida and our nation by offering STEM-focused degree programs, establishing interactive partnerships with business and industry and applying research and intellectual capital to economic and social challenges. The Florida Polytechnic Board of Trustees analyzed a wide range of factors from a variety of sources and used this information to identify degree programs that would benefit the state. This included:

- Forecasted industry and occupational growth
- Enterprise Florida clusters of targeted industries and strategic areas of emphasis
- Trends in student demand
- Costs per FTE student
- Capital start-up and operating costs
- Competition among other polytechnic universities and SUS sister institutions
- Suitability for online instruction
- Programs targeted by the Board of Governors Commission on Higher Education Access and Attainment (CHEAA)
- Correspondence between the Board of Governors and the University

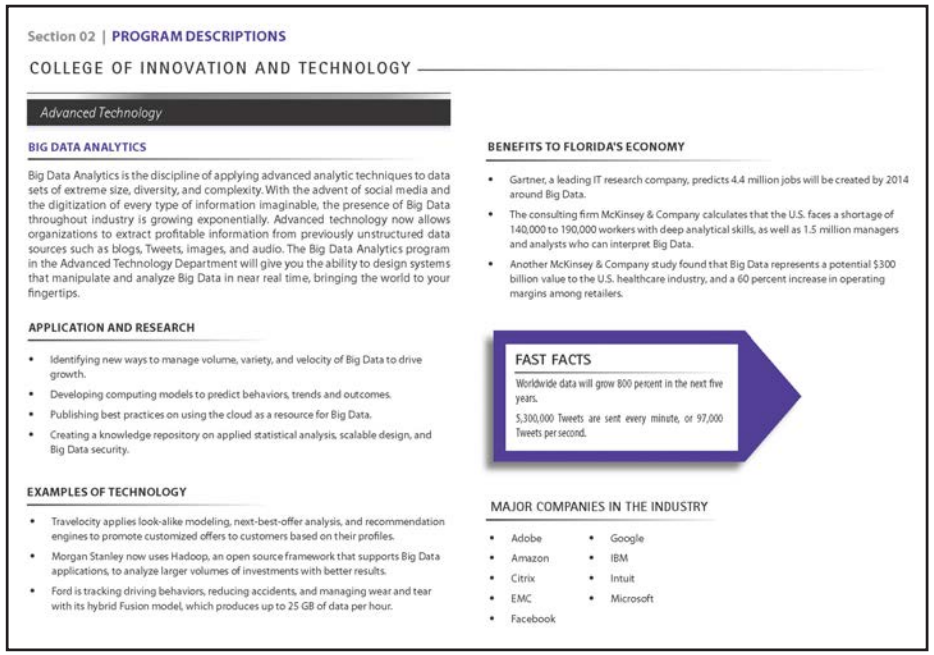
The Board of Trustees developed a decision matrix and program strategy for a mix of STEM and STEM-related offerings to address economic development needs and student demand from their analysis.

To avoid unnecessary duplication, the analysis took a thoughtful look at the engineering programs in the State University System and found nine engineering schools and colleges, including the joint FAMU/FSU college. A number of engineering programs are taught at the majority of schools and colleges. For example, electrical engineering and civil engineering are offered at eight of the colleges. Within these programs are specialization tracks and certificate offerings such as environmental engineering, transportation systems, materials and geotechnical engineering. The schools with the broadest array of engineering programs offer the greatest number of specialization tracks and certificates.

Using this and other information, Florida Poly's Board of Trustees chose majors and concentrations that addressed identified industry needs and avoided any unnecessary duplication.

Having synthesized a vast amount of information about trends in the global and state economy, industry and occupational forecasts, program offerings in the state and among peer institutions both nationally and internationally and learning and delivery models of education, the Florida Polytechnic Board of Trustees prepared a strategic approach to focus initially on two colleges, six cutting-edge degree programs and 19 unique concentrations for a target population of freshmen, transfers and graduate students.

Below is a sample program description, including industry highlights and economic benefits. Descriptions for most programs can be found in the appendix, and others will be added as programs are shaped and finalized through the curriculum development process:



Section 02 | PROGRAM DESCRIPTIONS

COLLEGE OF INNOVATION AND TECHNOLOGY

Advanced Technology

BIG DATA ANALYTICS

Big Data Analytics is the discipline of applying advanced analytic techniques to data sets of extreme size, diversity, and complexity. With the advent of social media and the digitization of every type of information imaginable, the presence of Big Data throughout industry is growing exponentially. Advanced technology now allows organizations to extract profitable information from previously unstructured data sources such as blogs, Tweets, images, and audio. The Big Data Analytics program in the Advanced Technology Department will give you the ability to design systems that manipulate and analyze Big Data in near real time, bringing the world to your fingertips.

APPLICATION AND RESEARCH

- Identifying new ways to manage volume, variety, and velocity of Big Data to drive growth.
- Developing computing models to predict behaviors, trends and outcomes.
- Publishing best practices on using the cloud as a resource for Big Data.
- Creating a knowledge repository on applied statistical analysis, scalable design, and Big Data security.

EXAMPLES OF TECHNOLOGY

- Travelocity applies look-alike modeling, next-best-offer analysis, and recommendation engines to promote customized offers to customers based on their profiles.
- Morgan Stanley now uses Hadoop, an open source framework that supports Big Data applications, to analyze larger volumes of investments with better results.
- Ford is tracking driving behaviors, reducing accidents, and managing wear and tear with its hybrid Fusion model, which produces up to 25 GB of data per hour.

BENEFITS TO FLORIDA'S ECONOMY

- Gartner, a leading IT research company, predicts 4.4 million jobs will be created by 2014 around Big Data.
- The consulting firm McKinsey & Company calculates that the U.S. faces a shortage of 140,000 to 190,000 workers with deep analytical skills, as well as 1.5 million managers and analysts who can interpret Big Data.
- Another McKinsey & Company study found that Big Data represents a potential $300 billion value to the U.S. healthcare industry, and a 60 percent increase in operating margins among retailers.

FAST FACTS

Worldwide data will grow 800 percent in the next five years.

5,300,000 Tweets are sent every minute, or 97,000 Tweets per second.

MAJOR COMPANIES IN THE INDUSTRY

- Adobe
- Amazon
- Citrix
- EMC
- Facebook
- Google
- IBM
- Intuit
- Microsoft

CURRICULUM DEVELOPMENT

SACS accreditation requires that "the institution [place] primary responsibility for the content, quality and effectiveness of the curriculum with its faculty."

Mindful of this, the Board of Trustees and Florida Poly's leadership team are already recruiting faculty who will develop the curriculum by assuring that the University is in compliance with the requirements of the State of Florida, SACS and the U.S. Department of Education. Programmatic prerequisites, common course numbering, general education requirements and scheduling are all considerations that faculty will make.

Relationships with textbook companies and lab equipment providers are also in development.

Florida Poly's curriculum will incorporate:

- Immediate immersion in the field of study
- Essential mathematics and physical science courses
- A solid engineering foundation
- Ongoing industry-oriented, hands-on engineering design projects with realistic constraints
- Specific courses focused on individual programs and concentrations
- Entrepreneurship, leadership, management, finance and innovation incorporated throughout the curriculum
- Opportunities for online learning

The University is currently implementing plans to deploy online learning for the delivery of the applied curriculum.

E-LEARNING AND ONLINE EDUCATION VISION

Florida Polytechnic University has been chartered with the focus of being the STEM-based state university in the Florida SUS. Our vision is to educate and provide students with the knowledge, skills, strategies, and support services to address their academic success and future professional goals. Our new e-Learning and online education strategy will set the direction for modern STEM-based curriculum with advanced use of technology for learning. The major principles include:

- Student-Centric Learning: Technology is used to support student-centric, personalized, collaborative learning with faculty and students leveraging appropriate online resources, content and research.
- Through worldwide cloud and open-collaborative resources, Florida Poly Professors will participate in, share and apply research and evidence-based practices to advance innovation in STEM education.
- Professors will develop, maintain and apply the knowledge, skills and techniques that enable them to use online technology effectively in support of teaching and learning.
- University leadership will establish policy, governance and will cultivate innovation in support of technology enabled learning through online network and system environments.

To create the modern learning environment at Florida Poly for teaching with technology in the 21st century, our strategy will encompass the above principles in establishing our e-Learning and online education. Our vision is to:

- Utilize advanced digital technology resources and modern student/faculty mobile user paradigms for 100% of our STEM curriculum and course management;
- Deliver a meaningful amount of education as online courses;
- Avoid spending resources on the seven courses to be offered by the University of Florida's online arm;
- Innovate with hybrid course models, with online techniques, to enhance traditional education in the classroom and labs;
- Encourage entrepreneurial approaches to solving to real world problems and projects with utilization and development of e-resources and online methodologies;
- Develop a comprehensive use of new instructional technologies to enable student access, collaboration, and academic success via modern e-Learning techniques.

STUDENT RECRUITMENT

Florida Poly is creating a unique and innovative environment that will be attractive to students seeking hands-on, integrated learning opportunities. The innovation at Florida Poly is not housed in a particular center of excellence or institute; it is built into the fabric of the university. Students at Florida Poly will be challenged daily to consider novel approaches to problem solving and to identify or create unique solutions to existing challenges. This advanced and modern learning opportunity is what captures the attention of the highest-level 21st century high school students.

Specifically, the University will attract talented students from Florida and throughout the nation by:

- Developing a strong, accredited technology and engineering curriculum that provides opportunities for practical and applied research, internships with industry partners and leadership development for Florida's innovation driven companies
- Creating a student-centered academic environment that relies on academic rigor, core values and a philosophy of combining traditional learning with practical experience as it relates to leadership and management
- Creating a focused and experiential learning environment
- Developing partnerships with industries to provide real-world experiences
- Developing and planning enrollment based on statistical modeling of Florida high school graduates and FTE transfer projections for state colleges
- Creating partnerships with state colleges, magnet schools and charter and public high schools
- Establishing summer STEM programs for talented middle and high school students (e.g., Florida Poly offered a 2013 high school summer medical engineering robotics program)
- Establishing articulation agreements with state colleges and granting admission to students who earn associate degrees in specially designed programs that prepare them for upper-level academic work at Florida Poly

- Developing an admissions process that reaches out to prospective students from across the nation
- Forming partnerships to attract international students from Brazil and other Latin American countries as well as Caribbean and Far East countries.

Additionally, in its partnerships with magnet, charter and public high schools Florida Poly will develop pathways wherein University courses are taught at the high schools and students who successfully complete them receive Florida Poly degree credit. This model serves as a recruiting tool for Florida Poly and also shortens the time to degree for students, reducing their cost of attendance.

Florida Poly will keep students engaged in active and applied learning by incorporating student research, design projects, collaboration, class discussion and regular feedback from the faculty into their learning process. In addition, sufficient advisors and mentors will allow students to receive personal attention so they have a nurturing environment in which to learn and apply their knowledge. University faculty, technical experts and engineers working in industry will form the core of the mentor group that will work with and guide students.

The University's curriculum will include content that prepares students for successfully earning one or more industry certifications as they complete their degree requirements.

Florida Poly's admissions criteria include an average high school grade point average (GPA) of 3.9 on a 5.0 scale or 3.1 on a 4.0 scale and 1790 as the average SAT score. Both of these criteria are above average for the institutions in the State University System. However, many factors beyond grades and test scores are considered when evaluating the likely success of student applicants. Some additional factors are competence in math, science, as well as demonstrated critical thinking skills as a priority. Level of involvement in school and related activities, volunteerism in community initiatives and demonstrated abilities also signify student likelihood of success in the academically rigorous programs at Florida Polytechnic.

Florida Poly understands that, even for bright students, STEM courses are challenging, and talented students may sometimes have difficulty with the coursework. The University is putting in place an academic tracking system that will alert faculty and administrators to students who may be at risk of failure. Early intervention by faculty and academic advisors will ensure that such students get appropriate assistance to address deficiencies in their academic progress. The University's small student body and class sizes will make monitoring student progress and providing early intervention feasible.

