

# 2022 - 2023

## **PROGRAM GUIDE FOR:**

**MANUFACTURING CLUSTER** 



ALABAMA STATE DEPARTMENT OF EDUCATION CAREER AND TECHNICAL EDUCATION LISA BRUCE, EDUCATION ADMINISTRATOR ASHLEY CRUM, ADMINISTRATIVE ASSISTANT (334) 694-4746

### **Manufacturing Cluster Program Guides**

The Manufacturing cluster provides the knowledge and skills to equip students for careers in additive manufacturing, industrial maintenance, electronics, manufacturing, precision machining, and robotics. These courses include significant technical depth and engineering concepts and terminology. The Manufacturing cluster provides a safe and appropriate setting for student exploration and achievement. Students gain knowledge and skills through an active, structured, and stimulating environment coordinated with simulated workplace learning experiences. The Manufacturing cluster learning environment utilizes a variety of physical space to stimulate development of effective cognitive and psychomotor skills. Students experience a wide range of hands-on activities based on authentic representations of expectations found in the workplace. Theory and concepts are taught in proportion to the need for strong application opportunities with emphasis on timely learning experiences that facilitate the transition to skills attainment. Safety, proper tool use, and adherence to procedures are integral components for all student learning experiences.

| **Courses highlighted in yellow are shared with other clusters. See "Shared Courses" table on page 5 for additional details.  |  |  |  |  |  |  |  |
|---|--|--|--|--|--|--|--|
|   | Additive Manufacturing   |  |  |  |  |  |  |
| Career  | (Must teach three courses from this program list within two years)   |  |  |  |  |  |  |
| Pathway   | Additive Manufacturing is based upon Computer. Aided Design and 3-D Printing. This program provides students with the knowledge of Introduction  |  |  |  |  |  |  |
| Program   | Intermediate and Advanced Drafting Design Technology Three-Dimensional Solid Modeling and Engineering Applications and the skill   |  |  |  |  |  |  |
| -   | successful in the Mechanical and Technical Design fields.  |  |  |  |  |  |  |
| Course  |  |  |  |  |  |  |  |
| Number  | Career Pathway Program Courses   | Career Readiness Indicator (CRI)   | Workforce Careers  |  |  |  |  |
| 21106G1033  | Advanced Drafting Design   | Alabama Certified Worker (Ready to   | CAD Designer   |  |  |  |  |
| 13997G1003  | Career Pathway Project in Manufacturing  | Work)  | Mechanical Designer  |  |  |  |  |
| 13997G1001  | CTE Lab in Manufacturing   | Autodesk- AutoCAD Certified User   | Technical Designer   |  |  |  |  |
| 21002G1001  | Engineering Design Applications  | Autodesk- Inventor Certified User  | Teeninean Designer   |  |  |  |  |
| 21106G1023  | Intermediate Drafting Design   | Autodesk Fusion 360 Certified User   |  |  |  |  |  |
| 21106G1013  | Introduction to Drafting Design  | SolidEdge Certified Associate  |  |  |  |  |  |
| 21004G1001  | Introduction to Engineering Design   | SolidWorks Associate   |  |  |  |  |  |
| 13001G1000  | Introduction to Manufacturing  | · Bond Works Associate   |  |  |  |  |  |
| 17049G1000  | Safety and Health Regulations  |  |  |  |  |  |  |
| 21107G1012  | Three-Dimensional Solid Modeling I   |  |  |  |  |  |  |
| 21107G1022  | Three-Dimensional Solid Modeling II  |  |  |  |  |  |  |
|   |  | •  |  |  |  |  |  |
|   |  | Electronics Program  |  |  |  |  |  |
| ~   | (Must teach three cours  | es from this program list within two y   | ears)  |  |  |  |  |
| Career  | The electronics program covers a variety of topics includ  | ing: Electrical Theory; Electronic Componer  | nts; Soldering-Desoldering and Tools; Block  |  |  |  |  |
| Pathway   | Diagrams-Schematics-Wiring Diagrams; Cabling; Power  | r Supplies; Test Equipment and Measurem  | ents; Safety Precautions; Mathematics and  |  |  |  |  |
| Drogrom   | Formulas; Electronic Circuits; Series and Parallel; Amplifiers; Interfacing of Electronics Products, Digital Concepts and Circuitry; Computer  |  |  |  |  |  |  |
| rrogram   | Formulas; Electronic Circuits; Series and Parallel; Amplif   | iers; Interfacing of Electronics Products, Digi  | tal Concepts and Circuitry; Computer   |  |  |  |  |
