State University System of Florida
Methodology for Determining Areas of Programmatic Strategic Emphasis
June 19, 2008

An essential component of the Forward by Design strategic planning initiative adopted by the Board of Governors (BOG) at its December 2007 meeting is the need to update the current State University System (SUS) of Florida Strategic Plan. Many of the initiative's projects are predicated on assumptions and forecasts underlying the goals of the strategic plan. Therefore, the BOG directed staff to reexamine assumptions related to enrollments, degree production, and targeted degree programs. This document focuses on reevaluating areas of programmatic strategic emphasis that provide the framework for targeting degree programs.

State University System of Florida Strategic Plan for 2005-2013 – Methodology

The Board of Governors, State University System of Florida Strategic Plan for 2005-2013 establishes specific goals related to meeting statewide professional and workforce needs. The Strategic Plan identifies the following four primary categories of programmatic strategic emphasis for the targeting of degree programs:

- Critical Needs: Education
- Critical Needs: Health professions
- Economic Development: Emerging Technologies
- Economic Development: High-Wage/High-Demand Jobs

The category of *Economic Development: Emerging Technologies* is divided further into six broad subcategories that include most engineering and science programs, along with other programs which address specific technologies or applications of a technology. The six subcategories are:

- Mechanical science and manufacturing
- Natural science and technology
- Medical science and technology
- Computer science and technology
- Design and construction
- Electronic media and simulation

The State Board of Education annually approves a critical needs list in teacher education, which is the primary source for identifying programs to be targeted in the *Critical Needs: Education* category. The *Critical Needs: Health Profession* degree program list is compiled from reports by various stakeholder groups such as the Florida Hospital Association, the Florida Center for Nursing, and the Florida Department of Health.

The areas of emphasis associated with the *Economic Development: Emerging Technologies* category are based largely upon work of The Advisory Group on Emerging Technologies (Advisory Group), which was organized in 2001 to support a university-level program-targeting initiative for the Workforce Estimating Conference. The Advisory Group included top university researchers and high-tech industry representatives from around the state. In developing its list of areas of emphasis for emerging technologies, the Advisory Group assessed the state's strategic advantages and disadvantages for high-tech business and industry; identified technology areas in which the state already had a critical mass or leadership position; and then focused on programs that leveraged or mitigated those factors. It is important to note that at least three areas which the Advisory Group recommended targeting in 2001 have since emerged as important industry sectors in Florida, as determined by industry growth and/or state investments. These include biotechnology, alternative energy, and digital arts/media. The original areas of emphasis and the list of associated targeted programs were updated in 2005 for the current BOG strategic planning document.

Economic Development: High-Wage/High-Demand programs were determined following an analysis of historical salary data and labor market forecasts. The Agency for Workforce Innovation (AWI) conducts employer surveys to determine the projected demand and salary levels for occupations throughout Florida. These occupations are then cross-walked with educational codes to determine the level of education that is typically needed for each one. At the associate degree level, this methodology is adequate to link degree programs with occupations and average graduate earnings. However, a one-to-one linkage between degree program and occupation is not possible with most university-level programs, because graduates from such programs can be found employed in a wider range of occupations. For this reason, Florida Education and Training Placement Information Program (FETPIP) data were used to examine the actual earnings of SUS graduates by degree program, and then those programs meeting the high-wage threshold were compared to the AWI list of high-demand occupations.

Updating Areas of Programmatic Strategic Emphasis and Targeted Degrees - Methodology

The methodology used to reevaluate assumptions and forecasts that provide the framework for targeting degree programs is relatively simple, but still follows the logic of the program targeting process that took place in 2001 and 2005.

1) Build on the recommendations of Florida's leading economic and workforce councils (Key Councils) (Table 1).
2) Merge the areas of interest and emphasis from the Key Councils into a single list and evaluate to determine appropriate program areas for strategic emphasis by the BOG (Table 2).
3) Identify academic program clusters that support the updated BOG areas for strategic emphasis (Table 3).

