

## **Florida Advanced Technological Education Center (FLATE)**

### **Hillsborough Community College**

**P.I.:** Dr. Marilyn Barger

**Budget:** \$300,000.

**FLATE External Collaborators:** Brevard Community College; Tallahassee Community College; Daytona State College; Central Florida Community College; Polk State College; Florida State College at Jacksonville; Valencia Community College; Palm Beach State College; School District Hillsborough County; Florida Department of Education – Division of Adult and Career Education; West Side Technical School; USF College of Engineering; Madison Area Technical College ATE project for Alternative Energy certifications; Milwaukee Area Technical College Energy Conservation and Advanced Manufacturing Center (ECAM); Florida Energy Workforce Consortium (FEWC); TECO; Progress Energy; ISTE (Ibero Science and Technology Education Consortium), Usurbil GLBHI (Spain); TKNIKA - Innovation Institute for Vocational Training (Spain); Center for Energy workforce Consortium (CEWD); UF Industrial Assessment Center; CREATE NSF Center for Alternative Energy; EST2 NSF ATE Grant project; DOE's Office of Energy Efficiency & Renewable Energy; Gulf Coast State College; Palm Beach State College; University of South Florida's College of Engineering; University of Miami; University of Alabama; Rutgers University; Energy Reduction Solution, SMC Corporation of America, Energy Conservation Group; Florida Solar Energy Consortium; Tampa Bay Regional Business Plan Energy Efficiency and Conservation Sub-Committee.

### **Summary**

FLATE (Florida Advanced Technological Education Center) will partner with FESC to develop statewide curriculum frameworks for technical A.S./A.A.S. degree programs supporting existing and new energy business sectors. FLATE will develop and have processed through the FLDOE the industry-validated student competencies of the frameworks. FLATE will also develop new courses required for each new program of

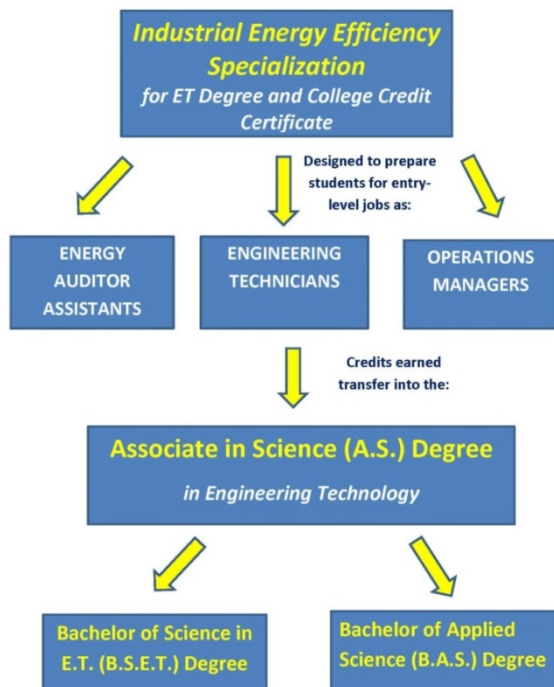
study. Additionally FLATE will help state and community colleges implement the new frameworks in their institutions. To support the new curriculum, FLATE will work closely with the FESC Public Outreach and Industry Partnership programs to provide professional development opportunities for teachers and faculty to upgrade and update their knowledge base.

### Project Activities, Results and Accomplishments

The development of the process for the Florida State College System to respond to FESC’s long term strategy to bring energy related technologies out of the Florida University System is well underway. FLATE has the college contacts and process in place to respond to any FESC and/or regional economic development authority request to provide assistance to a designated State College because of a technician workforce development need as identified or triggered by a new or expanding energy related company’s operations in the State.