| riogram   | Formulas; Electronic Circuits; Series and Parallel; Amplifi<br>Electronics; Computer Applications; Audio & Video Syst  | iers; Interfacing of Electronics Products, Digi<br>tems; Optical Electronics; Basic Telecommu  | tal Concepts and Circuitry; Computer nications; and Technician Work Procedures.  |  |  |  |  |
| riogram   | Formulas; Electronic Circuits; Series and Parallel; Amplifi<br>Electronics; Computer Applications; Audio & Video Syst<br>Students will be prepared to earn entry level credentials re  | iers; Interfacing of Electronics Products, Digi<br>tems; Optical Electronics; Basic Telecommu<br>cognized by the Electronics Technicians Asso  | tal Concepts and Circuitry; Computer<br>nications; and Technician Work Procedures.<br>ociation (ETA).  |  |  |  |  |
| Course  | Formulas; Electronic Circuits; Series and Parallel; Amplifi<br>Electronics; Computer Applications; Audio & Video Syst<br>Students will be prepared to earn entry level credentials re  | iers; Interfacing of Electronics Products, Digi<br>tems; Optical Electronics; Basic Telecommu<br>cognized by the Electronics Technicians Asso<br>Career Readiness Indicator (CRI)  | tal Concepts and Circuitry; Computer<br>nications; and Technician Work Procedures.<br>ociation (ETA).  |  |  |  |  |
| Course  | Formulas; Electronic Circuits; Series and Parallel; Amplifi<br>Electronics; Computer Applications; Audio & Video Syst<br>Students will be prepared to earn entry level credentials re<br>Career Pathway Program Courses  | iers; Interfacing of Electronics Products, Digi<br>tems; Optical Electronics; Basic Telecommu<br>cognized by the Electronics Technicians Asso<br>Career Readiness Indicator (CRI)  | tal Concepts and Circuitry; Computer<br>nications; and Technician Work Procedures.<br>ociation (ETA).<br>Workforce Careers   |  |  |  |  |
| Course<br>Number<br>17106G1002  | Formulas; Electronic Circuits; Series and Parallel; Amplifi<br>Electronics; Computer Applications; Audio & Video Syst<br>Students will be prepared to earn entry level credentials re<br>Career Pathway Program Courses<br>Alternating Current   | iers; Interfacing of Electronics Products, Digi<br>tems; Optical Electronics; Basic Telecommu<br>cognized by the Electronics Technicians Asso<br>Career Readiness Indicator (CRI)<br>• Alabama Certified Worker (Ready to  | tal Concepts and Circuitry; Computer<br>nications; and Technician Work Procedures.<br>ociation (ETA).<br>Workforce Careers<br>• Electronics Repair Technician  |  |  |  |  |
| Course           Number           17106G1002           13997G1003   | Formulas; Electronic Circuits; Series and Parallel; Amplifi<br>Electronics; Computer Applications; Audio & Video Syst<br>Students will be prepared to earn entry level credentials re<br>Career Pathway Program Courses<br>Alternating Current<br>Career Pathway Project in Manufacturing  | <ul> <li>iers; Interfacing of Electronics Products, Digitems; Optical Electronics; Basic Telecommucognized by the Electronics Technicians Associated Career Readiness Indicator (CRI)</li> <li>Alabama Certified Worker (Ready to Work)</li> </ul>   | tal Concepts and Circuitry; Computer<br>nications; and Technician Work Procedures.<br>ociation (ETA).<br>Workforce Careers<br>• Electronics Repair Technician<br>• Electronics Installer               |  |  |  |  |
| Course           Number           17106G1002           13997G1003           13997G1001  | Formulas; Electronic Circuits; Series and Parallel; Amplifi<br>Electronics; Computer Applications; Audio & Video Syst<br>Students will be prepared to earn entry level credentials re<br>Career Pathway Program Courses<br>Alternating Current<br>Career Pathway Project in Manufacturing<br>CTE Lab in Manufacturing  | <ul> <li>iers; Interfacing of Electronics Products, Digitems; Optical Electronics; Basic Telecommucognized by the Electronics Technicians Association (CRI)</li> <li>Alabama Certified Worker (Ready to Work)</li> <li>Electronics Technicians Association -</li> </ul>  | tal Concepts and Circuitry; Computer<br>nications; and Technician Work Procedures.<br>ociation (ETA).<br>Workforce Careers<br>• Electronics Repair Technician<br>• Electronics Installer               |  |  |  |  |