Sometimes students need assistance with issues that are unrelated to academics. The strains of keeping up with a challenging curriculum, being away from home and the everyday pressures of life may require dedicated support and guidance. Florida Poly will have enough counselors to ensure any student needing support will receive it quickly and professionally.

Florida Poly has identified a target first class of 500 undergraduate and graduate students, and the university anticipates growing that number to 1,819 by its fourth class in August 2017. A ten year projection places the university just over 5,000 students.

ENROLLMENT PROJECTIONS

Academic Year	2014-15	2015-16	2016-17	2017-18	…	…	2024
STUDENT HEADCOUNT BY LEVEL							
Freshmen	250	276	327	411	…	…	1257
Sophomore	30	250	277	323	…	…	1063
Junior	200	216	429	453	…	…	1211
Senior	0	182	276	478	…	…	934
Graduate	20	54	96	154	…	…	620
Yearly Headcount	**500**	**978**	**1405**	**1819**	**…**	**…**	**5086**

STUDENT AFFAIRS

Florida Poly's Division of Student Affairs will advocate a holistic approach to education and enhance the overall University experience for students. The department will encourage, support and provide guidance for students' extracurricular activities while providing the best resources for a fulfilling and rewarding academic experience. Services provided and managed by Student Affairs include:

- Residence life
- Student activities
- Counseling
- Academic advising
- Student clubs and organizations
- Intramurals
- Orientation/Welcome Week
- Student government
- Student publications
- Academic societies
- Leadership development
- Religious activities
- Constitution Day
- Living in Polk
- Study abroad

Student Affairs will collaborate with general counsel to lead creation of Florida Poly's code of conduct and student rights and responsibilities. The department will also work with Academic Affairs, Auxiliary Services and Special Projects to ensure Florida Poly meets SACS Core Requirement 2.10, 3.9.3, 3.11.2, and US DOE requirements by providing extra-curricular activities that include experiential learning as well as opportunities to participate in activities that bind the Florida Poly community to our Mission and Vision in a healthy, safe and secure environment. In accordance with the Title II regulation of Section 504 of the Rehabilitation Act of 1973, the Student Affairs department will manage and provide auxiliary aid to qualified students with disabilities, including:

- Voice synthesizers
- Electronics/taped texts
- Note takers
- Interpreters
- Braille calculators
- Printers or typewriters

FACULTY DEVELOPMENT

Faculty will be nationally competitive practitioner scholars engaged in cutting-edge research, well versed in applied and experiential learning and assessment and experienced in and engaged with the professional fields for which they are preparing students. The university is seeking faculty members who are enthusiastic about developing and participating in global partnership models. Theory, research, cross-disciplinary thinking and application to professional practice will guide their approach to building polytechnic habits of mind.

In keeping with its goal to be progressive and competitive, the Florida Polytechnic Board of Trustees approved a non-tenure model. Instead of tenure or tenure track, new faculty members will sign fixed-term, multi-year contracts. The contract length will be for one to five years and may be renewed based on performance. The faculty will be evaluated annually. This model ensures a fair and equitable review process that allows the university to recruit and maintain talented faculty. The university has begun to hire teaching faculty with both industry and research experience and will have essential faculty members in place by Fall 2013 who will provide curriculum development.

The quality and integrity of academic programs depend upon the faculty's education, research experience, knowledge of the subject matter and ability to deliver that knowledge to the students. Florida Poly is seeking faculty who are committed to the highest quality of experiential and applied research-based teaching. In addition, selected faculty will have excellent verbal and written communication skills, interest in pursuing interdisciplinary collaborations and teaching, research and industrial experience. Florida Poly seeks dynamic, broad-thinking scholars to establish a widely recognized reputation for a polytechnic learning and applied research university. The faculty must believe in and support the mission and vision of the University.

Florida Polytechnic University looks to recruit faculty at three levels:

- **Level 1**: Recent Ph.D. graduates with current research and teaching experience in Florida Polytechnic select subject areas. Candidates must have the ability to acquire funded research, teach, publish and should desire to be recognized in their specialty fields.

- **Level 2**: Faculty with a Ph.D. in Engineering or advanced technology with six to eight years of experience in teaching or research experience at an institution of higher education, government research laboratory, and/or industry as well as a clear record of publishing and acquiring funding for research in the field.

- **Level 3**: A mentor who has achieved national and international recognition. A leader capable of managing growth and bringing significant funded research to Florida Polytechnic. Successful candidates will be scholars and mentors with new and unique ideas and the ability to successfully execute such ideas. Appointed faculty will be leaders with critically imaginative vision, who see leadership as a community effort to redesign and utilize resources for the maximization of the interests and programs outcomes.

The recruiting process includes:

- Advertising:
  - On academic job boards *(e.g., Chronicle of Higher Education, Higher Ed Jobs)*
  - In professional journals *(e.g., IEEE, ASME, JSEE, CEE, JSS and others)*
  - In the publications of engineering professional organizations *(e.g., America Society for Engineering Education and the Society of Women Engineers)*
- Florida Poly representation at STEM-related conferences to announce vacancies and recruit speakers
- Visits to universities to recruit Ph.D. candidates and distinguished faculty in key subject areas who are interested in a new and innovative environment
- Competitive salaries and benefits
- Partnership opportunities with industry for visiting faculty relationships

INDUSTRY ENGAGEMENT

Florida Poly is connecting with business and industry leaders to establish an ongoing exchange of information which will help identify the knowledge and skills needed by our graduates to succeed in the industries related to Florida Poly's programs. Industry partnerships will focus on STEM-related businesses and be developed for mutual benefit and lead to joint endeavors.
Such industry partner endeavors may involve the following:

- Assisting in curriculum development and academic excellence
- Service on advisory boards
- Providing internship opportunities
- Conducting joint research
- Collaborating on product development
- Supporting efforts of the Foundation
- Teaching Florida Poly students
- Hiring Florida Poly graduates

The University will consider the following when partnering with industry:

- Industry engineering, technology and applied research needs
- Integrating industry input into the curriculum
  (e.g., advising, research, co-designed programs, etc.)
- Providing graduates that meet business and industry job requirements

Typical partnerships at other institutions fall into tiered levels and require varying amounts of commitment dependent on the depth of engagement and services offered by the university. The base level may be for support in name only, while a higher-level relationship may entail product development or sponsored research facilities. Florida Poly will define mutually beneficial partnership agreements in collaboration with industry.

The programs and expertise developed at Florida Poly are intended to be a statewide resource for economic development officials, chambers of commerce and others as they attract new businesses to their communities and as existing business are considering expansion. The University was established to be responsive to industry. As well as growing and diversifying the state's GDP. The enrollment of 5,000 students would allow the University to remain nimble and able to change as the needs of the market shift over time.

Florida Poly would like business and community leaders throughout the state to consider the University their partner in improving Florida's jobs economy.

The University envisions industry involvement through serving on its Advisory Boards. Such Advisory Boards will be established for each program. For example, an Industrial Engineering Industry Advisory Board (IE IAB) will provide the Industrial Engineering Department with counsel and advise on what business and industry leaders expect of the department graduates. This will help the department fine-tune its teaching methods, applied research concentration and interdisciplinary skills. The IE IAB will be comprised of engineering and management executives from industry, government agencies and private consulting firms.

Meeting in formal sessions twice yearly, the advisory boards will advise the program chair of the department, the faculty and other administrative officers on strategies and means of developing resources for enhancing the goals of the department.

The advisory boards will also assist in promoting the department to potential students, employers, legislative leaders, governmental agencies and industry.

At the meetings of the advisory boards, members will interact with the department head, faculty and staff on issues of mutual concern. Discussions are held on department goals and objectives, educational trends, development and capital campaigns, employment opportunities, research opportunities, budgets, enrollments, degrees and other related topics. Members of the advisory boards also provide support throughout the year for many of the department-specific initiatives and programs.

RESEARCH

Florida Poly's faculty and students will engage in applied research focusing on real-world challenges faced by industries, governments and society. The University will collaborate with industry at the cutting edge of the high-tech environment in order to spur innovation and produce talent capable of leading the development of new industries in the future.

This approach encourages faculty and students to explore new opportunities in research, entrepreneurship and interdisciplinary collaboration, keeping Florida Poly at the leading edge of innovation through the collective knowledge of its faculty and students.

Faculty research at Florida Poly is critical to supporting Florida's economy. Collaboration with high tech industry leaders will help those companies advance and solve problems. In addition, the University will form and be a part of consortia that jointly seek solutions, patents, methods, models and best practices within the fields of science, technology, engineering and mathematics (STEM) to benefit industry, government and society.

This commitment to research is expected to increase innovation and boost the state's economy by encouraging high tech firms to expand in or come to Florida for growth and development.

FLORIDA INDUSTRIAL & PHOSPHATE RESEARCH INSTITUTE

In 2012, the Legislature reestablished The Florida Industrial and Phosphate Research Institute (FIPR Institute) within Florida Polytechnic University. The FIPR Institute has always emulated the polytechnic model with emphasis on applied research and technology development. The Florida Legislature established the Institute originally in 1978 to address concerns about the environment and public health, to help the public understand the extent and scope of any problems and to find solutions. Researchers at the Institute are among the talented faculty being assembled by Florida Poly.

The Institute's role is to conduct scientific investigations that will give lawmakers, regulators, members of the industry, environmentalists and the general public the information they need to make decisions relating to issues of industrial influence or origin. The Institute's mission was expanded in 2010 to include industries other than the phosphate industry and to encourage commercialization of its research products and intellectual property.

Its research areas include Mining and Beneficiation, Chemical Processing, Reclamation, and Public and Environmental Health. Scientists and engineers throughout the world apply for FIPR Institute grants to conduct phosphate-related studies supporting the mission of the Institute: improving the environment, protecting public health and increasing mining and processing efficiency. FIPR Institute staff biologists, engineers and chemists also conduct in-house research.

The FIPR Institute's phosphate research is funded with a portion of the phosphate severance tax. Non-phosphate related research must be funded through other sources.

To facilitate sharing information it generates and collects, the Institute hosts technical conferences, workshops and meetings, operates a library that is open to the public and conducts a K-12 education program. As the information program expands the Institute is always looking for new ways to share the wealth of information it contains.

ACCREDITATION

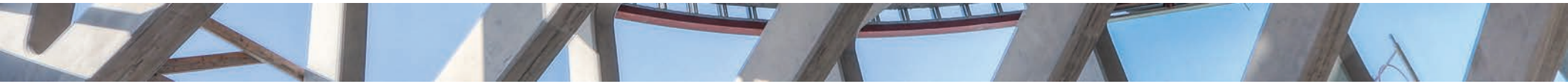
The Southern Association of Colleges and Schools Commission on Colleges (SACS) is the regional body for the accreditation of degree granting higher education institutions and serves as the common denominator of shared values and practices among diverse institutions in the Southern States and Latin America.

SACS accreditation assures stakeholders that the school's purpose is appropriate to higher education and that the institution has sufficient resources, programs and services to accomplish and sustain its purpose. Accredited institutions are eligible for Title IV funds (student financial aid).

Florida Poly's leadership is ensuring that, as Florida's newest university develops its procedures, policies, standards and curriculum that they will be in compliance with the standards for accreditation as contained in *The Principles of Accreditation: Foundations for Quality Enhancement.*

Following the SACS Accreditation Fast-Track, it is Florida Poly's goal to become an accredited university of the Southern Association of Colleges and Schools by December 2016. Florida Poly believes that, through the rigorous accreditation policy, it will be able to ensure its academic programs are built with the capacity to improve student learning and make continuous school improvement a part of Florida Poly's academic culture.