BOG staff reviewed the current reports and data of Key Councils in Florida. These Key Councils include Enterprise Florida, Inc., Workforce Florida, Inc., the Council of 100, the Florida Chamber of Commerce, and the Agency for Workforce Innovation. Staff determined while reviewing these reports that the issue of emerging technologies had been adequately addressed, so it

was not necessary to reconvene a separate advisory group on emerging technologies. Table 1 lists areas of interest identified by these organizations. Other organizations whose reports and data informed this process included the Florida Hospital Association, the Florida Center for Nursing, the Florida High-Tech Corridor, the Florida Department of Education, and the U.S. Department of Labor (USDOL).

TABLE 1. Areas of Interest from Key Florida Economic and Workforce Councils (Key Councils)

Enterprise Florida Industry Sectors & Roadmap to Fl. Futures	Workforce Florida Targeted Industries	Council of 100 2006 Report	Chamber of Commerce Cornerstone Report	Florida High Tech Corridor
• Life Sciences • Information Technology • Aerospace & Aviation • Homeland Security/Defense • Financial/Profes-sional Services • Manufacturing • Emerging Technologies ---------- • Talent • Sustainable Development • Innovation Economy • Emerging Technologies • Global Hub • Economic Diversification	• Manufacturing • Finance & Insurance • Wholesale Trade • Information Industries • Professional, Scientific, & Technical Services • Business Services • Corporate Headquarters • Construction • Hospitality	• Education • Income, Jobs, & Business Climate • Growth Management & The Environment • Hurricane Readiness & Costs • Attainable Housing • Rising Health Care Costs • Energy Dependence & Affordability • Globalization	• Research and Development • Technology **AWI/USDOL 4-Year Degree Occupational Forecast** • Medical Services • Information Technology • Business • Education • Engineering/ Technology • Arts/ Communication • Sciences	• Agritechnology • Aviation & Aerospace • Digital Media/Interactive Entertainment • Financial Services • Information Technology • Life Sciences/Medical Technologies • Microelectronics/ Nanotechnology • Modeling, Simulation, and Training • Optics and Photonics • Sustainable Energy

Review of the Key Council reports and individual lists generally reaffirmed relevancy of existing areas for strategic emphasis in the State University System Strategic Plan. However, it was apparent that the areas needed to be updated to improve alignment with the state's economic and workforce needs, so they have been revised as described in the following paragraphs. The review also identified two new potential areas of strategic emphasis, which are proposed for consideration by the BOG. These are *Security and Emergency Services* and *Globalization*.

Proposed Areas of Programmatic Strategic Emphasis for Strategic Plan Update

Critical Needs: Education is a category based upon the Florida State Board of Education list of critical teacher shortage areas for 2008-2009 (see below). This list can change from year to year, but typically remains the same with only one or two additions/deletions. It is also important to consider this list within the broader context of the overall teacher shortage. School districts reported that 16,063 teachers left the classroom in 2006-07, and, in the last three years, the number of new fall hires ranged from 20,000 to 22,000 to offset attrition and growth. These data indicate a consistent demand for teachers in all specialties, and, for this reason, all teacher education programs were included in the targeted list associated with the SUS 2005-2013 strategic plan.

State Board of Education's list of critical teacher shortage areas for 2008-2009:

- Middle and high school level mathematics
- Middle and high school level science
- Middle and high school level English/language arts
- Reading
- Exceptional student education programs (ESE)
- English for speakers of other languages (ESOL)
- Foreign languages
- Technology education/industrial arts

Critical Needs: Health Professions is a category based primarily upon workforce projections by The Florida Hospital Association and the Florida Agency for Workforce Innovation. These organizations have identified the healthcare professions that exist as critical shortage areas in Florida. In addition, a shortage of nursing faculty has been cited by both of these organizations, the Florida Center for Nursing, and the Florida Department of Health as a critical need occupation because of the direct impact on registered nurse education programs. Those professionals, prepared in state university programs, are listed below. In these SUS programs, a direct one-to-one link can be made with occupational titles.

- Registered Nurse
- Respiratory Therapist
- Physical Therapist
- Radiology Technician
- Occupational Therapist
- Medical Technologist
- Pharmacist
- Orthotist/Prosthetist
- Epidemiology
- Athletic Training
- Medical Scientist
- Veterinarian
- Physician Assistant
- Nursing Faculty

A ***Science, Technology, Engineering, and Math (STEM)*** category is proposed as a replacement for the *Economic Development: Emerging Technologies* category. The six subcategories of *Economic Development: Emerging Technologies* as currently configured in the SUS Strategic Plan encompass many degree programs that overlap into other subcategories. For this reason, it was determined that little is gained by continuing to differentiate using six subcategories. The broad category titled STEM will still encompass programs associated with the six current subcategories listed below. Use of the term STEM also aligns the SUS categories with language being used in national research and academic targeting efforts.

