

**AC 2005-256: THE FLORIDA ADVANCED TECHNOLOGY EDUCATION
REGIONAL CENTER FOR MANUFACTURING EDUCATION, FL-ATE**

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The Florida Advanced Technology Education Regional Center for Manufacturing Education, FL-ATE

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Introduction

The Florida Advanced Technology Education Regional Center for Manufacturing Education (FL-ATE) was funded by the ATE program of the National Science Foundation (NSF) in the summer of 2004 after 2.5 years of planning. This regional center will focus on curriculum development, faculty professional development, and outreach activities focused on recruitment of students into Florida's two-year manufacturing and related technologies A.S., A.A.S., and certificate programs. FL-ATE is one of 30 funded ATE centers throughout the country focused on regional or national needs in traditional, redefined, or emerging advanced technologies.

One unique aspect of FL-ATE is that it has a strong partnership among three educational institutions. The Center has strong participant involvement at Hillsborough Community College (HCC) its administrative institution, St. Petersburg College (SPC), and the College of Engineering at the University of South Florida (USF), as well as at a number of very supportive affiliate community colleges. The region is defined by the state boundaries and the Center is challenged to meet the manufacturing and related technologies needs of a diverse industrial customer base that are, on average, small to medium in size with a skilled workforce. The manufacturing business sector in Florida employs more than 37 other of the 50 states, including Connecticut, Massachusetts and Missouri. This paper shares the guiding principles and specific goals of this newly formed NSF-ATE Center. It also outlines how the Center plans to meet its multifaceted challenges.

NSF-ATE Program Overview

The Advanced Technology Education (ATE) program at NSF is committed to developing the best practices in technician education and have these practices become standard operating procedures for educators throughout the United States. The program was initiated by congressional legislation in 1992 to increase the number of skilled technicians in "strategic advanced-technology fields" with in the nation and to improve the productivity of American industry. To accomplish this mission, NSF-ATE supports Centers and projects that utilize partnerships with industry, business, government, and other educational institutions to achieve improvements in one or more the ATE program goal areas. These interests include enhancement of educational programs for technicians and continued professional development for educators. In addition, the creation of curriculum and educational materials, technical expertise, student's laboratory experiences, and applied research are key elements of ATE's mission.

FL-ATE's Design

A successful Center award by NSF Advanced Technology Education program, NSF-ATE, within NSF's Division of Undergraduate Education, NSF-DUE, requires partnerships and proposal goals that are not typically developed within a College of Engineering. NSF-ATE welcomes university involvement when the funding is directed to education and training that primarily involves students that are not current engineering students. Projects that capitalize on engineering college resources to facilitate and promote engineering degree programs as they related to technical education "pipe-line" issues are encouraged. However, at this point in time less than 10% of these NSF-ATE funded Centers involve an Engineering College as an active partner. With these facts as background knowledge, FL-ATE's three founding institutions, Hillsborough Community College, St. Petersburg College, and the College of Engineering at the University of South Florida began in the fall of 2001, Center planning efforts by defining a set of Guiding Principles for FL-ATE.

Table 1 summarizes the precepts developed by the planning team. These guidelines were the result of several planning team meetings over a year's time period and at many different locations within the region. Team members included representatives of the manufacturing sector, the Department of Defense, the Society of Manufacturing Engineers, the Tampa Bay Area Manufacturing Association, Agree Inc., regional technical education program experts, and the Florida High Technology Council. With these principles in place, additional meetings and forums were conducted to develop a set of initial Specific Goals for FL-ATE as presented in Table 2. Upon completion of this activity, the team identified FL-ATE's Target Objective sets associated with the success of each Specific Goal. Finally, to close the planning Team's Center inception and design process, the connections among Guiding Principles, Specific Goals and Target Objectives were identified and recorded within a cross correlation matrix.