Proposed Dates with SACS Published Fast Track	
Pre Applicant Workshop	Completed Feb. 2013
Preparation of Application	Initiated March 2013
Enroll First Class	Aug. 2014
Plan to Submit Application	Sept. 2014
Goal: Candidacy Committee Authorized by SACS BOT	Jan. 2015
Goal: Visit by Candidacy Committee	April 2015
SACS Grants Candidacy	June 2015
Plan to have SACS Advisory Visit	July 2015
Graduate First Class	May 2016
Plan to have Accreditation Committee Visit	June 2016
Goal: SACS BOT Grants Initial Accreditation	Dec. 2016



The university must complete the Innovation Science Technology (IST) building. In addition it must build infrastructure to support faculty and students, provide for the development of information technologies, enhance the delivery of instruction and support research. During the 2012-13 and 2013-14 fiscal years, Florida Polytechnic University will operate from the state Education and General appropriation. Beginning in the 2014 fiscal year, tuition and associated fees will be collected and become a source of revenue for the University. Florida Polytechnic University will begin classes in Fall 2014 with existing financial resources.

FLORIDA POLYTECHNIC UNIVERSITY	Total All Prior Years Transferred and Fiscal Year Ending June 30, 2013 [1]	FY2014	FY 2015	FY2016
Employee Counts (End of Year)	27	99	114	142
ALL ACTIVITIES				
REVENUE				
TUITION AND FEES	$ -	$ -	$ 2,601,550	$ 5,132,517
GENERAL REVENUE AND LOTTERY	22,411,523	28,711,220	30,538,393 [4]	30,538,398
PECO (PUBLIC EDUCATION CAPITAL OUTLAY) FUNDS	55,498,411	8,201,589	-	-
CARRYFORWARD FUNDS	21,240,683	19,742,000	7,083,310	11,921,065
DONATED FUNDS	12,232,595	4,900,000	3,367,405	-
INTEREST	922,899	325,640	185,000	185,000
TOTAL REVENUE	$ 112,306,111	$ 61,880,449	$ 43,775,658	$ 47,776,980
EXPENDITURES				
SALARY AND BENEFITS	$ 958,306	$ 6,824,958	$ 10,047,840	$ 12,915,205
OTHER PERSONNEL SERVICES AND BENEFITS	1,366	617,521	768,927	807,374
OPERATING EXPENSES	1,563,732	11,608,694	10,261,110	11,287,221
OPERATING CAPITAL OUTLAY	20,585	3,052,023 [2]	326,000	400,000
CURRENT PROJECTS				
INNOVATION SCIENCE TECHNOLOGY BUILDING	44,728,475	37,733,975	1,837,550	-
ADMISSIONS AND STUDENT RECRUITMENT CENTER BUILDING	-	1,200,000	-	-
UNIVERSITY CAMPUS INFRASTRUCTURE	9,672,950	23,261,731	5,535,320	-
LAND	3,700,000	-	-	-
FUTURE PROJECTS	-			
BOOKSTORE / STUDENT SERVICES FACILITY	-	800,000	-	-
FOOD SERVICE FACILITY	-	1,000,000	-	-
STUDENT ACHIEVEMENT CENTER DESIGN	-	-	1,000,000	1,000,000
APPLIED RESEARCH CENTER DESIGN	-	-	2,000,000	2,000,000
TOTAL EXPENDITURES	$ 60,645,414	$ 86,098,902	$ 31,776,747	$ 28,409,800
NET CASH PROVIDED / (USED)	$ 51,660,697	$ (24,218,453)	$ 11,998,911	$ 19,367,180
CASH BEGINNING BALANCE	$ 9,626,321 [3]	$ 51,660,697	$ 7,700,244	$ 12,615,845
OPERATING CARRY FORWARD FUNDS	$ (9,626,321)	$ (19,742,000)	$ (7,083,310)	$ (11,921,065)
CASH ENDING BALANCE	$ 51,660,697	$ 7,700,244	$ 12,615,845	$ 20,061,960

Notes:

1 Construction assets, including life to date activity related to the I-4 University campus location, were transferred from University of South Florida (USF) to Florida Polytechnic University, October 2012.

2 Operating Capital Outlay includes costs associated with the initial setup of the University campus. Costs expected include library resources, security systems, Admissions and Student Recruitment Center requirements, asset management systems, classroom and laboratory equipment, and furniture and fixtures required for the inaugural students Fall 2014.

3 Funds transferred October 2012 from University of South Florida USF to Florida Polytechnic. Carry Forward ($9,511,245) from previous years and Sale of Easement ($115,076) executed by USF prior to the completion of the transfer of assets and resources to Florida Polytechnic University.

4 Anticipate that an approximate $2m in formula funds will be added for plant, operation & maintenance of the IST building.

SOURCES OF FUNDS

State Appropriation

Funds are appropriated by the State Legislature to carry out and support the primary mission of the University: education, research and public service. Funding from the Legislature for higher education comes from two sources: General Revenue and Educational Enhancement Trust Fund (Lottery). The Legislature also provides the authority to spend funds collected from tuition and fees.

- General Revenue – annual allocation to support the operations of the University
- Educational Enhancement Trust Fund (Lottery) – an allocation is provided based on actual profits from the State Lottery operation

TUITION AND FEES

Tuition and estimated fees have been included based on projected student enrollment.

In August 2013, the University Board of Trustees approved scholarships for the inaugural class (undergraduate and graduate students). Inaugural full-time undergraduate students will receive scholarships of $5,000 for the first three years and $3,200 for the fourth year. Inaugural full-time graduate students will be awarded $9,300 per year for the first two years. Students must maintain eligibility requirements. The scholarships are expected to cover the majority of students' tuition and fees for those years until accreditation is granted.

EXPENDITURES

Salary and Benefits

Florida Polytechnic University will increase its staff to meet the expectations of the students being recruited, the systems being implemented and management and direction of the university and is committed to keeping administrative costs low. The University expects to employ a total of 99 employees by June 2014, 30 of whom will be full-time faculty. More faculty members will be hired for the College of Technology and Innovation and the College of Engineering into FY2015-2016.

Other Personnel Services (OPS) Hourly

Academic and support personnel necessary to meet instructional and operational requirements may be covered by qualified temporary positions.

Operating Expenses

Expenses consist of all non-personnel expenditures for consultants, advertising, marketing, printing, travel, data processing services, utilities, general office and classroom supplies, computer supplies and other related expenses needed to operate the University.

The University is working under a shared services agreement with the University of Florida to provide assistance for administrative services in an effort to use best practices when delivering University services for purchasing, financial reporting, human resources, insurance, contract and grant management, administrative services, procurement, legal services, records management services, asset management, internet and telephone services. This arrangement will be modified to reflect changes that occur as the University grows.

Operating Capital Outlay

Expenditures are for items that are operating assets and include equipment, vehicles, software and the purchase of our library assets and collections.

Carryforward

Unexpended E&G funds of the prior year operating budget may be carried forward by the University in accordance with Florida Statutes and may be used to fund new campus construction and capital projects.

Projected Operating Costs Per Student FY2014 and FY2024

In the first year, the costs to operate the University, calculated as a per student cost, will be approximately $56,000. However, as the University approaches campus build out in FY2024, the cost to operate will decrease to about $6,500 per student.

	FY2014	FY2024
TOTAL STUDENTS, HEADCOUNT	500	5,000
PROJECTED COST PER STUDENT	$ 56,000	$ 6,500

Project Construction Budget

Florida Polytechnic University is currently building a campus to be ready for its first students in Fall 2014. The Innovation Science and Technology (IST) Building will be the first major building to open, and will be available for occupancy June 2014. The campus also required the development and build-out of infrastructure to support access, the IST Building, and the Admissions and Student Recruitment Center.

Future projects may include an Academic Research Center and a Student Achievement Center. A residence hall will be necessary to meet academic and student services needs of the University over the next five years. The Academic Research Center will have flexible space for academic and laboratory use. This building will have researchers' offices, study spaces, and collaboration areas throughout. The Student Achievement Center will have student support spaces, study areas, health clinic, student guidance, student government, and health and student life programs.

Carryforward funds over the next few fiscal years will be part of the available financial resources to address the instructional and student academic areas in the future projects of the University.

FLORIDA INDUSTRIAL AND PHOSPHATE RESEARCH INSTITUTE (FIPR)

The Institute draws from the Phosphate Research Trust Fund to pay for its phosphate programs and operations. The financial overview from Fiscal Year ended June 30, 2013 and projections for Fiscal Year 2014 are shown to the right. FIPR is actively seeking research opportunities and contracts to expand alternative funding to meet the continuing requirements of the institute for the future. Within their operational purpose, the activities of FIPR are not expected to have an impact on the operations and requirements of Florida Polytechnic University.

FLORIDA INDUSTRIAL AND PHOSPHATE RESEARCH INSTITUTE (FIPRI)	Fiscal Year Ending June 30, 2013	Fiscal Year 2014
SOURCES		
PHOSPHATE RESEARCH TRUST FUND-SEVERANCE TAX COLLECTIONS	$ 2,200,000	$ 2,300,000
TRANSFERS-IN FROM TRUST FUND RESERVES	180,683	236,623
TOTAL SOURCES	$ 2,380,683	$ 2,536,623
EXPENDITURES		
SALARY AND BENEFITS	$ 1,097,340	$ 1,043,145
OTHER PERSONNEL SERVICES AND BENEFITS	98,155	193,478
OPERATING EXPENSES	1,023,035	1,175,000
OPERATING CAPITAL OUTLAY (OCO)	162,153	125,000
TOTAL EXPENDITURES	$ 2,380,683	$ 2,536,623
ANNUAL EXCESS SOURCES OVER EXPENDITURES	$ -	$ -

TARGETS

Florida Statutes section 1004.345 established the following criteria for Florida Poly to achieve by December 31, 2016:

(a) Achieve accreditation from the Commission on Colleges of the Southern Association of Colleges and Schools;

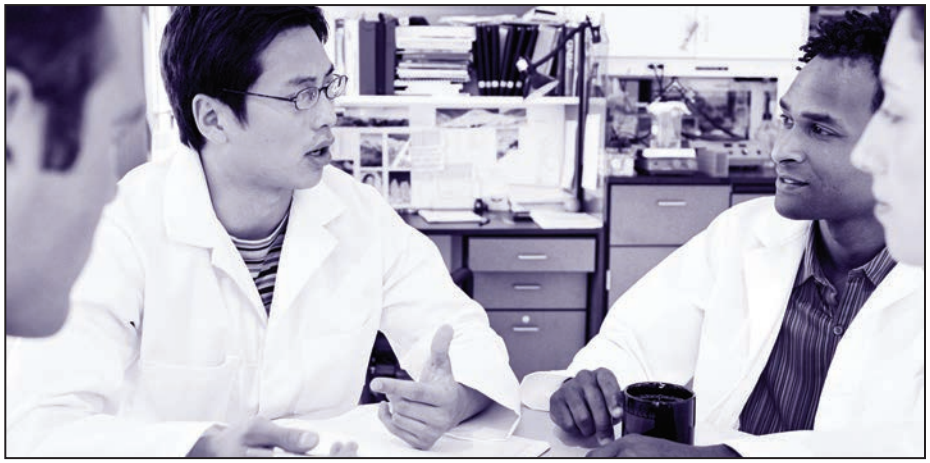
(b) Initiate the development of the new programs in the fields of science, technology, engineering, and mathematics;

(c) Seek discipline--specific accreditation for programs;

(d) Attain a minimum FTE of 1,244, with a minimum 50 percent of that FTE in the fields of science, technology, engineering, and mathematics and 20 percent in programs related to those fields;

(e) Complete facilities and infrastructure, including the IST Building, Phase I of the Wellness Center, and a residence hall or halls containing no fewer than 190 beds; and

(f) Have the ability to provide, either directly or where feasible through a shared services model, administration of financial aid, admissions, student support, information technology, and finance and accounting with an internal audit function.