Together with the National Science Foundation-funded Energy Systems Technology

Technicians (EST<sup>2</sup>) project team, FLATE has developed a new Industrial Energy Efficiency specialization for the Engineering Technology (ET) Degree and associated College Credit Certificate, in addition to the existing Alternative Energy Specialization. Experts from industry, government and academia have been involved in this collaborative effort and instrumental in ensuring that the new specialization is directly aligned with current industry needs. It will help students prepare to become a **SEP-**



## **Superior Energy Performance Certified Systems Practitioners and CEM Certified Energy Managers.**

In addition, the program will train workers who will assist a company in achieving the ISO 50001 standards related to energy management, as well as ISO 14001:2004 to assure a company's stakeholders that measures are being taken to improve their environmental impact. Credits earned in this certificate will transfer into the Associate in Science (A.S.) degree in Engineering Technology. The IEET program framework has been approved by the FL Department of Education, curriculum content modules to support the newly defined courses are complete, and are able to implement it in the current academic year.

### **INDUSTRIAL ENERGY EFFICIENCY COURSE LIST**

1. Fundamentals of Industrial Energy Efficiency (3 CH)
2. Industrial Systems (3 CH) *pre or co-requisite of Fundamentals of Industrial Energy Efficiency*
3. Energy benchmarking and performance analysis (3 CH) *pre or co-requisite of Fundamentals of Industrial Energy Efficiency*
4. Industrial Energy Analytics and Troubleshooting (3 CH) *pre or co-requisite of Fundamentals of Industrial Energy Efficiency and Industrial Systems*
5. Energy Efficiency Instrumentation and Measurement (3 CH) *prereq of Fundamentals of Industrial Energy Efficiency and Industrial Systems*
6. Industrial Controls and System Integration (3CH) *prereq of Fundamentals of Industrial Energy Efficiency and Industrial Systems*
7. Industrial Energy Efficiency Capstone (3CH or variable)

**Engineering Technology Energy-Related Programs as of January 2014**

<b>COLLEGE CREDIT CERTIFICATES</b>	<b>COLLEGES OFFERING</b>
<p><b>Alternative Energy Systems Specialist (CCC)</b></p> <p><b>Career Cluster:</b> Manufacturing <b>CIP #:</b> 0615000003</p> <p><b>Program Length:</b> 18 (Primary) or 15 (Secondary) Credits</p>	<p>Eastern Florida State College/BCC, Daytona State College (pending), State College of Florida, Gulf Coast State College, Broward College (pending), Palm Beach State College</p>
<p><b>Industrial Energy Efficiency Specialist (CCC)</b></p> <p><b>Career Cluster:</b> Manufacturing <b>CIP #:</b> 061500000x</p> <p><b>Program Length:</b> 21 (Primary) or 24 (Secondary) Credits</p>	<p>Florida State College at Jacksonville – pending with content being included in current courses</p>
<b>A.S. DEGREE SPECIALIZATIONS (60 credit hours)</b>	<b>COLLEGE OFFERING</b>
<p>A.S. Eng Tech Alternative Energy Technology</p>	<p>Eastern Florida State College/BCC, State College of Florida, and Gulf Coast State College</p>
<p>A.S. Eng Tech Industrial Energy Efficiency</p>	<p>Florida State College at Jacksonville - pending</p>

Frameworks are posted on the FLDOE website:

[http://www.fldoe.org/workforce/dwdframe/mfg\\_cluster\\_frame12.asp](http://www.fldoe.org/workforce/dwdframe/mfg_cluster_frame12.asp)



Power Analytics Lab



Attendees examine  
Electric Vehicles

FLATE coordinated a third highly successful energy workshop/forum (the previous workshops were held in Gainesville and Cocoa), for high school and college educators, as well as industry partners, hosted by the Institute for Energy and Environmental Sustainability at Palm Beach State College on January 31, 2014. Forty attendees attended a wide variety of presentations, were treated and participated in a Power Analytics Development activity.

The morning session included presentations about electric and marine renewable energy, as well as a Florida Department of Education update from Kathryn Frederick Wheeler, Supervisor of Energy and Architecture and Construction Career Clusters.

