Valencia College: Broadening Education, Access, and Momentum (BEAM) in Energy Management and Controls Technology

A National Science Foundation Advanced Technological Education Grant Program
Awarded June 2016

To meet a growing need for trained technicians in automation systems for the optimization of energy usage in buildings, Valencia College will develop an **Associate in Science** degree program in **Energy Management and Controls Technology (EMCT)**.

The **first to be developed in Florida**, the need was driven in consultation with major regional employers and the need to train future workers in a technical field which has considerable economic and environmental impacts.

The program aligns with the regional movement toward the establishment of **standards for energy** use by businesses, especially industries that support high occupancy rates and sales including those with high energy consumption such as the commercial, industrial, and transportation sectors. These sectors have a staggering impact on energy consumption. As business operations and energy consumption further intersect, the national need has increased for **building automation technicians** trained in technologies related to controls and systems engineering, computer software, and networking.

These technicians will operate and maintain complex, **high-performance buildings**, ensuring occupant health, energy conservation, sustainable procedures, and financial savings.

The new program will offer rigorous technical courses taught in creative ways, in particular, using Valencia's own facilities as a **living laboratory**. Along with a fully-equipped laboratory designed to train technicians in specific industry equipment, the hands-on living lab will include learning outcomes targeting building systems, construction, and land use. The labs will include data analysis through tracking patterns of the college's energy usage; practice of concepts such as math skills as they perform energy audits and calculate energy flow and life-cycle cost analysis; reading blueprints and engineering drawings; and networking software usage designed to solve real sustainability problems.

During the project period, **state curriculum frameworks** will be created; three existing courses (from related programs) will be modified; and nine new courses will be developed, field tested, and offered.

Career pathways will be developed for students entering from the local school districts and Orange Technical College providing seamless articulation opportunities through strong programming and partnership activities.

Specific program advising will focus on activities to promote enrollment and retention of females and veterans, both underrepresented populations in the technical programs at the college.

Strong **industry partnerships** and associations will serve on the Industry Advisory Council that will be significantly involved in all steps along the program development pathway as well as serving as internship and workplace sites for graduates.

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NSF Advanced Technological Education Proposal 1601403

Valencia College's
Energy Management and Controls Technology
A.S. Degree

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Energy Management Controls Technology (EMCT)
A.S. Degree Promotion Video
from the
Building Efficiency for a Sustainable Tomorrow Center

https://www.dropbox.com/s/5v5w7ugnksyptlh/Valencia%20Now.mp4?dl=0

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NSF ATE Grant Project Goal

To provide accessible, affordable educational opportunities and higher level employment opportunities to college students interested in pursuing a degree in Energy Management and Controls Technology.

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Industry Driven Need

- Hotels
- Retail
- Industrial complexes
- Hospitals
- Theme Parks
- Grocery Stores

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NSF ATE Grant Outcome Objectives

- AS in EMCT
- 25% Female Enrollment
- 15% Veteran Enrollment
- Curriculum Development
- Faculty Preparation

- Contextual Learning Experiences – Living Lab
- Partnership with Orange Technical College
- Building Career Pathways: Underrepresented Populations Targeted Services