With these benchmarks in mind, the Florida Polytechnic Board of Trustees established a schedule that includes the following:

- **Hire administrative staff:** ***Summer 2013***
- **Develop student services and housing plan:** ***Summer 2013***
- **Begin hiring faculty:** ***Fall 2013***
- **Begin student recruitment:** ***Fall 2013***
- **Begin curriculum development:** ***Fall 2013***
- **Open admissions office:** ***November 2013***
- **Open the campus:** ***June 2014***
- **Welcome the inaugural class:** ***August 2014***
- **Plan to apply for SACS candidacy:** ***2014***
- **Graduate first class:** ***May 2016***
- **Plan to achieve accreditation:** ***December 2016***

The Chief Operating Officer started in December 2012 and the Vice President of Academic Affairs started in February 2013. As a new institution, a leaner administrative model that encourages timely decisions and avoids the bureaucracy traditionally associated with academia was developed. A flat organization that hires staff as needed to build the foundation of the University was employed. Experienced directors and managers were brought on board to build the academic departments in the University instead of several vice presidents.

The smaller administrative model will also be employed in the academic division. Initially, the Vice President of Academic Affairs will lead the academic departments by using the expertise of the faculty and program directors. This style of management will eliminate the need for deans and encourage interdisciplinary curriculum development. The department directors and chairs will work with the Vice President of Academic Affairs to lead the College of Engineering and the College of Innovation and Technology. The full time faculty in each of the colleges, estimated at 15 in Engineering and 15 in Innovation and Technology, will share limited administrative assistance in each of the colleges. Over the next year, adjunct faculty will be hired to address some of the instructional and curriculum requirements for the Colleges. This is expected to be 9 FTE positions in Engineering and 9 FTE positions in Innovation and Technology.

The VP of Academic Affairs will also lead the delivery of student services with directors instead of additional vice presidents. Directors of student life, financial aid, admissions and a registrar will also be a part of the team.

The General Counsel's office will be expanded to include the legal affairs clerks, Board of Trustees liaison and campus and auxiliary services. The inclusion of auxiliary services was a logical connection to the General Counsel's office because of the contract negotiations to deliver services to the campus.

The number of employees who will be on staff by June 2014 is 99. The proposed number of employees for fiscal year 2014-2015 is 114, and the projected number of personnel for 2015-2016 is 142.

The University also entered into a shared services agreement with the University of Florida to support its essential functions. The shared services agreement provided an opportunity to outsource back office functions.

The Florida Polytechnic Board of Trustees will commence the president's search in August of 2013. A search firm will lead the search and ensure that the Board is following the Sunshine Law Guidelines. The president will be in place in 2014.

GOVERNANCE

To achieve its goals to produce graduates ready to work in STEM fields, Florida Poly is led by a Board of Trustees appointed by the Governor and the Board of Governors that oversees the Student University System of Florida. The Board consists of thirteen trustees, with six trustees appointed by the Governor, five trustees appointed by the Board of Governors, and two trustees serving by virtue of their offices: the president of the Florida Polytechnic University Student Government Association and the president of the faculty senate.

The current Board of Trustees consists of:

- **Chairman Robert Gidel**, *Managing Partner of Liberty Capital Advisors*
- **Vice Chairman Mark Bostick**, *President of ComCar Industries, Inc.*
- **Bill Brown,** *President of Harris Corporation*
- **Sandra Featherman, Ph.D.**, *former President of the University of New England*
- **Dick Hallion**, *Research Associate in Aeronautics, National Air & Space Museum, Smithsonian Institute*
- **Scott Hammack**, *Chief Executive Officer of Prolexia*
- **Kevin Hyman**, *Executive Vice President of Bright House Networks*
- **Frank Martin**, *Senior Vice President of Atkins North America*
- **Bob Stork**, *Chief Executive Officer Communications International, Inc.*
- **Don Wilson**, *Partner/Attorney with Boswell & Dunlap, LLP*
- **Rob MacCuspie, Ph.D.,** *Assistant Professor, College of Engineering; Director of Nanotechnology and Multi-functional Materials*

Section 07 | GOVERNANCE, LEADERSHIP AND STAFFING

The Florida Polytechnic Board of Trustees has assembled a dynamic team to administer its operations and implement its vision of innovation and collaboration with industry.

The Florida Polytechnic University Foundation is a direct support organization of Florida Poly. The charter Foundation Board of Directors is comprised of 11 business, community and industry leaders.

The current Foundation Board consists of:

- **Chair Cindy Alexander**, *Community Leader and Fundraiser*
- **Vice Chair Loretta Sanders,** *Community and Volunteer Board Leader*
- **Ralph Allen**, *Allen & Company, Financial Investment and Advising*
- **Ron Clark**, *Clark, Campbell & Lancaster, Attorney*
- **Ford Heacock**, *Heacock Insurance*
- **Rob Kincart**, *A-C-T Environmental, Scientist*
- **Ingram Leedy**, *Elephant Outlook / Technology Companies*
- **Cliff Otto,** *SaddleCreek Corporation, Logistics Services*
- **Dr. Sijo Parekattil,** *Director of Robotics Surgery and Urology, Winter Haven Hospital*
- **Shelley Robinson**, *Community Leader and Volunteer*
- **Vic Story**, *the Story Companies, Citrus/Agriculture*

Section 08 | APPENDIX

COLLEGE OF ENGINEERING

Computer Engineering

DIGITAL LOGIC DESIGN

Digital Logic Design is the design of circuits and systems that form the base of all electronics. A combined discipline of electrical and computer engineering, digital logic design is used to develop intricate hardware, such as circuit boards and microchips, for computers, navigational systems, cell phones, robotics, and other high-tech systems. The Digital Logic Design program in the Computer Engineering Department will give you a strong foundation in logic principles, practical experience in programming digital circuits, and hands-on training in electrical component integration for a high-powered career in high tech.

APPLICATION AND RESEARCH

- Developing new circuit designs to decrease production costs and energy waste of transistors.
- Advancing next-generation CPU/Graphics processing for tech manufacturers.
- Designing new software to update digital systems without upgrading hardware.
- Consulting on development and support of modified electronic designs for unique commercial purposes.
- Creating software tools for simulating the functionality and accuracy of system designs.

EXAMPLES OF TECHNOLOGY

- Special purpose hardware can emulate the logic of a proposed design for yet-to-be-built computer chips.
- Synopsys, Inc., the largest company in electronic design automation, unveiled new testing technology in 2013 to reduce the cost of testing silicon devices.

BENEFITS TO FLORIDA'S ECONOMY

- Estimated revenue for the electronic design automation industry in 2012 was $6.5 billion.
- Florida employs the third highest number of electronics engineers in the country, after California and Texas, according to the Bureau of Labor Statistics.
- Florida has two out of the five top metropolitan areas in the country with the highest concentration of electronics engineering jobs: Titusville ranked third and Crestview/Fort Walton Beach ranked fifth on the Bureau of Labor Statistics rankings.

FAST FACT

The 22 nanometer transistor can switch on and off over 100 billion times per second. A human would need 2,000 years to turn a light switch on and off that many times.

MAJOR COMPANIES IN THE INDUSTRY

- MC Assembly
- METI
- Synopsys, Inc.
- Technology Service Partners

COLLEGE OF ENGINEERING

Computer Engineering

EMBEDDED SYSTEM DESIGN

Embedded systems are designed to handle a particular task within a larger mechanical or electrical system. The field of embedded systems design unifies hardware and software development and spans microprocessor-based control systems, system-on-chip (SoC) design, and device software. Today's embedded systems are everywhere: hybrid vehicles, airplanes, medical equipment, traffic lights, factory controllers, videogame consoles, and digital cameras. The Embedded Systems Design program in the Computer Engineering Department will give you hands-on training in programming and analyzing embedded devices, using design automation tools, and experimenting with the latest embedded technologies.

APPLICATION AND RESEARCH

- Prototyping microcontrollers for use in automatic devices such as car engine control, implantable medical devices, office machines, and power tools.
- Developing hardware and software for system-on-chip designs used in Bluetooth, GPS, smartphone, and iPad technology.
- Improving user interfaces for embedded systems, ranging from remote connection to touch screen interfaces.
- Optimizing specialized software for embedded systems with custom compiling and debugging.

EXAMPLES OF TECHNOLOGY

- The Gibson Robot Guitar includes an embedded system for tuning its own strings.
- Embedded systems in medicine include electronic stethoscopes that amplify sound, vital signs monitoring systems with wireless networking, and CT, MRI, and SPECT technology for noninvasive diagnostics.

BENEFITS TO FLORIDA'S ECONOMY

- The Bureau of Labor Statistics projects that embedded systems engineer jobs will grow 21 percent between 2008 and 2018.
- Apple leads all companies in spending $28 billion a year on chip purchasing, a large share of which includes system-on-chip technology.
- The global market for embedded technology is estimated to reach $112.5 billion by 2014, according to a report by BCC Research.

FAST FACT

The latest embedded software turns mobile phones into function generators.

MAJOR COMPANIES IN THE INDUSTRY

- Apple
- Authentium
- Microsoft
- SanDisk
- Voalte

COLLEGE OF ENGINEERING

Computer Engineering

MACHINE INTELLIGENCE

Machine Intelligence is a branch of computer engineering that applies methods of computation to replicate, and sometimes surpass, human intellectual functions. The field seeks to advance machine learning, reasoning, and self-correction, as well as the abilities of machines to perceive, move, manipulate and communicate. The Machine Intelligence program in the Computer Engineering Department will give you a foundation in programming strategies for machine learning and pattern recognition, as well as the opportunity to design your own intelligent machines, to prepare you for a career in building the stuff of science fiction.

APPLICATION AND RESEARCH

- Advancing natural language processing and speech recognition technology for voice control of electronics.
- Solving problems of navigation, mapping, and motion planning to enable robotic machines to move in any environment.
- Developing artificial neural networks inspired by human and animal central nervous systems.

EXAMPLES OF TECHNOLOGY

- IDSIA, one of the top ten Artificial Intelligence labs in the world, has developed AI programs for handwriting recognition, robot control, and computer-controlled freight platforms for rail transport.
- The linguistics underlying Google, the scheduling software used throughout the military, the fraud detection software for credit card companies, and the software in massive multiplayer games are all examples of machine intelligence.

BENEFITS TO FLORIDA'S ECONOMY

- The National Science Foundation has awarded more than $12 million to Florida institutions for Information & Intelligent Systems research.
- A KPMG survey of tech companies showed that artificial intelligence technology drove at least 10% of sector revenue in 2012.

FAST FACT

Ray Kurzweil has used Moore's law to calculate that desktop computers will have the same processing power as human brains by the year 2029.

MAJOR COMPANIES IN THE INDUSTRY

- Sony
- iRobot
- Kiva Systems
- Microsoft

COLLEGE OF ENGINEERING

Electrical Engineering

CONTROL SYSTEMS

Control Systems engineering seeks to analyze physical systems -- mechanical, electrical, fluidic, chemical, financial and even biological -- and design ways to control them. From prototyping a new spacecraft guidance system, to engineering more efficient fuel injection in cars, to designing multi-legged robots for combat, control systems engineers play a critical role in technological innovation. In the Control Systems program within the Electrical Engineering Department, you will acquire the engineering methods and analytic tools needed to design solutions for complex technical challenges in the world of control.

APPLICATION AND RESEARCH

- Designing microcontrollers for embedded electronic control systems, such as cruise control or climate control.
- Advancing sensor, stabilizing, and tracking technology to improve manufacturing processes, guidance and navigation in aerospace, and automotive design.
- Exploring robotic control in medicine, space exploration, consumer electronics, and defense.
- Improving communications systems for rail, airline, shipping, and other industries.

EXAMPLES OF TECHNOLOGY

- Historic inventions in control systems engineering include the thermostat in 1620, the passenger elevator in 1857, the pacemaker in 1950, the Apollo Guidance Computer in 1964, and the first microprocessor in 1969.
- Medical technologies that use control systems include pacemakers, prosthetic limbs, drug delivery, artificial respiration, and many types of surgery.
- Control system engineering pervades the defense sector in ballistic and anti-ballistic missile systems, self-propelled submarines, drones, F-16s, radar detection, and other military technologies.

