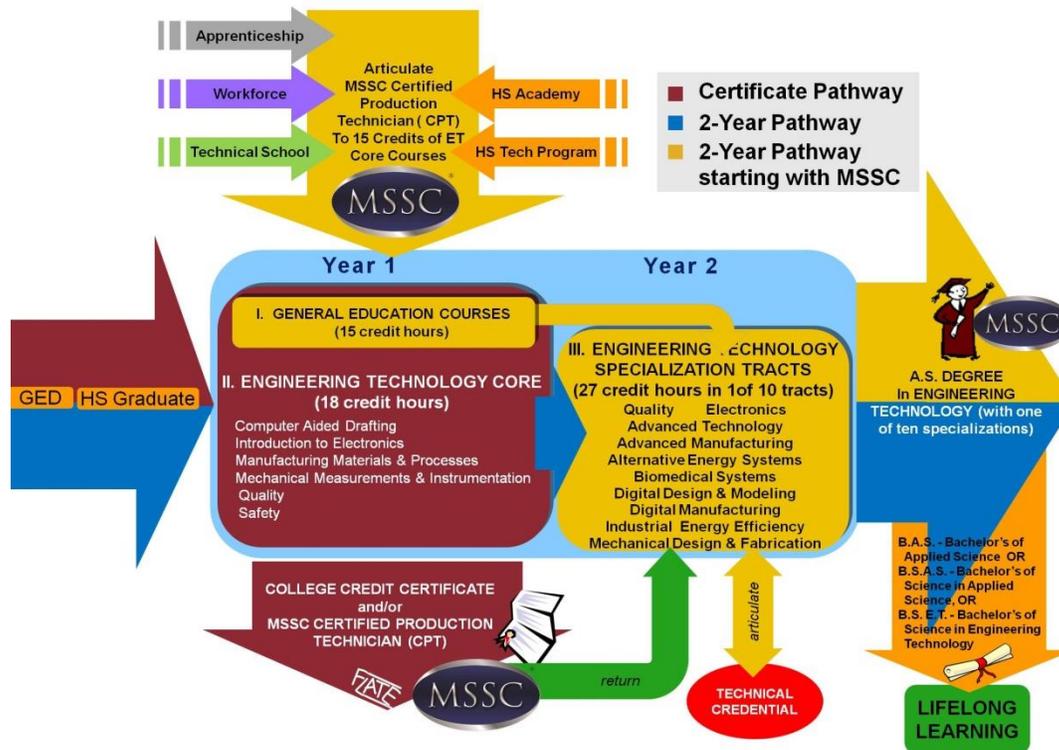




THE ENGINEERING TECHNOLOGY A.S. DEGREE PROGRAM

(SUPPORTING FLORIDA'S DIVERSE MANUFACTURING AND HIGH TECHNOLOGY INDUSTRIES)

The Florida Advanced Technological Education (FLATE) Center's review and reform of the statewide Curriculum Frameworks has redefined the manufacturing and related curriculum in Florida at the state level. FLATE, working with the Florida Department of Education's Career and Technical Education team, Florida colleges, and Florida industries defined a new A.S. degree program in Engineering Technology (ET) currently with 10 specialization tracks and 20 technical college certificates. The FL DOE approved the degree in March 2007. The degree program with embedded industry and academic credentials, offers students a variety of technical specializations pathways built upon a common technical core that supports a wide range of manufacturing and high technology industries.



The structure of this degree is a “one-plus-one” approach where in year-one a student takes general education courses and a strong technical core curriculum that aligns with the Manufacturing Skills Standards Council (MSSC) Certified Production Technician (CPT) credential. The 18 credit hour “ET Core” covers introductory computer aided drafting, electronics, instrumentation and testing, quality, safety, and processes and materials. Year-two of the ET degree focuses on a specialization track, each of which has some required and some elective topics. Each college is free to adopt any or all of the specialization tracks and certificates depending on their local industry needs. The currently approved tracks are: Advanced Manufacturing, Advanced Technology, Alternative Energy, Biomedical Systems, Digital Design and Modeling, Digital Manufacturing, Electronics, Industrial Energy Efficiency, Mechanical Design & Fabrication, and Quality. Eighteen Florida colleges have adopted the new degree as of June 2015, with others transitioning from their current offerings or investigating the degree as a viable program to support their local manufacturing industries.

