An Alternative Energy Credit Certificate and Degree for Florida

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www.fl-ate.org; www.madeinflorida.org www.stem-at-work.org
Marilyn Barger is the Principle Investigator and Executive Director of FLATE, the Florida Regional Center for Manufacturing Education funded by NSF and housed at Hillsborough Community College in Tampa Florida since 2004. She earned a B.A. in Chemistry at Agnes Scott College, and both a B.S. in Engineering Science and a Ph.D. in Civil Engineering (Environmental) from the University of South Florida, where her research focused on membrane separations. She has over 20 years of experience in developing curriculum for engineering and engineering technologies for elementary, middle, high school and post secondary institutions. Dr. Barger serves on several national panels and advisory board for technical programs, curriculum and workforce initiatives and is a registered professional engineer in Florida.
OUTLINE

• FLATE-FESC Partnership
• Florida Career Pathway
• Curriculum Framework
• Partnerships and Certification
• Curriculum Development
• Alternative Energy Courses State of the State
FLATE VISION

FLATE will be Florida’s leading resource for education and training expertise, leadership, projects, and services to promote and support the workforce in the high performance production and manufacturing community.

Impact Florida, lead nationally

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www.madeinflorida.org
www.stem-at-work.org
FESC-FLATE MOTIVATION

2020 specific target criteria the 2008 Florida Legislature:

* Defined goals and specific objectives for Florida with respect to energy production and consumption. 

* Provided substantial funds to establish Florida as a leader in alternative energy technologies development and manufacture.

Through a 2008 Florida legislative action, FLATE, the Florida Advanced Technological Education Center, was commissioned to partner with FESC to prepare and execute a technician workforce plan that will put an alternative energy workforce in place.
FLORIDA CAREER PATHWAYS

FLORIDA Curriculum Framework for Career Education

INDUSTRY REVIEW & VALIDATION
INDUSTRY CERTIFICATIONS
EMPLOYABILITY SKILLS
DOL OCCUPATION CODES (SOC)
TARGETED OCCUPATIONS LIST (TOL)
ACADEMICS
1-gen ed
2-tech skills support
ENGINEERING TECHNOLOGY PATHWAYS

I. GENERAL EDUCATION COURSES (15 credit hours)
- Computer Aided Drafting
- Introduction to Electronics
- Manufacturing Materials & Processes
- Mechanical Measurements & Instrumentation
- Quality
- Safety

II. ENGINEERING TECHNOLOGY CORE (18 credit hours)
- Articulate MSSC Certified Production Technician (CPT) To 15 Credits of ET Core Courses
- HS Academy
- HS Tech Program

III. ENGINEERING TECHNOLOGY SPECIALIZATION TRACTS (27 credit hours in 1 of 7 tracts)
- Quality
- Electronics
- Biomedical Systems
- Advanced Technology
- Advanced Manufacturing
- Digital Design & Modeling
- Mechanical Design & Fabrication

College Credit Certificate and/or MSSC Certified Production Technician (CPT)

A.S. or A.A.S. DEGREE in ENGINEERING TECHNOLOGY (with one of five specializations)
- B.A.S. Bachelor’s of Science in Applied Science, OR
- B.S. E.T. - Bachelor’s of Science in Engineering Technology

Alternative Energy Systems

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# FLDOE Curriculum Framework Standards
## (Alternative Energy Systems Specialization)

<table>
<thead>
<tr>
<th>No.</th>
<th>Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>12.0</td>
<td>Interpret AC and DC circuit fundamentals related to energy technologies.</td>
</tr>
<tr>
<td>13.0</td>
<td>Characterize alternative energy sources and technologies.</td>
</tr>
<tr>
<td>14.0</td>
<td>Apply energy storage, distribution and conversion systems principals.</td>
</tr>
<tr>
<td>15.0</td>
<td>Characterize the operation and performance of solar energy systems.</td>
</tr>
<tr>
<td>16.0</td>
<td>Apply policy, regulation, and good business practices for alternative energy systems.</td>
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</table>
**PARTNERSHIPS**

Alternative Energy Systems Specialist College  
Credit Certificate – Code AECC

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>EET 1084</td>
<td>Introduction to Electronics</td>
<td>3 cr.</td>
</tr>
<tr>
<td>EET 1551</td>
<td>Distributed Power Generation &amp; Storage</td>
<td>3 cr.</td>
</tr>
<tr>
<td>ETI 1701</td>
<td>Industry Safety</td>
<td>3 cr.</td>
</tr>
<tr>
<td>EST 1800</td>
<td>Photovoltaic Technology</td>
<td>3 cr.</td>
</tr>
<tr>
<td>EST 1830</td>
<td>Alternative/Renewable Energy Technology</td>
<td>3 cr.</td>
</tr>
<tr>
<td>EETC 2550</td>
<td>Photovoltaic Technology</td>
<td>3 cr.</td>
</tr>
</tbody>
</table>

Brevard Community College implemented AESS Certification in Fall 2010  
Tallahassee Community College implementing AESS Certification in Fall 2011
STATE OF THE STATE:
ALTERNATIVE ENERGY COURSES/PROGRAMS

Surveyed 28 State and Community colleges in Florida

- Continuing Education or Non-credit
- Academic Credit & Technical Certificate/Degree Programs
- Stand-Alone Energy, Alternative/Renewable Energy, Sustainability, etc