BENEFITS TO FLORIDA'S ECONOMY

- Florida has one of the nation's largest aerospace and aviation industries, with over 2,000 companies in the state, 100+ public airports, and two spaceports.
- According to a survey by a leading staffing firm, Manpower, engineering jobs are the second hardest to fill, due to a lack of skilled candidates.
- Systems Engineers are among of the most versatile of all engineers. Where other engineers specialize in a certain discipline (electronics, mechanics, aerodynamics, software, etc.), systems engineers are concerned with all of these, and often serve as the primary interface between management, customers, suppliers, and specialty engineers in the systems development process.

FAST FACT

The earliest known example of control systems engineering occurred in 270 B.C., when a Greek man named Ktesibios invented the water clock.

MAJOR COMPANIES IN THE INDUSTRY

- CAE USA
- FARO Technologies
- Ocean Optics
- Sensormatic Electronics
- SimplexGrinnell

COLLEGE OF ENGINEERING

Electrical Engineering

DIGITAL & HYBRID SYSTEMS

Digital Systems focuses on integrating digital mechanisms to achieve greater interoperability, compatibility, transferability, and scalability in devices. They are the basis of how all technology and information becomes accessible and usable. Digital systems engineers combine components to provide newer, faster, and more reliable technology to military, avionics, security, marine and other industries. The Digital Systems program in the Electrical Engineering Department provides you with a strong foundation in the principles of digital systems and circuits, as well as hands-on training in industry-standard tools for designing the digital systems that are essential to all technologies in use today.

APPLICATION AND RESEARCH

- Connecting mobile devices to share information and work together to accomplish complex tasks.
- Fusing multiple video sensors for large surveillance systems.
- Advancing vision processors for smart glasses, gaming systems, and automotive driver assistance systems.
- Developing multi-core technology in central processing units (CPUs).

EXAMPLES OF TECHNOLOGY

- Supercomputers, personal computers, appliances, calculators, digital clocks, industrial controls, aviation and defense instruments, and automobiles all rely on digital systems, from large boards to nanoscale systems-on-a-chip.
- Flip chip packaging is a method of connecting several semiconductor devices in less space for use in small electronics like cell phones.

BENEFITS TO FLORIDA'S ECONOMY

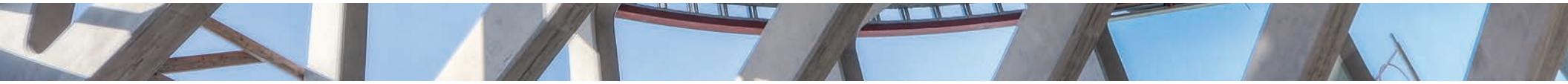
- As much as $40 billion could be spent by 2017 on the fabrication of multi-core processors, according to R&D Magazine.
- The global cell phone industry is expected to reach an estimated $334.8 billion in 2017.
- In a 2012 study by the National Association of Colleges and Employers, 49 percent of employers polled said they hired electrical engineers from the Class of 2013.

FAST FACT

The Hubble Space Telescope uses four charge-coupled devices to detect light that is one billion times fainter than what the naked eye can see.

MAJOR COMPANIES IN THE INDUSTRY

- Advanced Solar Photonics
- Atkins Engineering
- Galtronics Telementry
- Infrax Systems



COLLEGE OF ENGINEERING

Electrical Engineering

ELECTRODYNAMICS

Electrodynamics is a branch of physics that studies moving electric charges and their interaction with magnetic and electric fields. Rooted in classic and quantum physics, electrodynamic engineering focuses on developing advanced technology used in space exploration, energy conservation, proton acceleration, and a myriad of other applications. The Electrodynamics program in the Electrical Engineering Department will give you a strong scientific foundation in the theory and problems of electrodynamics, as well as hands-on experience in designing new, exciting electrodynamic technologies.

APPLICATION AND RESEARCH

- Addressing problems and methods of theoretical physics and astrophysics associated with microscopic and macroscopic electrodynamics.
- Applying electric and magnetic fields to reduce plasma densities over antennae, missiles, and spacecraft.
- Developing new applications for and improvements in Magnetic Resonance Imaging (MRI) technology for medical diagnostics.

EXAMPLES OF TECHNOLOGY

- Electrodynamic tethers (EDTs) are long conducting wires, currently used on satellites, that can convert energy to either generate power for sustaining spacecraft or provide motoring capability with thrust to extend the mission range of spacecraft.
- Electrodynamic suspension (EDS) is a form of magnetic levitation in which conductors are exposed to eddy currents that create a repulsive magnetic field, holding two objects apart. EDS is used in the Japanese SCMaglev train and in Cadillacs for a smooth ride.
- Electrodynamic bearings (EDBs) feature contactless, frictionless rotating shafts in motors to achieve ultra high-speeds, minimal fuel requirements, and superior lifetimes. This largely conceptual technology has powerful implications for the automotive, aerospace, defense, energy, and medical industries.

BENEFITS TO FLORIDA'S ECONOMY

- With nearly 2,000 aviation and aerospace companies in Florida, electrodynamic analysis and applications of electrodynamic technology are in high demand.
- In 2012, MetroPlan Orlando announced plans to build a maglev train in Orlando, costing $315 million.
- In 2013, Orlando-based API Technologies received a $2 million contract for electromagnetic integrated solutions for defense communications.

FAST FACT

Spacecraft must be able to endure violent levels of vibration during launch, so electrodynamic shakers are used to simulate launch conditions during testing.

MAJOR COMPANIES IN THE INDUSTRY

- Alternate Energy Technologies
- CP Engineering
- Intellon Corporation
- Kinley-Horn & Associates
- Matrix Utilities

COLLEGE OF ENGINEERING

Electrical Engineering

MAGNETICS

Magnetics is the study of the magnetic structure within highly permeable, thin strips of alloy for the purposes of applied engineering. Magnetic materials play a critical role in a wide range of industries: automotive, security, medical, IT, and aerospace applications are just a few ways in which magnetics is driving innovation. The Magnetics program in the Electrical Engineering Department at both the graduate and undergraduate levels includes hands-on experimentation and the practical design of magnetic components to give you a cutting-edge advantage in this exciting field.

APPLICATION AND RESEARCH

- Developing magnetic semiconductors for spintronic devices.
- Creating new types of sensors using magnetic surface effects.
- Advancing solid-state magnetic memory technology.
- Improving wireless magnetic devices.

EXAMPLES OF TECHNOLOGY

- *Popular Mechanics* reports that strong magnets with printed poles can be used for spinal implants, aircraft machinery, prosthetic-limb fittings, even fasteners that allow robots to scale walls without touching them.
- Medical Resonance Imaging (MRI) technology in medical diagnostics continues to advance for increased accuracy, effectiveness and patient comfort.
- One of the largest growing segments of the semiconductor market is swipeless mobile payment systems.
- Electrical engineers at Oregon State University have discovered a way to use sound waves to enhance magnetic data storage, for more stable memory and more storage capacity in less space, using less power.

BENEFITS TO FLORIDA'S ECONOMY

- Electrical engineers in magnetics are in demand at a wide variety of companies throughout Florida, including telecommunications, medical, clean tech, energy distribution, aerospace, defense, and consumer electronics manufacturing.
- According to Bureau of Labor Statistics data, the semiconductor industry added jobs three times faster than the rest of the U.S. economy in 2011. The Semiconductor Industry Association reports that the industry's employment multiplier figure is higher than that of the construction industry, the communications industry, and the automobile industry.
- Leading audit firm KPMG's Semiconductor Business Confidence Index rose 11 points between 2012 and 2013.

FAST FACT

Spintronics devices are smaller than 100 nanometers, or 1,000 times thinner than a human hair.

MAJOR COMPANIES IN THE INDUSTRY

- BAE Systems
- Mitsubishi Power Systems America
- Roper Industries
- Siemens Energy

COLLEGE OF ENGINEERING

Electrical Engineering

SEMICONDUCTORS

Semiconductor devices are solid state devices that exploit the properties of semiconductor materials to improve electronic technology. Semiconductor device engineers can manipulate semiconductor materials to build transistors, capacitors, wires, light-emitting diodes and semiconductor lasers -- all of which are integrated into computer chips. The Semiconductors program in the Electrical Engineering Department will give you a comprehensive foundation in device physics and electrical engineering, as well as hands-on experiments in fabricating and prototyping your own applications for these small but powerful components that we all depend on.

APPLICATION AND RESEARCH

- Developing plasmonic solar cells that convert light into electricity using less expensive substrates than silicon.
- Optimizing semiconductor processes, devices and circuit yield.
- Developing new semiconductor formulations with manufacturing advantages.
- Modeling defect and parametric yield loss in fabrication processes.

EXAMPLES OF TECHNOLOGY

- The International Technology Roadmap for Semiconductors estimates that 14 nanometer transistor technology will be reached by 2014.
- Northwestern University has filed a patent for polymeric and molecular semiconductors that can be used in photovoltaic devices, transistors, and light-emitting diodes.

BENEFITS TO FLORIDA'S ECONOMY

- The Semiconductor Industry Association (SIA) reported that worldwide sales of semiconductors reached $74.65 billion during the second quarter of 2013, the largest quarterly increase in three years.
- Florida has the third highest average wages in semiconductor processing, and is ranked eighth in overall semiconductor employment, according to the Bureau of Labor Statistics (BLS).
- BLS also reports that total direct semiconductor employment in the U.S. is estimated at 369,700 jobs.

FAST FACT

Silicon, the primary ingredient in beach sand, is a natural semiconductor and the most abundant element on earth except for oxygen.

MAJOR COMPANIES IN THE INDUSTRY

- Intel
- Qualcomm
- Jabil Circuit
- Texas Instruments
- Toshiba

COLLEGE OF ENGINEERING

Mechanical & Industrial Engineering

GEOMETRIC DIMENSIONING AND TOLERANCING

Geometric Dimensioning and Tolerancing (GD&T) is the standardized method used for communicating part requirements on engineering drawings and 3-D CAD models. GD&T uses its own notation to define allowable variations in the form, size and position of parts in assemblies. GD&T is used on a daily basis by a variety of professionals, including tool designers, mechanical engineers, technical inspectors, and engineering managers. The Geometric Dimensioning and Tolerancing program in the Industrial Engineering Department will give you a firm foundation in geometric systems, advanced practice in calculating tolerances, and hands-on training in international standards and real world applications for this essential skill set.

APPLICATION AND RESEARCH

- Applying GD&T to prevent part waste, tool damage, and other manufacturing costs.
- Advancing the field of process capability studies by analyzing design alternatives.
- Developing mathematical models to calculate tolerances affected by new fabrication, assembly, and inspection processes.
- Developing new software for faster GD&T.

EXAMPLES OF TECHNOLOGY

- GD&T analysis and solutions helped Ford solve an assembly problem with belt length and tensioners in one of its engine models.
- The Six Sigma quality improvement system used by Motorola, Honeywell, IBM, and General Electric relies on GD&T engineering to maximize process efficiency.

BENEFITS TO FLORIDA'S ECONOMY

- The Bureau of Labor Statistics projects a six percent increase in industrial engineer jobs between 2010 and 2020.
- A recent study in *Quality Management* Journal found that companies realized an average return of two dollars for every one dollar invested in Six Sigma programs.
- Manufacturing has the biggest economic multiplier effect of all industries in Florida: each dollar invested creates another $1.43 in other sectors.

FAST FACT

Every factory employs geometric dimensioning and tolerancing of some kind.