| Course           Number           17106G1002           13997G1003           13997G1001           17104G1003   | Formulas; Electronic Circuits; Series and Parallel; Amplifi<br>Electronics; Computer Applications; Audio & Video Syst<br>Students will be prepared to earn entry level credentials re<br>Career Pathway Program Courses<br>Alternating Current<br>Career Pathway Project in Manufacturing<br>CTE Lab in Manufacturing<br>Digital Electronics   | <ul> <li>iers; Interfacing of Electronics Products, Digitems; Optical Electronics; Basic Telecommunicognized by the Electronics Technicians Association (CRI)</li> <li>Alabama Certified Worker (Ready to Work)</li> <li>Electronics Technicians Association - Student Electronics Technician</li> </ul>   | tal Concepts and Circuitry; Computer<br>nications; and Technician Work Procedures.<br>ociation (ETA).<br>Workforce Careers<br>• Electronics Repair Technician<br>• Electronics Installer               |  |  |  |  |
| Course           Number           17106G1002           13997G1003           13997G1001           17104G1003           17106G1001  | Formulas; Electronic Circuits; Series and Parallel; Amplifi<br>Electronics; Computer Applications; Audio & Video Syst<br>Students will be prepared to earn entry level credentials re<br>Career Pathway Program Courses<br>Alternating Current<br>Career Pathway Project in Manufacturing<br>CTE Lab in Manufacturing<br>Digital Electronics<br>Direct Current   | <ul> <li>iers; Interfacing of Electronics Products, Digitems; Optical Electronics; Basic Telecommunicognized by the Electronics Technicians Association (CRI)</li> <li>Alabama Certified Worker (Ready to Work)</li> <li>Electronics Technicians Association - Student Electronics Technician</li> <li>Electronics Technician - Student Electronics Technician</li> </ul>  | tal Concepts and Circuitry; Computer<br>nications; and Technician Work Procedures.<br>ociation (ETA).<br>Workforce Careers<br>• Electronics Repair Technician<br>• Electronics Installer               |  |  |  |  |
| Course           Number           17106G1002           13997G1003           13997G1001           17106G1001           20101G1033  | Formulas; Electronic Circuits; Series and Parallel; Amplifi<br>Electronics; Computer Applications; Audio & Video Syst<br>Students will be prepared to earn entry level credentials re<br>Career Pathway Program Courses<br>Alternating Current<br>Career Pathway Project in Manufacturing<br>CTE Lab in Manufacturing<br>Digital Electronics<br>Direct Current<br>Electronics and Control Systems  | <ul> <li>iers; Interfacing of Electronics Products, Digitems; Optical Electronics; Basic Telecommunicognized by the Electronics Technicians Association (CRI)</li> <li>Alabama Certified Worker (Ready to Work)</li> <li>Electronics Technicians Association - Student Electronics Technician</li> <li>Electronics Technicians Association - Basic DC</li> </ul>   | tal Concepts and Circuitry; Computer<br>nications; and Technician Work Procedures.<br>ociation (ETA).<br>Workforce Careers<br>• Electronics Repair Technician<br>• Electronics Installer               |  |  |  |  |
| Course           Number           17106G1002           13997G1003           13997G1001           17104G1003           17106G1001           20101G1033           21009G1005           12009G1005   | Formulas; Electronic Circuits; Series and Parallel; Amplifi<br>Electronics; Computer Applications; Audio & Video Syst<br>Students will be prepared to earn entry level credentials re<br>Career Pathway Program Courses<br>Alternating Current<br>Career Pathway Project in Manufacturing<br>CTE Lab in Manufacturing<br>Digital Electronics<br>Direct Current<br>Electronics and Control Systems<br>Embedded Arduino Controls   | <ul> <li>iers; Interfacing of Electronics Products, Digitems; Optical Electronics; Basic Telecommunicognized by the Electronics Technicians Association (CRI)</li> <li>Alabama Certified Worker (Ready to Work)</li> <li>Electronics Technicians Association - Student Electronics Technician</li> <li>Electronics Technicians Association - Basic DC</li> <li>Electronics Technicians Association - CRI</li> </ul>  | tal Concepts and Circuitry; Computer<br>nications; and Technician Work Procedures.<br>ociation (ETA).<br>Workforce Careers<br>• Electronics Repair Technician<br>• Electronics Installer               |  |  |  |  |