- Mechanical science and manufacturing
- Natural science and technology
- Medical science and technology
- Computer science and technology
- Design and construction
- Electronic media and simulation

Economic Development: Regional Workforce Demand is proposed as a category to replace the current *Economic Development: High-Wage/High-Demand* category. Examples of academic programs associated with the current category *Economic Development: High-Wage/High-Demand* were derived using the same methodology as before, using FETPIP and occupational forecast data. However, based on further data analysis and feedback from universities, the high-wage/high-demand category appears not to be particularly relevant as a target category at the state level and also fails to adequately capture regional employer demand for a number of reasons:

- A direct one-to-one correlation between degree program and occupation is difficult to make for most university majors, and FETPIP data indicate that graduates from all programs can be found working across the various state industry sectors.
- First-year wages are an insufficient indicator of the economic value of a degree. For example, education graduates' wages are above average the first year after graduation, but far below average after ten years. Life sciences graduates' wages are far below average the first year after graduation, but well above average after ten years. The real value of the life science bachelor degree is as a stepping-stone to graduate or medical school.
- Fields with high wages may not need additional "targeting" at all if the wages are high enough and institutions are able to charge sufficient tuition to pay for the programs. The wages provide the student incentive and the means to pay off loans incurred.
- Local conditions and wage levels vary considerably, making statewide classifications less useful.
- Many of the business-related majors are already heavily enrolled across the university system, and similar programs are also offered by independent institutions in response to student demand.

By adopting a regional workforce demand category, the BOG is directing universities to engage sufficiently with local industries and employers to identify academic programs in high demand. These programs will then be incorporated into

individual university compacts with the BOG based on a variety of criteria, including numbers of projected openings, importance to the local community/economy, difficulty filling vacancies, etc. It is anticipated that, to become "targeted," these programs should represent a relatively limited proportion of each institution's projected degrees. Identified programs could then be aggregated at the state level into an "employer demand" category.

Critical Need: Security and Emergency Services is proposed as a new category to address the needs of homeland security and disaster preparedness, which were identified by two Key Councils as important emerging areas of interest. This category will include degree programs associated with law enforcement and criminal justice, along with several related programs in other degree classifications. Although most of the programs in law enforcement and criminal justice are typically two-year degrees or less, there are a number of more advanced programs offered as baccalaureate and graduate degrees, such as Criminology and Criminal Justice Administration. By creating a specific area of emphasis, the BOG can recognize the importance of these programs that would not be included in other categories.

Economic Development: Globalization is more of an over-arching concept found in the various reports reviewed, rather than a specific industry or occupational area. Degree programs that assist in making the SUS globally competitive can be found throughout the system across many disciplines, especially within the sciences, engineering, and information technology programs. However, there are programs that directly support globalization through program graduates and focused research. Some of these programs have an international focus, such as international affairs, international business, international construction, international law, etc. Area studies and foreign language programs that focus on critical trade partners or foreign competitors would also fall under the broad umbrella of increasing globalization.

Comparison of Proposed BOG Areas of Programmatic Strategic Emphasis and Key Councils Areas of Interest

The following tables have been developed to demonstrate how the BOG Areas of Programmatic Strategic Emphasis address the economic and workforce needs of the state. Degrees programs that are identified are only illustrative examples of the types of programs that might become targeted and do not represent a comprehensive targeted program list. A targeted program list will be developed for each university as part of the compact negotiation process using the BOG areas of programmatic strategic emphasis as guidance. The lists for all universities can then be aggregated into a systemwide targeted degree program list.

The areas of specific interest identified by each Key Council in Table 1 were merged and reorganized into broader categories and subcategories. This revised list is now found in the first column of Table 2. The second column of Table 2 lists the newly proposed BOG areas of programmatic strategic emphasis that correlate most closely with Key Councils areas of interest. The table clearly illustrates the overlap between areas of programmatic strategic emphasis in meeting the needs of the state. Key Council areas of interest are most often associated with several BOG areas of emphasis.

