This deliverable contains East Mississippi Community Colleges Mechatronics Technician Career and Technical Education program which facilitates a stackable credential career pathway model that embeds NAM endorsed and local industry recognized credentials, adds contextualized learning, and better utilizes technology. The Mechatronics Technician program was developed through the Trade Adjustment Assistance Community College and Career Training (TAACCCT) Grant Program Round 3 Grant Golden Triangle Modern Manufacturing Project TC-25149-13-60-A-28.

This document contains deliverable #7: Mechatronics Technician program.

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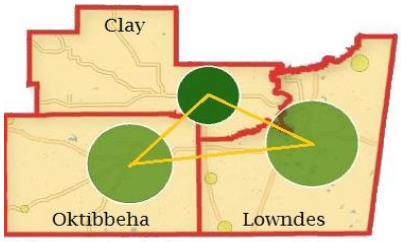
East Mississippi Community College
Golden Triangle Modern Manufacturing Project



Golden Triangle Modern Manufacturing

<u>Technician Programs-</u> Strategy 1: Build programs that meet industry needs. Action 1.2 Develop new 30-hour certificate and 60-hour certificate/AAS degree programs tied to NAM-endorsed certificates for Electro-Mechanical craft technicians, Mechatronics technicians, and Welder/Fabricator technicians.

MECHATRONICS TECHNICIAN

The Mechatronics Technician program was developed to embed National Association of Manufacturers (NAM) –endorsed and industry-recognized credentials; to contextualize safety, lean, measurement and blueprint reading into each program; and to utilize online and technology-enabled systems as instructional tools.

The Mechatronics Technician advanced technical certificate prepares graduates to enter the job market in many different areas or continue their education at a 4-year institution. Mechatronics technicians are responsible for assembling, installing, and maintaining/repairing machinery used in the manufacturing or industrial environment as well as troubleshooting, repair and programming of automated systems. Students receive Mechatronics programming, robotics, process control, CNC/CAM, mechatronics troubleshooting, data acquisition and industrial communications.

This program requires successful completion of the Associate of Applied Science degree option in the Electro-Mechanical Technician program. The Mechatronics Technician curriculum is located on p.100 in the EMCC Catalog and can be found by following the link: http://www.eastms.edu/students/Documents/catalog,2016-17v1-2,5-19-16.pdf.

The FANUC Certified Education Robot Training (CERT) has been identified as the technical exit assessment for the Mechatronics Technician program (pending state community college board approval).

Course Number	Course Name	Credentials	Technology	Notes
IMM 2814 4 hours	Mechatronics Programming I		Computer programming, PLC, digital sensors	1,2,3,4
IMM 2824 4 hours	Mechatronics Robotics	Fanuc CERT (Certified Education Robot Training)*	Robotics programming, PLC, sensors	1,2,3,4
IMM 2833 3 hours	Mechatronics Process Control		Computer programming, PLC, process controller, sensors	1,2,3,4
IMM 2714 4 hours	CNC/Computer Assisted Manufacturing		CNC Controls programming	1,2,3,4

IMM 2844 4 hours	Mechatronics Programming II		Computer programming, PLC, HMI, robot controllers, digital sensors, analog sensors, vision systems, bar coding systems, RFID systems	1,2,3,4
IMM 2854 4 hours	Mechatronics Troubleshooting and Repair		Computer Programming, PLC, HMI, Robot Controllers, Digital Sensors, Analog Sensors, Vision Systems, Bar Coding Systems, RFID Systems	1,2,3,4
IMM 2863 3 hours	Data Acquisition and Industrial Communications		Computer networking systems, PLC's, Robot Controllers	2,4
6 hours	Technical Electives			

*FANUC CERT trains the student in integration of robotic automation through design and manufacturing concepts. The students will use project based activities to program and operate the robotic arm. Since 1982, FANUC Robotics America Corporation has been designing, engineering, and manufacturing innovative robots and robotic solutions for companies all over the world.

Note 1 - Contextualized Safety: Instructors contextualized safety in IMM classes by relating OSHA safety to automated equipment.

Note 2 - Contextualized Measurement: Instructors contextualized measurement in IMM classes by relating length, volume, flow, temperature, speed, pressure and electrical measurements used in automated industrial environments.

Note 3 - Contextualized Print Reading: Instructors contextualized print reading in IMM classes by relating electrical schematics, fluid power schematics, part/power flow diagrams and ladder logic programming used in automated industrial environments.

Note 4- Contextualized Lean Concepts: Instructors contextualized lean concepts in IMM classes by relating organization, maintaining of tools, maintaining work place, maintaining materials/supplies/waste products, and refining programs to improve reduce Takt time to the automated industrial workplace.