| Course           Number           17106G1002           13997G1003           13997G1001           17104G1003           17106G1001           20101G1033           21009G1005           13001G1000   | Formulas; Electronic Circuits; Series and Parallel; Amplif:<br>Electronics; Computer Applications; Audio & Video Syst<br>Students will be prepared to earn entry level credentials re<br>Career Pathway Program Courses<br>Alternating Current<br>Career Pathway Project in Manufacturing<br>CTE Lab in Manufacturing<br>Digital Electronics<br>Direct Current<br>Electronics and Control Systems<br>Embedded Arduino Controls<br>Introduction to Manufacturing  | <ul> <li>iers; Interfacing of Electronics Products, Digitems; Optical Electronics; Basic Telecommunicognized by the Electronics Technicians Association (CRI)</li> <li>Alabama Certified Worker (Ready to Work)</li> <li>Electronics Technicians Association - Student Electronics Technician</li> <li>Electronics Technicians Association - Basic DC</li> <li>Electronics Technicians Association - Basic AC</li> </ul>   | tal Concepts and Circuitry; Computer<br>nications; and Technician Work Procedures.<br>ociation (ETA).<br>Workforce Careers<br>• Electronics Repair Technician<br>• Electronics Installer               |  |  |  |  |
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| Course           Number           17106G1002           13997G1003           13997G1001           17104G1003           17106G1001           20101G1033           21009G1005           13001G1000           21009G1001           21009G1002   | Formulas; Electronic Circuits; Series and Parallel; Amplifi<br>Electronics; Computer Applications; Audio & Video Syst<br>Students will be prepared to earn entry level credentials re<br><b>Career Pathway Program Courses</b><br>Alternating Current<br>Career Pathway Project in Manufacturing<br>CTE Lab in Manufacturing<br>Digital Electronics<br>Direct Current<br>Electronics and Control Systems<br>Embedded Arduino Controls<br>Introduction to Manufacturing<br>Introduction to Robotics<br>Robotics Applications  | <ul> <li>iers; Interfacing of Electronics Products, Digitems; Optical Electronics; Basic Telecommucognized by the Electronics Technicians Association (CRI)</li> <li>Alabama Certified Worker (Ready to Work)</li> <li>Electronics Technicians Association - Student Electronics Technicians</li> <li>Electronics Technicians Association - Basic DC</li> <li>Electronics Technicians Association - Basic AC</li> <li>Electronics Technicians Association - Basic Analog</li> </ul>  | tal Concepts and Circuitry; Computer<br>nications; and Technician Work Procedures.<br><u>sciation (ETA).</u><br><b>Workforce Careers</b><br>• Electronics Repair Technician<br>• Electronics Installer |  |  |  |  |
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| Course           Number           17106G1002           13997G1003           13997G1001           17104G1003           17106G1001           20101G1033           21009G1005           13001G1000           21009G1001           21009G1002           17049G1000           17106G1003   | Formulas; Electronic Circuits; Series and Parallel; Amplifi<br>Electronics; Computer Applications; Audio & Video Syst<br>Students will be prepared to earn entry level credentials re<br><b>Career Pathway Program Courses</b><br>Alternating Current<br>Career Pathway Project in Manufacturing<br>CTE Lab in Manufacturing<br>Digital Electronics<br>Direct Current<br>Electronics and Control Systems<br>Embedded Arduino Controls<br>Introduction to Manufacturing<br>Introduction to Robotics<br>Robotics Applications<br>Safety and Health Regulations   | <ul> <li>iers; Interfacing of Electronics Products, Digitems; Optical Electronics; Basic Telecommucognized by the Electronics Technicians Association (CRI)</li> <li>Alabama Certified Worker (Ready to Work)</li> <li>Electronics Technicians Association - Student Electronics Technician</li> <li>Electronics Technicians Association - Basic DC</li> <li>Electronics Technicians Association - Basic AC</li> <li>Electronics Technicians Association - Basic Analog</li> <li>Electronics Technicians Association - Basic Digital</li> </ul>  | tal Concepts and Circuitry; Computer<br>nications; and Technician Work Procedures.<br><u>sciation (ETA).</u><br><b>Workforce Careers</b><br>• Electronics Repair Technician<br>• Electronics Installer |  |  |  |  |
