



ENGINEERING TECHNOLOGY (A.S.)

SPECIALIZATIONS: ALTERNATIVE ENERGIES, AUTOMATION & ADVANCED MFG, DIGITAL MFG., ELECTRONICS

PROGRAM DESCRIPTION:

The Engineering Technology Associate in Science degree program prepares students for employment or provides additional training for persons employed in manufacturing and high technology industries. Gulf Coast State College (GCSC) offers the alternative energies, automation & advanced manufacturing, electronics and digital manufacturing specializations along with eight college credit certificates: alternative energy, automation, CNC, digital manufacturing, electronics aid, engineering technology, pneumatics, hydraulics & motors for manufacturing and rapid prototyping.

The 18 credit hour technical core of this degree is closely aligned with the national Manufacturing Skill Standards Council (MSSC) Certified Production Technician (CPT) industry certification, which is endorsed by the National Association of Manufacturers' Skills Credential System. After completing this core, students will be prepared to take the MSSC assessment for the CPT Certification. Students who have already earned the MSSC-CPT will receive 15 articulated credit-hours towards the Engineering Technology degree. The Engineering Technology Associate in Science degree program is fully transferable to four year degree granting institutions.

ASSOCIATE IN APPLIED SCIENCE DEGREE

GENERAL EDUCATION and ENGINEERING TECHNOLOGY CORE COURSES			
GENERAL EDUCATION (18 credits)	Cr.	ENGINEERING TECHNOLOGY CORE (18 credits)	Cr.
English I	3	CAD ETD 1320 AutoCAD	3
Humanities	3	ELECTRONICS EET 1084C Introduction to Electronics	3
College Algebra	3	MEASUREMENT ETM 2001C Applied Mechanics	3
Psychology/Sociology	3	PROCESSES ETI 1411 Manufacturing Processes I	3
General elective	3	SAFETY ETI 1701 Industrial Safety	3
English II	3	QUALITY ETI 2110 Intro to Quality Assurance	3

Specialized Track Courses

ALTERNATIVE ENERGY (27 Credits)

The purpose of this track is to prepare students to meet industry-specific educational needs for technicians in new and emerging alternative and renewable energy fields, including, but not limited to, occupational titles such as Electrical Engineering Technician, Industrial Engineering Technician, Solar Photovoltaic Installer and Solar Power Plant Technician, Solar Thermal Installer and Technician, Energy Auditor, and Smart Grid Technician. This program also provides supplemental training of persons previously or currently employed in occupations related to energy production and storage, manufacturing and construction.

Course	Title	Cr.	Courses	Title	Cr.
EPT 1501	Intro to Energy, Environment & Society	3	ETP 1410C	Solar Energy	3
ETP 1500	Alt Energy Inventory & Analysis	3	ETP 1520	Geothermal Energy	3
ETP 1500L	Alt. Energy Inventory & Analysis Lab	3	ETP1510	Biofuels and Biomass	3
ETP 2311	Distributed Electrical Power Storage	3	ETP 1550	Alternative Fuels & Electric Vehicles	3



ENGINEERING TECHNOLOGY 2014
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<u>Technical Elective Courses</u>					
Courses	Title	Cr.	Courses	Title	Cr.
BCN 2643	Economics of Sustainable Construction	3	ETS 2542C	Programmable Logic Controllers	3
ETS 2511C	Motor & Motion Control	3	EET 2214C	LabVIEW Instrumentation	3
<u>AUTOMATION & ADVANCED MANUFACTURING (27 Credits)</u>					
<p>This track specializes in automation, robotics, and process control with emphasis on computer-controlled systems for industrial manufacturing, system integration, instrumentation, simulation, and animatronics. The program skills used for careers in manufacturing, theme park industries, military applications, water filtration and purification plants, and much more. Graduates are prepared to work as controls engineers, systems integrators, robotic technicians, industrial programmers, process control engineers, field service technicians, simulation technicians, simulation industrial sales engineers, and industrial maintenance technicians.</p>					
Courses	Title	Cr.	Courses	Title	Cr.
EET 1035C	AC/DC Circuits	4	ETS 2542C	Programmable Logic Controllers	3
CET 1112C	Digital Circuits	4	ETS 3535C	Process Control & Instrumentation	3
ETS 112C	Industrial Electronics	4	ETS 2700C	Electro-Hydraulics & Pneumatics	3
<u>Technical Elective Courses</u>					
Courses	Title	Cr.	Courses	Title	Cr.
EET 2280C	Data Acquisition & Control Systems	3	EET 2214C	LabVIEW Instrumentation	3
ETS 2606C	Robotics	3	ETS 2511C	Motors & Motion Control	3
<u>DIGITAL MANUFACTURING (27 Credits)</u>					
<p>The purpose of this track is to prepare students for initial employment as a Rapid Prototyping specialist, Digital Manufacturing specialist, industrial designer, product designer, architectural, civil or mechanical drafter, technician, or detailers in various specialized areas of industry that use digital design and modeling and rapid prototyping, direct digital manufacturing and CNC machining technologies, or to provide supplemental training for persons previously or currently employed in these occupations.</p>					
Courses	Title	Cr.	Courses	Title	Cr.
ETD 2657C	Auto Desk Inventor	3	PMT 2250C	CNC Programming I	3
EDT 2350	Advanced AutoCAD	3	PMT 2254C	CNC Programming II	3
ETD 2364C	Intro to Solidworks	3	ETI 1420	Manufacturing Proc. II	3
EDT 2368C	Advanced Solidworks	3	PMT 2214C	Advanced Machining II	3
EDT 2369C	Solidworks Advanced Applications	3			





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ELECTRONICS (27 Credits)

The purpose of this track is to prepare students to enter the workforce as highly skilled electronic technicians or to continue their education at several state universities. The curriculum balances instruction in theory with hands-on laboratory applications and provides the student with a diversified background in circuit theory, digital systems, microcomputers, programmable logic controllers, analog systems, and LabVIEW programming. Graduates of this program will be prepared for careers in electronic maintenance and troubleshooting, electronics product development, data acquisition and testing, software development for microcontroller systems, computer installation and repair, telecommunications, biomedical equipment repair and calibration, avionics, radio and television communications, and security systems.