TABLE 2. Update to BOG Areas of Strategic Emphasis		
Merged Key Councils Areas of Interests from Table 1	**Related BOG Areas of Programmatic Strategic Emphasis**	
Business & Global Economics • Financial Services • Professional Services • Hospitality	Regional Workforce Demand Globalization STEM Programs	
Sciences • Life Sciences • Biotechnology Mfg. • Scientific & Technical Services	Critical Health Professions STEM Programs Globalization	
Medical Services • Healthcare • Social Services	Critical Health Professions Regional Workforce Demand STEM Programs	Globalization Security& Emergency Services
Education	Critical Education Regional Workforce Demand	Globalization STEM Programs
Technology • Research and Development • Emerging Technologies	Regional Workforce Demand Globalization STEM Programs	Critical Health Professions
Sustainable Development • Energy • Environment	Regional Workforce Demand Globalization STEM Programs	
Information Technology	Regional Workforce Demand STEM Programs	Globalization
Disaster Management • Homeland Security • Hurricane Preparedness	Security& Protective Services Regional Workforce Demand Critical Health Professions	Globalization STEM Programs
Engineering • Aerospace/Aviation • Manufacturing • Construction	Regional Workforce Demand Globalization STEM Programs	Security& Protective Services
Arts/Communication/Interactive Entertainment	Regional Workforce Demand Globalization	STEM Programs

Table 3 identifies the types of state university programs that are encompassed by the proposed BOG Areas of Programmatic Strategic Emphasis. The majority of the programs listed in Table 3 prepare graduates to work in a wide variety of the occupations related to the Key Councils areas of interest (as well as numerous other industry areas). For example, mechanical and electrical engineers can be found working in engineering firms, construction, manufacturing, energy, information technology, and other industries. A biologist might be found working in biomedical manufacturing, healthcare, sustainable development, or disaster preparedness. In addition, emphasis should be placed on degree programs at all levels in the STEM disciplines because, in many high-tech industries that engage in research and development, professional employees and managers are typically graduates of master's and doctoral programs.

TABLE 3. EXAMPLES of Potentially Targeted Programs Related to BOG Areas of Programmatic Strategic Emphasis		
Critical Needs: Education		
Secondary Math Education	Foreign Language Education	English as Second Language
Secondary Science Education	Exceptional Student Education	All other Teacher Education
Secondary Language Arts Education	Trade and Industrial Education	
Critical Needs: Health Professions		
Nursing (RN, ANP, Faculty)	Orthoptics	Athletic Training
Respiratory Therapy	Occupational Therapists	Physician Assistant
Physical Therapy	Epidemiology	Medicine/Medical Scientist
Pharmacy	Medical Technology	Radiological Technology
Critical Needs: Security and Emergency Services		
Law Enforcement Administration	Criminology	Fire & Emergency Services Administration
Forensic Science	Computer Criminology	
Economic Development: Globalization		
Area Studies – Asia, Middle East,	International Relations	International Business
Area Studies – Latin America	International Law	International/Global Studies
Foreign Language – Critical	International Construction	
Economic Development: Regional Workforce Needs		
Accounting	Hospitality Management	Social Work
Business	Finance	Performing Arts
Urban and Regional Planning	Sport Business Management	

Science, Technology, Engineering, and Math (STEM)

Engineering Programs
- Aerospace Engineering
- Biological Engineering
- Chemical Engineering
- Electrical Engineering
- Mechanical Engineering

Physical Science Programs
- Physics
- Chemistry
- Materials Science
- Optical Science & Engineering
- Atmospheric Science
- Geology

Natural Science Programs
- Botany & Zoology
- Biology & Biochemistry
- Physiology & Genetics
- Marine Biology & Marine Science
- Microbiology & Cell Sciences

Environmental Science Programs
- Environmental Science
- Environmental Systems
- Forestry

Health Science Programs
- Gerontology
- Immunology
- Medical Technology
- Neuroscience
- Pharmacology
- Biostatistics

Construction Related Programs
- Architecture
- Civil Engineering
- Building Construction

Computational Science Programs
- Computer Science & Engineering
- Information Science & Technology
- Instructional Technology
- Software Engineering
- Mathematics and Statistics

Interactive Media & Simulation
- Digital Arts/Media
- Instructional Technology
- Modeling and Simulation