| Course           Number           17106G1002           13997G1001           17104G1003           17106G1001           20101G1033           21009G1005           13001G1000           21009G1001           21009G1002           17049G1000           17106G1003           17106G1003           17106G1003  | Formulas; Electronic Circuits; Series and Parallel; Amplifi<br>Electronics; Computer Applications; Audio & Video Syst<br>Students will be prepared to earn entry level credentials re<br><b>Career Pathway Program Courses</b><br>Alternating Current<br>Career Pathway Project in Manufacturing<br>CTE Lab in Manufacturing<br>Digital Electronics<br>Direct Current<br>Electronics and Control Systems<br>Embedded Arduino Controls<br>Introduction to Manufacturing<br>Introduction to Robotics<br>Robotics Applications<br>Safety and Health Regulations<br>Semiconductors<br>Telecommunications Cabling | <ul> <li>iers; Interfacing of Electronics Products, Digitems; Optical Electronics; Basic Telecommucognized by the Electronics Technicians Association (CRI)</li> <li>Alabama Certified Worker (Ready to Work)</li> <li>Electronics Technicians Association - Student Electronics Technician</li> <li>Electronics Technicians Association - Basic DC</li> <li>Electronics Technicians Association - Basic Ac</li> <li>Electronics Technicians Association - Basic Analog</li> <li>Electronics Technicians Association - Basic Digital</li> <li>Electronics Technicians Association - Basic Digital</li> </ul>   | tal Concepts and Circuitry; Computer<br>nications; and Technician Work Procedures.<br><u>sciation (ETA).</u><br>Workforce Careers<br>• Electronics Repair Technician<br>• Electronics Installer        |  |  |  |  |
| Course           Number           17106G1002           13997G1003           13997G1001           17104G1003           17106G1001           20101G1033           21009G1005           13001G1000           21009G1001           21009G1002           17049G1000           17106G1003           17106G1003  | Formulas; Electronic Circuits; Series and Parallel; Amplifi<br>Electronics; Computer Applications; Audio & Video Syst<br>Students will be prepared to earn entry level credentials re<br><b>Career Pathway Program Courses</b><br>Alternating Current<br>Career Pathway Project in Manufacturing<br>CTE Lab in Manufacturing<br>Digital Electronics<br>Direct Current<br>Electronics and Control Systems<br>Embedded Arduino Controls<br>Introduction to Manufacturing<br>Introduction to Robotics<br>Robotics Applications<br>Safety and Health Regulations<br>Semiconductors<br>Telecommunications Cabling | <ul> <li>iers; Interfacing of Electronics Products, Digitems; Optical Electronics; Basic Telecommucognized by the Electronics Technicians Association (CRI)</li> <li>Alabama Certified Worker (Ready to Work)</li> <li>Electronics Technicians Association - Student Electronics Technicians Association - Basic DC</li> <li>Electronics Technicians Association - Basic AC</li> <li>Electronics Technicians Association - Basic Analog</li> <li>Electronics Technicians Association - Basic Digital</li> <li>Electronics Technicians Association - Comprehensive</li> </ul>   | tal Concepts and Circuitry; Computer<br>nications; and Technician Work Procedures.<br>sciation (ETA).<br>Workforce Careers<br>• Electronics Repair Technician<br>• Electronics Installer               |  |  |  |  |
| Course           Number           17106G1002           13997G1003           13997G1001           20101G1033           21009G1005           13001G1000           21009G1002           17049G1000           17106G1001           20101G1033           21009G1005           13001G1000           21009G1002           17049G1000           17106G1003           17109G1000 | Formulas; Electronic Circuits; Series and Parallel; Amplifi<br>Electronics; Computer Applications; Audio & Video Syst<br>Students will be prepared to earn entry level credentials re<br><b>Career Pathway Program Courses</b><br>Alternating Current<br>Career Pathway Project in Manufacturing<br>CTE Lab in Manufacturing<br>Digital Electronics<br>Direct Current<br>Electronics