Courses	Title	Cr.	Courses	Title	Cr.
EET 1035C	ACDC Circuits	4	EET 2214C	LabVIEW Instrumentation	3
CET 1112C	Digital Circuits	4	EET 2280C	Data Acquisition & Control Systems	3
EET 1140C	Electronic Devices & Circuits	4			
<u>Technical Electives Courses</u>					
Courses	Title	Cr.	Courses	Title	Cr.
CTE 2123C	Microprocessor Fundamentals	3	ETS 2535C	Process Control & Instrumentation	3
EET 2355C	Digital Communications	3	ETS 2606C	Robotics	3
ETS 2542C	Programmable Logic Controllers	3	CTS 1120	Computer & Network Security	3

COLLEGE CREDIT CERTIFICATES

ALTERNATIVE ENERGY ENGINEERING TECHNOLOGY 18 (Credits)

This certificate program will prepare students to meet the industry-specific skills needed for technicians in the new and emerging alternative and renewable energy fields, including occupational titles such as electrical technician, industrial engineering technician, solar photovoltaic installer and solar power plant technician, solar thermal installer and technician, energy auditor and smart grid technician. This program also provides supplemental training for persons previously or currently employed in occupations related to energy production, distribution, and storage.

Course	Title	Cr.	Course	Title	Cr.
ETP 1501	Introduction to Energy, Environment, and Society		ETP 1500L	Solar Energy	3
ETP 1500	Alternative Energy Inventory & Analysis		EPT	Distributed Power generation & Storage	3
<u>Technical Electives Courses</u>					
Courses	Title	Cr.	Courses	Title	Cr.
ETP 1410C	Solar Energy	3	ETP 1550	Alternative Fuels & Electric Vehicles	3
ETP1520	Geothermal Energy	3	BCN 2643	Economics of Sustainable Construction	3
ETP 1510	Biofuels & Biomass	3			



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AUTOMATION (15 Credits)

This certificate prepares student for engineering technology support positions dealing with PLCs, automation, and control systems in high tech production, manufacturing, distribution, and engineering research and development facilities.

Course	Title	Cr.	Course	Title	Cr.
ETS 2542C	Programmable Logic Controllers	3	EET 2214C	LabVIEW Instrumentation	3
ETS 3535C	Process Control & Instrumentation	3	EET 2280C	Data Acquisition & Control Systems	3
ETS 2606C	Robotics	3			

COMPUTER NUMERICAL CONTROL- CNC (12 Credits)

Course	Title	Cr.	Course	Title	Cr.
PMT 2213C	Advanced Machining I	3	PMT 2250C	CNC Programming I	3
PMT 2214C	Advanced Machining II	3	PMT 2254C	CNC Programming II	3

DIGITAL MANUFACTURING (24 Credits.)

The content includes but is not limited to maintenance techniques, computer aided drafting/design skills, technical communications, maintenance and operation of various industrial components, quality control and testing, material handling protocols, and proper usage of tools and instrumentation.

Course	Title	Cr.	Course	Title	Cr.
ETD 2357	AutoDesk Inventor	3	PMT 2250C	CNC Programming I	3
ETD 2364C	Introduction to SolidWorks	3	PMT 2254C	CNC Programming II	3
ETD 2368C	Advanced Solidworks	3	ETI 1420	Manufacturing Proc. II	3
ETD 2369C	Solidworks Advanced Applications	3	PMT 2214	Advanced Machining II	3

ELECTRONICS AIDE (12 Credits.)

The purpose of this certificate program is to prepare students for initial employment with an occupational title as electronics or electronics test technician in various specialized areas or to provide supplemental training for persons previously or currently employed in these occupations.

Course	Title	Cr.	Course	Title	Cr.
EET 1035C	AC/DC Circuits	4	EET 1140C	Electronic Devices & Circuits	4
CET 1112C	Digital & Computer Circuits	4			





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ENGINEERING TECHNOLOGY SPECIALIST (18 Credits)

This certificate prepares students for entry level technical jobs in high technology production, manufacturing, distribution, engineering, and research and development facilities.

Course	Title	Cr.	Course	Title	Cr.
EET 1084C	Introduction to Electronics	3	ETI 2110	Introduction to Quality Assurance	3
EDT 1320C	AutoCAD	3	ETI 1411	Manufacturing Processes I	3
ETI 1701	Industrial Safety	3	ETI 2001C	Applied Mechanics	3

PNEUMATICS, HYDRAULICS & MOTORS FOR MANUFACTURING (18 Credits)

This certification prepares students for entry level technical jobs in high tech production, manufacturing, distribution and engineering research and development facilities.

Course	Title	Cr.	Course	Title	Cr.
EET 1084C	Introduction to Electronics	3	ETI 2110	Introduction to Quality Assurance	3
ETD 1320	AutoCad	3	ETI 1411	Manufacturing Processes I	3
ETI 1701	Industrial Safety	3	ETI 2001C	Applied Mechanics	3

RAPID PROTOTYPING (12 Credits)

ETD 2357C	AutoDesk Inventor	3	ETD 2368C	Advanced Solidworks	3
ETD 2364C	Introduction to Solidworks	3	ETD 2369C	Solidworks Advanced Applications	3