MAJOR COMPANIES IN THE INDUSTRY

- Ardaman & Associates
- General Electric
- Honeywell
- IBM
- Motorola

COLLEGE OF ENGINEERING

Mechanical & Industrial Engineering

MULTIFUNCTIONAL MATERIALS

Multifunctional material design is the science of engineering composite materials with new and unique capabilities. Traditional materials that provide high stiffness and strength, for instance, can be modified at the nanoscale to take on other properties such as energy absorption, self-healing, and even shape morphing. The design of new "smart" materials and systems has major implications for the defense, aerospace, energy, and semiconductor industries. The Multifunctional Materials program in the Industrial Engineering Department will give you a strong foundation in the fabrication, characterization, modeling and prototyping of multifunctional materials and other smart systems that improve safety, efficiency, and versatility.

APPLICATION AND RESEARCH

- Prototyping structure-sensing composites that can monitor their own health and detect threats to their embedded systems.
- Developing active structures that can alter their shape and properties to respond to changes in their external environment.
- Designing materials with energy-transduction properties that harvest and store energy to increase their mission range and endurance.
- Advancing physics-based simulations and models to enhance the performance and efficiency of multifunctional materials.

EXAMPLES OF TECHNOLOGY

- A collaboration between University of Washington and General Motors will develop new composite materials that capture waste heat for conversion into usable electricity for automotive engines.
- Harvard University is partnering with IBM to accelerate the testing of millions of new, simulated organic molecules that could be used for low cost, effective and easily produced materials to conduct and store solar energy.

BENEFITS TO FLORIDA'S ECONOMY

- In 2012, the Army Research Office announced a $120 million investment in multifunctional materials research and President Obama announced the Materials Genome Initiative, with $25 million in research awards.
- 31 organizations endorsed the Orlando Materials Innovation Principles, an outcome of a 2012 summit in Orlando, Florida that focused on the Materials Genome Initiative.
- Semiconductor, defense and space technology companies - the primary developers of multifunctional materials -- are directly targeted by the State of Florida's special financial incentives.

FAST FACT

Using a protein from color-changing squids, scientists have created a coating that reflects infrared and could potentially be used to make people and vehicles invisible to infrared cameras

MAJOR COMPANIES IN THE INDUSTRY

- Saint-Gobain
- General Motors
- US Army
- NASA

COLLEGE OF ENGINEERING

Mechanical & Industrial Engineering

NANOTECHNOLOGY

Nanotechnology is a revolutionary field incorporating engineering, chemistry, physics, materials science, biology, and a growing number of other disciplines. Literally, the "science of the small," nanoscience focuses on manipulating matter at the level of atoms, molecules, and supramolecular structures to address challenges ranging from medicine to manufacturing. The Nanotechnology program in the Industrial Engineering Department will train you in the use of specialized instruments, fabrication processes, and advanced analysis methods to create smarter materials and devices with unlimited applications.

APPLICATION AND RESEARCH

- Developing student proposals for funded research and specific business applications with real-world time and budget requirements.
- Pioneering next-generation medical devices, drug delivery systems, computer chips, batteries, and lightweight materials.
- Improving the efficiency of fuel cells and reducing the cost of fuel cell production.
- Advancing nanotechnology for clean air and carbon emission reduction.

EXAMPLES OF TECHNOLOGY

- Nanoscale additives to polymer composite materials are making everyday items like baseball bats, motorcycle helmets, and automobile bumpers stronger, lighter, and more durable.
- Nanocrystals can enhance biological imaging for medical diagnostic devices such as MRIs.
- Nanotechnology has been used in the early diagnosis of atherosclerosis, the buildup of plaque in arteries.

BENEFITS TO FLORIDA'S ECONOMY

- More than 150,000 people in the U.S. held jobs in nanotechnology in 2008, according to the National Nanotechnology Initiative. By 2015, that number is expected to grow to 800,000.
- According to financial analysts at RNCOS, the global nanotechnology market is expected to grow 19 percent by 2017.
- Cientifica Ltd. estimates that nearly a quarter of a trillion dollars will be invested in nanotechnology by 2015.

FAST FACT

A nanometer is one-billionth of a meter. National Geographic describes the size of a nanometer as "the amount a man's beard grows in the time it takes him to lift a razor to his face."

MAJOR COMPANIES IN THE INDUSTRY

- Dais Analytic
- Draper Labs
- Lockheed Martin
- NanoPharma
- Nasa
- Viagene

COLLEGE OF INNOVATION AND TECHNOLOGY

Advanced Technology

BIG DATA ANALYTICS

Big Data Analytics is the discipline of applying advanced analytic techniques to data sets of extreme size, diversity, and complexity. With the advent of social media and the digitization of every type of information imaginable, the presence of Big Data throughout industry is growing exponentially. Advanced technology now allows organizations to extract profitable information from previously unstructured data sources such as blogs, Tweets, images, and audio. The Big Data Analytics program in the Advanced Technology Department will give you the ability to design systems that manipulate and analyze Big Data in near real time, bringing the world to your fingertips.

APPLICATION AND RESEARCH

- Identifying new ways to manage volume, variety, and velocity of Big Data to drive growth.
- Developing computing models to predict behaviors, trends and outcomes.
- Publishing best practices on using the cloud as a resource for Big Data.
- Creating a knowledge repository on applied statistical analysis, scalable design, and Big Data security.

EXAMPLES OF TECHNOLOGY

- Travelocity applies look-alike modeling, next-best-offer analysis, and recommendation engines to promote customized offers to customers based on their profiles.
- Morgan Stanley now uses Hadoop, an open source framework that supports Big Data applications, to analyze larger volumes of investments with better results.
- Ford is tracking driving behaviors, reducing accidents, and managing wear and tear with its hybrid Fusion model, which produces up to 25 GB of data per hour.

BENEFITS TO FLORIDA'S ECONOMY

- Gartner, a leading IT research company, predicts 4.4 million jobs will be created by 2014 around Big Data.
- The consulting firm McKinsey & Company calculates that the U.S. faces a shortage of 140,000 to 190,000 workers with deep analytical skills, as well as 1.5 million managers and analysts who can interpret Big Data.
- Another McKinsey & Company study found that Big Data represents a potential $300 billion value to the U.S. healthcare industry, and a 60 percent increase in operating margins among retailers.

FAST FACTS

Worldwide data will grow 800 percent in the next five years.

5,300,000 Tweets are sent every minute, or 97,000 Tweets per second.

MAJOR COMPANIES IN THE INDUSTRY

- Adobe
- Amazon
- Citrix
- EMC
- Facebook
- Google
- IBM
- Intuit
- Microsoft

COLLEGE OF INNOVATION AND TECHNOLOGY

Advanced Technology

CLOUD VIRTUALIZATION

Cloud virtualization is a powerful new field in information technology that is creating a major paradigm shift across all industries. By providing users with on-demand access to a pool of IT services on "the cloud," virtualization allows organizations to dramatically reduce computing costs while optimizing performance. The global transition to cloud computing requires specially trained cloud architects, software engineers, systems administrators, service developers, analysts, and sales professionals. The Cloud Virtualization program in the Advanced Technology Department provides hands-on programming experience and instruction on multiple platforms to equip you with the skills to lead in the new era of cloud computing.

APPLICATION AND RESEARCH

- Creating new technology components for deployment in the cloud.
- Designing system architecture for virtualization infrastructures that are scalable and secure.
- Defining best practices for managing cloud-based systems.
- Developing solutions for immediate implementation in the workplace.
- Quantifying cost savings and monitoring new trends to develop the knowledge base on cloud computing.

EXAMPLES OF TECHNOLOGY

- High-performance processing via the cloud now supports 3-D modeling and training simulations.
- Clinicians can compare cell samples to image databases on the cloud for faster diagnosis.
- The supply chain management sector is using the cloud for collaborative sourcing and procurement.

BENEFITS TO FLORIDA'S ECONOMY

- Cloud computing is expected to become a $240 billion industry by 2020, according to Forrester, a leading IT research firm.
- In 2012, 6.7 million jobs were created by the transition to cloud computing. The research firm IDC predicts that job creation will rise to 13.8 million by 2015. The same study concluded that 62 percent of IT leaders polled anticipate that some or all of their IT operations will be cloud-based in the long term.
- *Forbes* reports that the federal government is currently deploying a cloud-based community, which is expected to provide $20 billion in cloud computing services to over 25 agencies.

FAST FACT

Intel reports that a new server is added to the cloud for every 600 smartphones or 120 tablets.

MAJOR COMPANIES IN THE INDUSTRY

- Amazon.com
- Apple
- AT&T
- CISCO
- HP

COLLEGE OF INNOVATION AND TECHNOLOGY

Advanced Technology

HEALTH INFORMATICS

Health informatics is a fast-growing discipline that combines healthcare management and information science to improve patient care. Acquiring and analyzing health and biomedical data aids in preventing medical errors, tracking disease, evaluating the quality of hospitals, and expediting clinical research. The Health Informatics program in the Advanced Technology Department offers a dynamic, interdisciplinary course of study with hands-on instruction from industry experts to prepare you for a career in improving human health.

APPLICATION AND RESEARCH

- Developing decision support tools for healthcare, biomedical, and pharmaceutical industries.
- Evaluating methods for making health information accessible to consumers.
- Translating research into solutions for immediate implementation in hospital and clinical settings.
- Advising industry leaders on compliance requirements and data security as new health information legislation takes effect.
- Publishing case studies on effective health informatics systems and quantifying benefits and challenges for informatics implementation.

EXAMPLES OF TECHNOLOGY

- Global disease monitoring systems use informatics for early detection.
- The new science of bioinformatics is advancing the field of DNA sequencing.
- Innovative enterprise software is in demand to acquire, validate, secure, and analyze informatics.
- A new focus on integrating consumer preferences is on the horizon for customizable care.

BENEFITS TO FLORIDA'S ECONOMY

- According to a recent survey by Burning Glass, a labor market analytics firm, job postings for healthcare informatics jumped 36 percent between 2007 and 2011, versus a nine percent increase for all healthcare jobs, including nursing.
- The Bureau of Labor Statistics estimates that employment in health informatics will increase by 21 percent by 2020. BLS also states that demand will grow as the population ages and needs more medical tests and treatments, creating a higher volume of records to manage.
- The Health Information Technology for Economic and Clinical Health (HITECH) Act of 2009 mandated the switch to electronic health records, with financial incentives for early adopters.

FAST FACT

94 percent of all pharmacies are now actively e-prescribing using advanced technologies in health informatics.

MAJOR COMPANIES IN THE INDUSTRY

- Availity
- Cerner Corp
- McKesson Technology Solutions
- Siemens Healthcare
- Vitera Healthcare Solutions

COLLEGE OF INNOVATION AND TECHNOLOGY

Computer Science and Information Technology

CYBER GAMING

Cyber Gaming is an interdisciplinary concentration that applies the rigor of computer science to the creative challenges of game development. With a core curriculum in computing, mathematics, and science, students will combine advanced technical skills with training in the visual arts to develop innovations in digital gaming. The Cyber Gaming program in the Computer Science and Information Technology Department prepares you not only for careers in the $70 billion professional games industry, but also for related fields such as healthcare simulation, scientific visualization, and other computing professions.

APPLICATION AND RESEARCH

- Advancing programmable artificial intelligence and augmented reality interfaces.
- Creating a knowledge repository on game physics, computer graphics, hardware advancements, and other topics.
- Developing game-based behavioral modeling for commercial use.
- Identifying trends in "gamification" across education, healthcare, and government sectors.

EXAMPLES OF TECHNOLOGY

- Therapeutic and rehabilitative video games are currently used to treat autism, stroke, visual impairment, and cognitive disabilities.
- Serious game development has been utilized by the military to train personnel in armored vehicle operation.
- Simulated response scenarios are already in place for disaster preparedness and logistics industries.
- Monsanto recently incorporated online games into their wellness program to promote employee health and performance.

BENEFITS TO FLORIDA'S ECONOMY

- Consumers spent $20.77 billion on video games, hardware, and accessories in 2012.
- The research firm Gartner predicts that game sales will reach $112 billion by 2015, with mobile gaming as the fastest-growing segment of the market.
- 53,000 digital game personnel were employed in California in 2009, versus 2,400 in Florida.