50% Response rate
In 2010-2011 Academic Year
- 45 continuing education courses
- 6 FL Dept of Education approved College Credit Certificates
- Over 22 Alternative/Renewable energy related courses

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ENGINEERING TECHNOLOGY PATHWAYS

I. GENERAL EDUCATION COURSES (15 credit hours)
- Computer Aided Drafting
- Introduction to Electronics
- Manufacturing Materials & Processes
- Quality
- Safety

II. ENGINEERING TECHNOLOGY CORE (18 credit hours)
- Management
- Mechanical Measurements & Instrumentation
- Quality
- Safety

III. ENGINEERING TECHNOLOGY SPECIALIZATION TRACTS (27 credit hours in 1 of 7 tracts)
- Electronics
- Biomedical Systems
- Advanced Technology
- Advanced Manufacturing
- Digital Design & Modeling
- Mechanical Design & Fabrication

COLLEGE CREDIT CERTIFICATE and/or MSSC CERTIFIED PRODUCTION TECHNICIAN (CPT)

Year 1

Year 2

Certificate Pathway
2-Year Pathway
2-Year Pathway starting with MSSC

A.S. or A.A.S. DEGREE in ENGINEERING TECHNOLOGY (with one of five specializations)

B.S. or B.S.E.E. Bachelor's of Science in Engineering Technology

NEW Alternative Energy Systems

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FLATE’s PARTNERS FOR CURRICULUM

- Florida Department of Education
- Florida Legislature
- Manufacturers Association of Florida (MAF)
- School districts
- State and community colleges
- Industry (employers)
- Students
- Faculty and teachers
- Florida’s Forum for Engineering Technology
- Florida Energy Systems Consortium - FESC

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# Engineering Technology A.S./A.A.S. Degree

## I. General Education – 15 - 18 credit hours
- English
- Math
- Science
- Social Science
- Humanities

## II. ET Core - 18 credit hours
- Computer Aided Design
- Manufacturing Processes & Materials
- Mechanics & Instrumentation
- Electronics
- Quality
- Safety

## III. 8 Specialization Tracts – 24 to 27 credit hours
- Advanced Manufacturing
- Biomedical Systems
- Electronics
- Quality
- Advanced Technology
- Digital Design & Modeling
- Mechanical Design & Fabrication
- Alternative Energy Systems

### 60 semester hours
ET Pathways

- Apprenticeship
- Workforce
- Technical School

MSSC

Year 1
- I. GENERAL EDUCATION COURSES (15 credit hours)
- II. ENGINEERING TECHNOLOGY CORE (18 credit hours)
  - Computer Aided Drafting
  - Introduction to Electronics
  - Manufacturing Materials & Processes
  - Mechanical Measurements & Instrumentation
  - Quality
  - Safety

Year 2
- III. ENGINEERING TECHNOLOGY SPECIALIZATION TRACTS (27 credit hours)
  - Quality
  - Electronics
  - Advanced Technology
  - Advanced Manufacturing
  - Alternative Energy Systems
  - Biomedical Systems
  - Digital Design & Modeling
  - Mechanical Design & Fabrication

A.S. or A.A.S. DEGREE in ENGINEERING TECHNOLOGY (with one of five specializations)
- B.A.S. - Bachelor's of Applied Science OR
- B.S.A.S. - Bachelor's of Science in Applied Science, OR
- B.S. E.T. - Bachelor's of Science in Engineering Technology

LIFELONG LEARNING

GED | HS Graduate

MSSC CERTIFIED PRODUCTION TECHNICIAN (CPT)
### ET College Network

<table>
<thead>
<tr>
<th>SPECIALIZATION</th>
<th>COLLEGES</th>
<th>LOCATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quality</td>
<td>CCF</td>
<td>Ocala</td>
</tr>
<tr>
<td></td>
<td>FGC</td>
<td>Lake City</td>
</tr>
<tr>
<td></td>
<td>SPC</td>
<td>St. Pete</td>
</tr>
<tr>
<td>Electronics</td>
<td>SPC</td>
<td>Bradenton</td>
</tr>
<tr>
<td></td>
<td>BCC</td>
<td>Palm Bay</td>
</tr>
<tr>
<td></td>
<td>SCF</td>
<td>St. Pete</td>
</tr>
<tr>
<td>Adv. Man</td>
<td>FSC</td>
<td>Jacksonville</td>
</tr>
<tr>
<td></td>
<td>HCC</td>
<td>Tampa</td>
</tr>
<tr>
<td></td>
<td>PSC</td>
<td>Lakeland</td>
</tr>
<tr>
<td>Fab and Design</td>
<td>FSCJ</td>
<td>Jacksonville</td>
</tr>
<tr>
<td></td>
<td>PSC</td>
<td>Pensacola</td>
</tr>
<tr>
<td>Adv Tech</td>
<td>BCC</td>
<td>Palm Bay</td>
</tr>
<tr>
<td>Digital Design</td>
<td>SPC</td>
<td>St. Pete</td>
</tr>
<tr>
<td></td>
<td>SCF</td>
<td>Bradenton</td>
</tr>
<tr>
<td>Med Systems</td>
<td>SPC</td>
<td>St. Pete</td>
</tr>
<tr>
<td>Alt Energy Sys</td>
<td>BCC</td>
<td>Palm Bay</td>
</tr>
</tbody>
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Thank You!

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