Florida Power and Light Company brought a selection of electric cars/truck for participants to explore up-close, during the lunch hour. The afternoon session included a panel discussion on turbines and advanced fuels followed by a power analytics professional development activity held in IEES' state-of-the art power analytics lab. For the first time, thanks to Palm Beach State College's Media Technology and Instructional Services, the meeting was also broadcast live via the Internet, so that folks that wanted to attend, but couldn't travel could participate "remotely".

FLATE's Fourth **Annual Summer Energy Camp** was held July 7 – 10, 2014 at Hillsborough Community College's SouthShore campus which is LEED (Leadership in Energy and Environmental Design) silver-certified by the USGBC (U.S. Green Building Council), and boasts an earth-friendly, energy-conscious functionality incorporating a number of sustainable features. The camp was a huge success with over  $\frac{3}{4}$  of the campers being Hispanic females. Feedback from both teachers and students overwhelmingly positive! Twenty two 7<sup>th</sup> and 8<sup>th</sup> grade students were treated to four days of exciting, hands-on activities centered on capturing and keeping their interest in STEM (Science, Technology, Engineering and Math) subjects – specifically renewable energy. Camp participants were all part of Hillsborough County School District's AVID (Advancement Via Individual Determination) Excel Program, consisting of first generation college-

bound, English language learners. The possibility of adding a high school energy camp in 2015 is being discussed.



#### Cumulative Camp Data

	Total	Male	%	Female	%	White	%	Hispanic	%	Black	%
2011	12	8	67%	4	33%			11	92%	1	8%
2012	13	9	69%	4	31%			13	100%		
2013	25	15	60%	10	40%			23	92%		
2014	22	6	27%	16	73%	0	0	22	100%	0	0

Finally, FLATE regularly updates / presents information about energy curriculum and training issues at the statewide Florida Engineering Technology Forum that meets twice per year at various colleges across the state. Many of these schools are looking to add “energy” curriculum and/or programs and are requesting guidance on what industry is asking for across the state and what and how other colleges are implementing credit programs. The goal of these activities is to keep colleges working together and sharing curriculum rather than develop independent programs not properly aligned to statewide frameworks. At the April 3 – 4 ET Forum in Bartow, FL at Polk Community College, the new Industrial Energy Efficiency Specialization and College Credit Certificate courses were presented.



**Activities for the 2013-2014 year are listed below.**

- Attended the Manufacturers Association of Florida Summit in St. Petersburg, FL, December 3 – 5, 2013
- Coordinated a third Community College Energy workshop for 40 attendees at the Institute for Energy and Environmental Sustainability at Palm Beach State College on January 31, 2014.
- Presented “Integrating Environmental Sustainability Concepts and Practices into Florida’s Engineering Technology Education System” at the American Society for Engineering Education’s Conference for Industry and Education Collaboration in February, 2014 in Savannah, GA.
- Attended the 2014 Beyond Sustainability 38<sup>th</sup> Annual Conference at Hillsborough Community College, Ybor City, February 28 – March 1.
- FLATE hosted the Engineering Technology (ET) Forum in Tampa in October, 2013 and in Bartow, April 3-4, 2014 where the Energy Efficiency Specialization courses and content were presented.
- FESC Workshop May 12-13, Gainesville. Presenting a poster, “Matching Training to Industry Needs: Industrial Energy Efficiency Education”.
- Attended the Florida Energy Teachers’ Network Fourth Annual Workshop in Gainesville. June 11-12.
- Fourth Summer Energy Camp for under-represented middle school students was held July 7-10 at HCC’s SouthShore Campus in Ruskin, FL in conjunction with the EST2 grant partners (BCC, TCC and FSCJ).

**Funds leveraged/new partnerships created:**

FLATE has leveraged its NSF and FESC resources to help Brevard Community College to apply for and be awarded a very competitive NSF grant, \$ 500,000, implement two energy related specialization within the A.S. Engineering Technology Degree. In addition, FLATE was able to secure a \$ 100,000 award from NSF to develop a faculty/student interchange that will allow Florida to benefit from the well advanced energy related technology educations practices at technology colleges in Spain.