FAST FACTS

- 67 percent of U.S. households play videogames.
- 45 percent of all players are women, with twice as many adult women as boys aged 17 or younger.

MAJOR COMPANIES IN THE INDUSTRY

- Activision
- Artix Entertainment
- Disney Interactive Studios
- Electronic Arts
- Rockstar Games

COLLEGE OF INNOVATION AND TECHNOLOGY

Computer Science and Information Technology

INFORMATION ASSURANCE AND CYBER SECURITY

Information Assurance and Cyber Security is the profession of keeping digital information safe from cyber crime, espionage, and terrorism. Cyber security experts are in high demand to protect institutional data from attack, keep sensitive data confidential, and set systems protocols that comply with policies and regulations. In the Information Assurance and Cyber Security program in the Computer Science and Information Technology Department, you will design systems and strategies for safeguarding information and gain real world experience in preventing attacks to prepare you for a career as a sought-after cyber security professional.

APPLICATION AND RESEARCH

- Developing advanced programming for data encryption, asset identification, and security engineering.
- Creating a knowledge repository on business continuity, threat assessment, vulnerability gap analysis, disaster recovery, and other topics.
- Advising on legal theory and new developments in regulation and policy.
- Offering executive symposia on business management and information assurance.

EXAMPLES OF TECHNOLOGY

- R&D firm SRI International and Georgia Tech partnered to develop BLADE, a drive-by download immunization system funded by the NSF and the U.S. Army.
- GridCOM Technologies is developing "quantum encryption" technology that uses photons to produce random encryption keys for electric utility companies.

BENEFITS TO FLORIDA'S ECONOMY

- *The Washington Post* reports that the Defense Department intends to spend $23 billion on cyber security over the next five years.
- Burning Glass, a labor market analytics firm, reports that listings for cyber security positions rose 73 percent between 2007 and 2012, 3.5 times faster than postings for all computer jobs. Meanwhile, Reuters has reported a possible labor shortage of up to 40,000 cyber security professionals.
- U.S. companies will raise outlays on computer security to an estimated $89 billion in 2013, more than double the 2006 level, according to the Ponemon Institute.

FAST FACT

The FCC estimates that cyber crime costs the U.S. more than $1 trillion per year.

MAJOR COMPANIES IN THE INDUSTRY

- Fidelity National Information Services
- Harris Corporation
- Northrop Grumman Corp.
- Terremark
- Ultimate Software

COLLEGE OF INNOVATION AND TECHNOLOGY

Science & Technology Management

LOGISTICS

Logistics focuses on the transportation and storage of goods to ensure their timely delivery to the consumer. Logistics professionals possess expertise in fleet management, warehousing, transportation economics, international trade, and communications. To meet the growing needs of major global industries, the Logistics program in the Science Department will train you to combine data-driven analysis with business know-how so that you can always deliver.

APPLICATION AND RESEARCH

- Improving logistics efficiency using algorithm-based forecasting.
- Engineering reverse logistics to maximize reuse of products and materials.
- Developing software and IT for enterprise warehousing and fleet management.
- Designing integrations systems for third-party carriers.
- Calculating price negotiations for different aspects of transportation.

EXAMPLES OF TECHNOLOGY

- Shippers are using cloud computing to see their freight lane costs and then establish benchmarks for better decision-making.
- Volvo installed its own proprietary software on laptops to create a mobile computing solution for diagnostic testing and maintenance of its fleet.
- Clorox migrated to an enterprise resource planning system in 2011 to optimize truckloads and cut costs.

BENEFITS TO FLORIDA'S ECONOMY

- According to the Department of Labor, the logistics industry will generate 1.1 million jobs by 2016.
- The 2011 Florida Trade and Logistics Study identified the potential for the creation of 143,000 jobs in the state's logistics sector.
- Currently, U.S. educational institutions generate only 75,000 logistics professionals annually, enough to fill only 28 percent of the estimated available jobs.

FAST FACT

Over the 2010 holiday season, UPS delivery trucks collectively covered 500,000,000 miles of travel -- farther than the distance to Jupiter.

MAJOR COMPANIES IN THE INDUSTRY

- Ceva Logistics
- CSX Intermodal
- R+L Carriers
- Ryder Systems
- Saddle Creek Logistics Services

COLLEGE OF INNOVATION AND TECHNOLOGY

Science & Technology Management

MATERIALS AND SUPPLY CHAIN

Supply chain management covers all aspects of the life cycle of raw materials as they are converted into finished goods and delivered to the consumer. Supply chain managers and engineers oversee the sourcing, production, procurement, storage, and delivery of materials and goods, always striving to conserve energy and commodities for maximum efficiency. The Materials and Supply Chain program in the Science Department will give you hands-on experience in analyzing supply chain efficiency across industries, developing systems integration technology, and working side-by-side with business leaders to ensure that no matter the challenge, you can always meet demand.

APPLICATION AND RESEARCH

- Developing software and IT for enterprise inventory control.
- Quantifying benefits and risks for supply chain processes that rely on SAP data-processing.
- Configuring distribution networks and strategies.
- Engineering logistical systems to lower costs and optimize operations.
- Controlling the flow of information on inventory, demand forecasts, and collaborations.

EXAMPLES OF TECHNOLOGY

- TradeCard, Inc., an American software company, developed a platform to connect over 10,000 buyers, suppliers, and financial institutions in order to automate supply-chain finance transactions.
- Toyota and MIT pioneered the model of lean manufacturing and its attendant tools, including Value Stream Mapping, pull systems, error-proofing, and Total Productive Maintenance.

BENEFITS TO FLORIDA'S ECONOMY

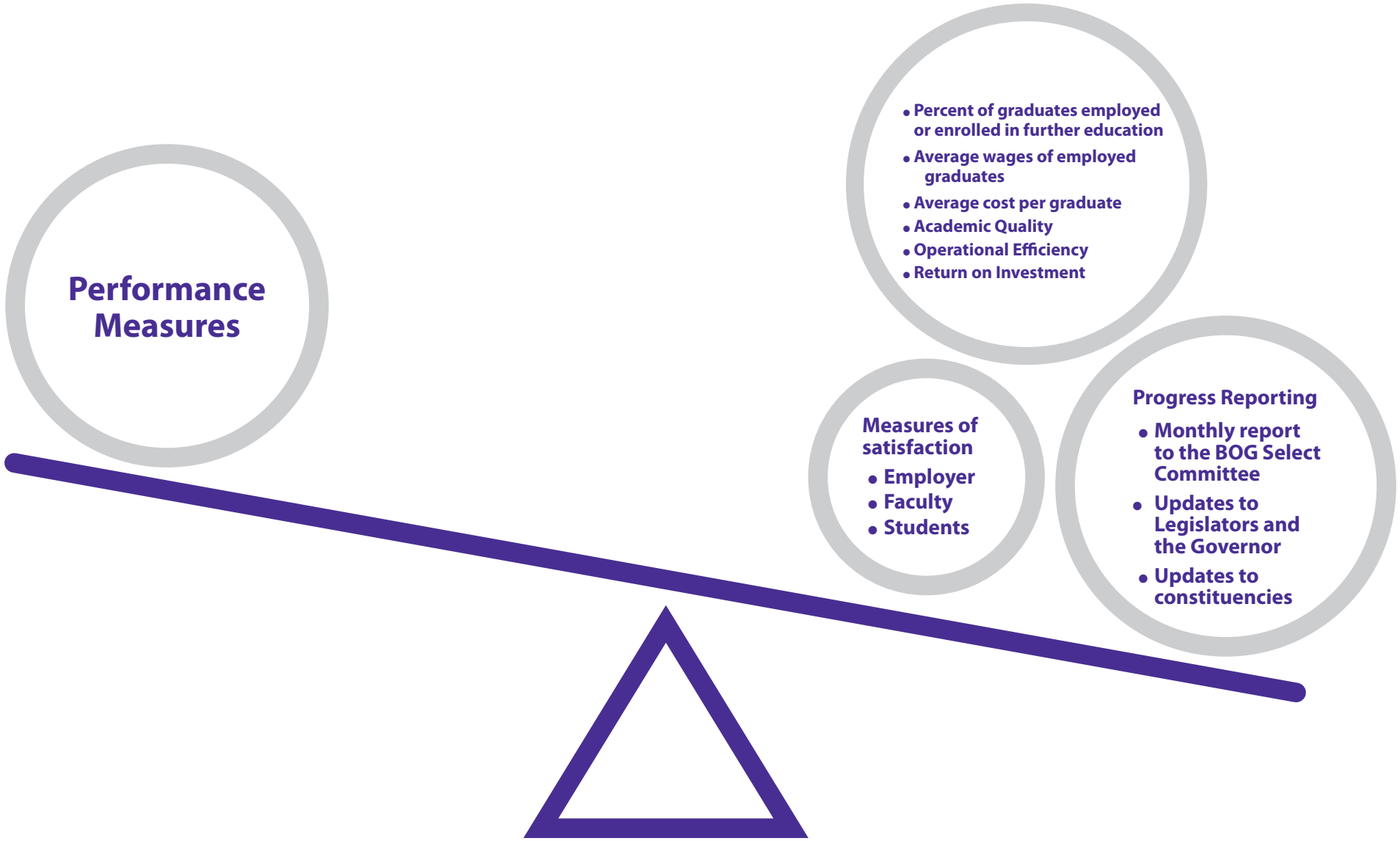
- The market for global supply chain management software is expected to reach $11 billion by 2017, according to research firm Research and Markets.
- 90 percent, or $452 billion, of all Florida exports come from manufacturing.
- The ELMO project (Enforcement Link to Mobile Operations), introduced at PortMiami in January 2012, helped PortMiami record some of the fastest inspection turnaround times in the nation.
- PortMiami is set to double cargo traffic in 2015 and bring 33,000 new jobs to the region, including technology jobs to manage the uptick in cargo.

FAST FACT

According to the Council of Supply Chain Management Professionals (CSCMP), it costs approximately .37 to deliver a box of cereal to the U.S. consumer's breakfast table.

MAJOR COMPANIES IN THE INDUSTRY

- 3M
- Cardinal Health
- Johnson & Johnson
- Kimberly-Clark
- Samsung


Performance Measures
• Percent of graduates employed or enrolled in further education
• Average wages of employed graduates
• Average cost per graduate
• Academic Quality
• Operational Efficiency
• Return on Investment
Measures of satisfaction
• Employer
• Faculty
• Students
Progress Reporting
• Monthly report to the BOG Select Committee
• Updates to Legislators and the Governor
• Updates to constituencies

The purpose of Florida Polytechnic is to produce "ready to work" graduates for key industries that are or will locate in the state of Florida. Florida Polytechnic will affirm our success and relevancy to ensure our programs remain current and focused on areas of strategic emphasis. We are committed to measuring academic quality, placement of graduates, operational efficiency, and return on investment. We will use the findings for improvements and growth.

In response to Board of Governors requirement to select three metric goals included in the 2012-2025 System Strategic Plan, Florida Polytechnic intends to measure:

- Bachelor's degrees in areas of strategic emphasis.
- Graduate degrees in areas of strategic emphasis.
- Percentage of students participating in identified community and business engagement activities.

In addition to the BOG requirement, Florida Polytechnic will measure:

- Our success at achieving SACS accreditation and programmatic accreditation –
  - Florida Polytechnic is progressing along an aggressive path to obtain SACS accreditation by December 2016, as mandated by the Florida Legislature. Our application to SACS will be submitted following entrance of our charter class of students. After SACS accreditation is received, Florida Polytechnic will pursue programmatic accreditation for its programs of study.
- Our success with placing graduates in jobs.
- Satisfaction (Student, Faculty and Employee)
- FTE enrollment growth.
- FTE enrollment share in STEM fields.
- Development of new programs in STEM fields.
- Progress implementing the campus facilities master plan.
- Use of shared services model.