Table 1. FL-ATE Guiding Principles

- I. Foster and facilitate technical and professional advancement for manufacturing and related technology faculty.
- II. Provide educational support for manufacturing and relate technology courses and programs.
- III. Incorporate an active corporate advisory team into all center project and activity development activities.
- IV. Promote manufacturing careers and recognize exemplary manufacturing students and educators.
- V. Identify and monitor the manufacturing workforce needs.
- VI. Support training for an initial regional workforce for new technologies emerging from region's university and/or federally sponsored incubators.
- VII. Develop state of the art training and education materials.
- VIII. Disseminate educational materials and resources.
- IX. Encourage and nurture enrollment of under-represented students in manufacturing educational programs.

FL-ATE's Operational Strategy

This intensive pre-center planning and organizational effort and energy "paid off" in several ways. Of course, it terminated with a successful center proposal but there were several additional significant far-reaching benefits. Chief among these was the development of a total community sense of commitment to accomplish the goals established by the Center's planning team. Ultimately, this "buy-in" was the proposal's fundamental strong point. The continuous long-term interaction among stakeholders during this center formation period resulted in a set of mutually

developed realistic goals that followed the guiding principles developed by the planning team. Now, with over \$3,000,000 of combined federal, state, and local funds in place, the Center is well positioned to meet its objectives.

FL-ATE has already developed an organizational structure that integrates its stakeholders into the practical operation of the Center. Executive and advisory board activity is tied to Center activities and key to the overall performance of FL-ATE. The Center has also developed a business plan that is committed to establishing substantial revenue streams to assure long term stability. Initially, energy

is focused on establishing a firm interaction with the various governmental entities that have a major stake in the development of Florida's technical workforce. Follow-up effort will use the Center's NSF affiliation as a stepping stone to secure regional government, industry, and specific Center project funded grants.

An additional outcome of the extended community input during the planning stage was the adoption of a modified Baldrige/ Sterling evaluation/ assessment program for FL-ATE. The FL-ATE planning team's vision for the Center had always been tempered with the realization that FL-ATE would not have its intended impact unless it was prepared to structure an evaluation/assessment plan that provided a continuous constructive but critical review of all operations and projects. The selection of a Baldrige based approach was a direct result of industry interaction with FL-ATE. Industrial partners pointed out that FL-ATE vision required an execution plan that was respected by the manufacturing and business sector. Without this element, the Center really could not expect any significant partnerships with individual manufacturing entities to address their educational and professional development needs. By adopting an industry recognized Baldrige style operational mode, the Center will be able to demonstrate that does "do what it says will be done". FL-ATE's Baldrige plan details as well as other organizational and initial project information about the Center are provided at www.FL-ATE.org.

In summary, FL-ATE is a NSF ATE funded Regional Center for Manufacturing Education that services the entire state of Florida. It is an intense partnership among HCC, SPC, and USF that has cooperative arrangements with most of the community colleges with the state. It has an extensive partner set with manufacturing, business, and public sector interests and has worked

Table 2: FL-ATE Specific Goals

- Goal 1: Create an administrative region for FL-ATE that will have state-wide recognition as an educational resource for manufacturing related curriculum, content and activities.
- Goal 2: Create for statewide implementation an educational delivery System that contains curriculum, content, and technical programs to support high performance manufacturing within the region.
- Goal 3: Adapt and/or create needed regional related manufacturing curriculum, content, activities and/or services that cannot be adopted from existing NSF, NSF-ATE and other appropriate sources.
- Goal 4: Create a viable Manufacturing Education Awareness System (MEAS) that promotes manufacturing careers, honors outstanding manufacturing education champions and educators and that fosters industry supported academic scholarships in manufacturing education.
- Goal 5: Create and implement a faculty development program that updates faculty technical and educational skills as they relate to best practices for modern high performance manufacturing in the State.
- Goal 6: Create an exciting manufacturing and technology educational environment that encourages and facilitates under-represented student participation in partner programs and development

with these partners to craft a sound Center mission, a practical set of initial goals and objectives, and an effective operational structure that matches the State's needs and desires. As a result, FL-ATE reflects a holistic vision for an NSF ATE regional manufacturing education center that catalyzes the individual manufacturing stakeholders within the region to evolve into a viable and dynamic manufacturing community- a central resource for educational institutions to collaborate in order to meet the education and training needs of this manufacturing community.

Authors

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