The college Engineering Technology degree is part of a much larger statewide unified curriculum project that includes the high school technology programs and career academies, incumbent worker training and bachelor degree programs. Embedding the MSSC Skill standards into the ET Core provides an industry-relevant articulation pathway from secondary programs that address these same industry skills. It also provides a pathway for incumbent workers to gain college credit by experience through certification. To accomplish these articulations, FLATE crafted the first-of-its-kind Statewide Articulation Agreement based on Industry Certification, which has been ratified by the college partners and was approved by the FLDOE. This statewide agreement based on industry certification has been a model for other career

This material is based upon work supported by the National Science Foundation under Grant No. 1204751. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation. Revised 5/26/15.

education programs in Florida as well as other states. This model has been endorsed by the National Association of Manufacturers (NAM) in their Skill Certification System (SCS) and has been identified as a national model for successful career pathways. All of Florida's ET offering colleges are members for NAM's M-List.

To ensure the success of this unified curriculum plan, FLATE, in partnership with the FLDOE, also developed a new curriculum framework for secondary and PSAV programs that aligns with the MSSC CPT. This framework was approved in January 2009 and is now available for adoption by Florida high schools and Tech Schools. Currently, FLATE is engaged with its college partners to validate the alignment between the state frameworks, the MSSC skill standards and the specific student learning outcomes defined in the college syllabus. FLATE will work to close identified gaps with needed curriculum for the ET Core and professional development for high school teachers and college faculty to ensure that students wishing to become MSSC certified are successful. FLATE is also be aligning existing secondary frameworks for pre-engineering programs in the state with the MSSC Certifications. FLATE provides support for colleges during their institutional implementation phase through ET equipment grants, as well as providing individual college support with statewide promotional campaign materials for unified curriculum aimed at both the educational communities (student, parents, counselors, teachers, etc.) and manufacturing industries.

All Engineering Technology Associate in Science (A.S.) Degree holders can transfer seamlessly to a number of Bachelor of Applied Science (B.A.S.) Degrees offered in Florida's universities and colleges. The 2 + 2 agreements apply 60 credit hours of an A.S. Degree directly to this 4-year bachelor's degree. A second option is for AS ET graduates to transfer to Daytona State College's B.S.E.T. degree, which articulate 59-62 credits. The B.S.E.T. requires additional general education credits and may require technical prerequisite courses.

A.S. Engineering Technology Degree Specializations and related Certificates (2014)

SPECIALIZATION	CERTIFICATES (18)
Advanced Manufacturing	Automation (12 credit hours) Lean Manufacturing (12 credit hours) Mechatronics (30 credit hours) Pneumatics, Hydraulics & Motors for Manufacturing (12 credit hours)
Advanced Technology	Applied Technology Specialist (16 credit hours) Composite Fabrication and Testing (12 credit hours)
Alternative Energy Systems	Alternative Energy Systems Specialist (18 credit hours)
Biomedical Systems	Medical Quality Systems (12 credit hours)
Digital Design and Modeling	Computer Aided Design and Drafting (12 credit hours)
Digital Manufacturing	Rapid Prototyping Specialist (12 credit hours) Digital Manufacturing Specialist (24 Credit Hours)
Electronics	Electronics Aide (12 credit hours)
Industrial Energy Efficiency	Industrial Energy Efficiency Specialist (21 credit hours)
Mechanical Design & Fabrication	CNC Machinist /Fabricator (12 credit hours) CNC Composite Fabricator/Programmer (12 credit hours) CNC Machinist Operator/Programmer (12 credit hours) Mechanical Designer and Programmer (12 credit hours)
Quality	Lean Six Sigma Green Belt (12 credit hours) Six Sigma Black Belt (12 credit hours)
Non-specific:	
ET Core (MSSC CPT aligned)	Engineering Tech. Support Specialist (18 credit hours)

The Engineering Technology Curriculum Frameworks and supporting documentation as well as the statewide articulation agreement can be found on the FLATE website: <http://www.fl-ate.org/projects/degree-reform.html>. Information about the specific degree programs at colleges in Florida can be found on the Made in Florida website at: www.madeinflorida.org/ETdegree.

FLATE serves the entire state of Florida and is one of the Advanced Technological Education (ATE) Centers of Excellence funded by the National Science Foundation (NSF) to enhance and promote the technician workforce education for advanced technologies in the United States. To achieve this mission, all NSF-ATE Centers partner with industry in three broad areas: curriculum reform and/or development; student recruitment and retention into these technical programs (outreach); and professional development for technical secondary and post-secondary educators. FLATE's leadership is a partnership among Hillsborough Community College (HCC), St. Petersburg College (SPC), and the USF College of Engineering (USF COE). For more information about FLATE, please visit www.fl-ate.org and www.madeinflorida.org.