Identify and Measure Desired Learning Outcomes

Our success with preparing students with the skills and values needed to compete in a global and ever-changing environment will be measured through identified learning outcomes:

- Reasoning and Problem Solving. Students will apply problem-solving skills to real-world contexts and/or simulations, and use logic and reasoning to draw inferences and/or conclusions.
- Communication. Students will demonstrate teamwork and interpersonal communication skills, as well as effective oral and written communication skills.
- Diversity and World Perspective. Students will demonstrate understanding, respect and value for differences in ideas, cultures and experiences in local, national and global contexts.
- Social Responsibility. Students will demonstrate understanding and value for acting from collective responsibility and accountability for the welfare of society and stewardship of the environment.
- Ethical Behavior. Students will demonstrate understanding and value for thinking and acting from principles of integrity and personal responsibility for one's actions.
- Application of Technology. Students will integrate and/or create innovative technology applications to address real-world problems and tasks.
- Inquiry and Applied Research. Students will raise questions, engage in a process of inquiry, collect and analyze data, draw conclusions and identify implications for further inquiry or practice.
- Interdisciplinary Thinking. Students will identify and make connections among academic disciplines in the exploration, examination of or resolution of a real-world problem.
- Civic Engagement. Through the capstone experience students will demonstrate value for civic involvement and skills in change agency to promote educational, social, and economic factors that enhance quality of life.

Listen to Our Partners and Constituents

Florida Polytechnic will solicit information from our business and industry partners on an ongoing basis through such means as the Industry Summit, discipline-specific advisory boards, and evaluation of student interns, and placements of graduates.

Progress Reporting

- Monthly report to the BOG Select Committee
- Updates to Legislators and the Governor
- Updates to constituenties

The campus is conveniently located just off Interstate 4 in Lakeland, Florida, in Polk County.

Construction is currently underway on our state-of-the-art Innovation, Science and Technology Building, designed by world-renowned architect Dr. Santiago Calatrava. Upon completion in June 2014, the 160,000 square-foot building will feature:

- classrooms
- auditoriums
- research/teaching labs
- meeting rooms
- offices for faculty and academic administration
- 26,000 square-foot common-use area

Plans for a wellness center to support the student population with student health and wellness services and recreational facilities are being developed. The structure will be a multi-use facility to support the initial student population by providing living quarters, food services, laboratory space and classrooms. Additional facilities will be added in the future to meet growth in enrollment.

Florida Industrial and Phosphate Research Institute

In 2012, the Legislature re-established The Florida Industrial and Phosphate Research Institute (FIPR Institute) within Florida Polytechnic University. The FIPR Institute has always emulated the polytechnic model with emphasis on applied research and technology development. The Institute was established originally by the Florida Legislature in 1978 to address concerns about the environment and public health, to help the public understand the extent and scope of any problems, and to find solutions. Researchers at the Institute are among the talented faculty being assembled by Florida Poly.

The Institute's role is to conduct scientific investigations that will give lawmakers, regulators, members of the industry, environmentalists and the general public the information they need to make decisions relating to issues of industrial influence or origin. The Institute's mission was expanded in 2010 to include industries other than the phosphate industry and to encourage commercialization of its research products and intellectual property.

Its research areas include Mining and Beneficiation, Chemical Processing, Reclamation, and Public & Environmental Health. Scientists and engineers throughout the world apply for FIPR Institute grants to conduct phosphate-related studies supporting the mission of the Institute: improving the environment, protecting public health and increasing mining and processing efficiency. FIPR Institute staff biologists, engineers and chemists also conduct in-house research.

The FIPR Institute's phosphate research is funded with a portion of the phosphate severance tax. Non-phosphate related research must be funded through other sources.

To facilitate sharing information it generates and collects, the Institute hosts technical conferences, workshops and meetings, operates a library that is open to the public, and conducts a kindergarten-Grade 12 education program. As the information program expands the Institute is always looking for new ways to share the wealth of information is contains.

Polk State College / Florida Polytechnic Campus

Board of Trustees

The charter Board of Trustees consists of 11 members. Six members were appointed by Governor Rick Scott and five were appointed by the Board of Governors, which oversees the State University System of Florida. Board members come from all areas of the state, and represent diverse business and educational interests and expertise. Members include:

- Robert H. Gidel, Chair – Managing Partner, Liberty Capital Advisors, LLC
- R. Mark Bostick, Vice Chair – President, Comcar Industries
- William M. Brown – President and Chief Executive Officer, Harris Corporation
- Sandra Featherman, Ph.D., - President Emeritus, University of New England
- Richard Hallion, Ph.D., - Aeorspace Analyst (retired)
- Scott Hammack – Chief Executive Officer, Prolexic, Inc.
- Kevin Hyman – Executive Vice President, Bright House Networks
- Rob MacCuspie – Assistant Professor, College of Engineering Director of Nanotechnology & Multi-functional Materials
- Frank T. Martin – Senior Vice President, Transportation, Sales and Strategy, Atkins North America
- Robert W. Stork – Founder and Chief Executive Officer, Communications International, Inc.
- Don Wilson – Partner, Boswell & Dunlap, LLP
- Rob MacCuspie, Ph.D., Assistant Professor, College of Engineering; Director of Nanotechnology and Multi-functional Materials

Florida Polytechnic Foundation

The Foundation Board of Directors is comprised of 11 business, community and industry leaders and includes:

- Cindy Alexander, Chair – Community Leader and Fundraiser
- Loretta Sanders, Vice Chair – Community and Volunteer Board Leader
- Ralph Allen – Chairman of the Board, Allen & Company
- Ron Clark – Attorney, Clark, Campbell & Lancaster
- Ford Heacock III – President, Heacock Insurance
- Rob Kincart – Scientist, A-C-T Environmental
- Ingram Leedy – Founder and President, Elephant Outlook
- Cliff Otto – President, SaddleCreek Corporation
- Dr. Sijo Parekattil – Director of Robotics Surgery and Urology, Winter Haven Hospital
- Shelley Robinson – Community Leader and Volunteer
- Victor B. Story, Jr. – President, the Story Companies

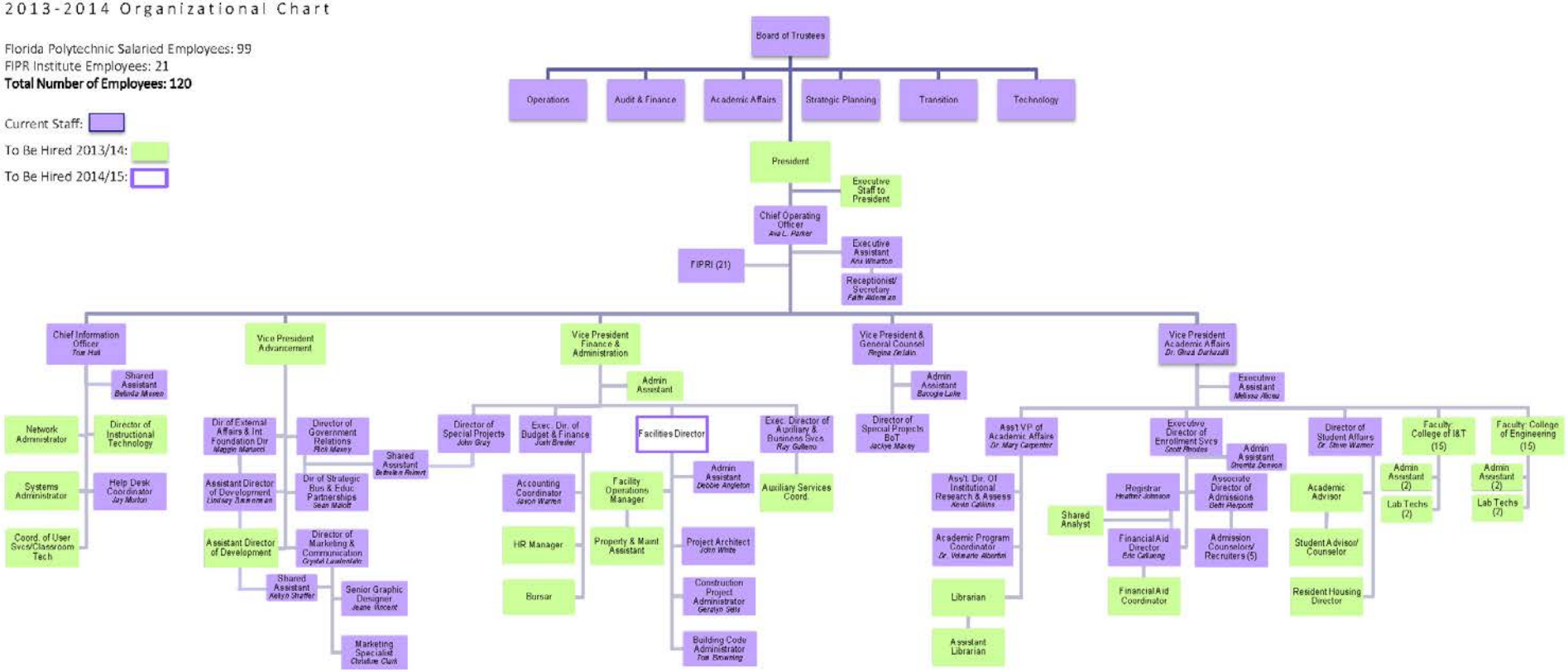
FLORIDA POLYTECHNIC UNIVERSITY

October 24, 2013 | Florida Poly Org Chart v3.0

2013-2014 Organizational Chart

Florida Polytechnic Salaried Employees: 99
FIPR Institute Employees: 21
Total Number of Employees: 120

Current Staff:
To Be Hired 2013/14:
To Be Hired 2014/15:



Ava L. Parker

Ava L. Parker serves as the Chief Operating Officer. She was appointed to this position by the Board of Trustees in November 2012 and comes to the position with a wealth of governance experience in the Florida State University System. She was appointed by Governor Jeb Bush to the inaugural Board of Trustees for the University of Central Florida where she served for two years. After the creation of the Board of Governors of the State University System, Governor Bush appointed Parker as an inaugural member of the BOG for one term, and she was reappointed by Governor Crist and Governor Scott. She served on the BOG for 10 years and led the board as the chairman, vice chairman and chair of the Facilities Committee. In addition to her university governance experience, Parker has also served as General Counsel for Edward Waters College, a SACS accredited, private non-profit institution affiliated with the AME Church. She is a partner in the law firm of Lawrence & Parker PA and the president of Linking Solutions, Inc. a consulting firm that provides training, program management and back office support. Parker is a graduate of the University of Florida, College of Journalism and the University of Florida College of Law.

Ghazi Darkazalli, Ph.D., PE

Ghazi Darkazalli, Ph.D., PE serves as Vice President of Academic Affairs. Previously, he served as president of Marian Court College. While president, Darkazalli converted the college from a two-year degree granting institution to a baccalaureate approved and accredited college. He also served as the dean of Business, Science, Engineering and Advanced Technology Institute at MassBay Community College and a faculty member at the University of Texas where he taught both undergraduate and graduate courses and directed the University Solar Energy Research Facility. Darkazalli has also had a successful corporate career. He was president, founder, and co-owner of GT Solar Technologies, solar and semiconductor equipment and technology provider. He also served as vice-president and general manager at Spire Corporation. Under his management, Spire Corporation became the leader of photovoltaic equipment and technology supplier worldwide. In addition, At Exxon Solar Power Corporation, he was director of the Systems Division where he managed solar energy projects under contract with NASA, the World Health Organization and the U.S. Department of Energy. Darkazalli received his Ph.D. in Mechanical Engineering from the University of Massachusetts, Amherst and is a registered Professional Engineer. He is a Fellow Member of the American Society of Mechanical Engineering, a member of numerous professional societies, and has published over 50 technical reports and papers.