and Control Systems<br>Embedded Arduino Controls<br>Introduction to Manufacturing<br>Introduction to Robotics<br>Robotics Applications<br>Safety and Health Regulations<br>Semiconductors<br>Telecommunications Cabling | <ul> <li>iers; Interfacing of Electronics Products, Digitems; Optical Electronics; Basic Telecommucognized by the Electronics Technicians Association (CRI)</li> <li>Alabama Certified Worker (Ready to Work)</li> <li>Electronics Technicians Association - Student Electronics Technicians Association - Basic DC</li> <li>Electronics Technicians Association - Basic AC</li> <li>Electronics Technicians Association - Basic AC</li> <li>Electronics Technicians Association - Basic Digital</li> <li>Electronics Technicians Association - Comprehensive</li> <li>NCCER Electronic Systems</li> </ul>   | tal Concepts and Circuitry; Computer<br>nications; and Technician Work Procedures.<br>sciation (ETA).<br>Workforce Careers<br>• Electronics Repair Technician<br>• Electronics Installer               |  |  |  |  |
| Course           Number           17106G1002           13997G1003           13997G1001           17104G1003           17106G1001           20101G1033           21009G1005           13001G1000           21009G1001           21009G1002           17049G1000           17106G1003           17106G1003           17106G1003           17109G1000                      | Formulas; Electronic Circuits; Series and Parallel; Amplifi<br>Electronics; Computer Applications; Audio & Video Syst<br>Students will be prepared to earn entry level credentials re<br><b>Career Pathway Program Courses</b><br>Alternating Current<br>Career Pathway Project in Manufacturing<br>CTE Lab in Manufacturing<br>Digital Electronics<br>Direct Current<br>Electronics and Control Systems<br>Embedded Arduino Controls<br>Introduction to Manufacturing<br>Introduction to Robotics<br>Robotics Applications<br>Safety and Health Regulations<br>Semiconductors<br>Telecommunications Cabling | <ul> <li>iers; Interfacing of Electronics Products, Digitems; Optical Electronics; Basic Telecommucognized by the Electronics Technicians Association (CRI)</li> <li>Alabama Certified Worker (Ready to Work)</li> <li>Electronics Technicians Association - Student Electronics Technician</li> <li>Electronics Technicians Association - Basic DC</li> <li>Electronics Technicians Association - Basic AC</li> <li>Electronics Technicians Association - Basic AC</li> <li>Electronics Technicians Association - Basic Digital</li> <li>Electronics Technicians Association - Comprehensive</li> <li>NCCER Electronic Systems Technician, Electronics</li> </ul>   | tal Concepts and Circuitry; Computer<br>nications; and Technician Work Procedures.<br>sciation (ETA).<br>Workforce Careers<br>• Electronics Repair Technician<br>• Electronics Installer               |  |  |  |  |
| Course           Number           17106G1002           13997G1003           13997G1001           17104G1003           17106G1001           20101G1033           21009G1005           13001G1000           21009G1001           21009G1002           17049G1000           17106G1003           17109G1000  | Formulas; Electronic Circuits; Series and Parallel; Amplifi<br>Electronics; Computer Applications; Audio & Video Syst<br>Students will be prepared to earn entry level credentials re<br><b>Career Pathway Program Courses</b><br>Alternating Current<br>Career Pathway Project in Manufacturing<br>CTE Lab in Manufacturing<br>Digital Electronics<br>Direct Current<br>Electronics and Control Systems<br>Embedded Arduino Controls<br>Introduction to Manufacturing<br>Introduction to Robotics<br>Robotics Applications<br>Safety and Health Regulations<br>Semiconductors<br>Telecommunications Cabling | <ul> <li>iers; Interfacing of Electronics Products, Digitems; Optical Electronics; Basic Telecommucognized by the Electronics Technicians Association (CRI)</li> <li>Alabama Certified Worker (Ready to Work)</li> <li>Electronics Technicians Association - Student Electronics Technician</li> <li>Electronics Technicians Association - Basic DC</li> <li>Electronics Technicians Association - Basic AC</li> <li>Electronics Technicians Association - Basic AC</li> <li>Electronics Technicians Association - Basic Digital</li> <li>Electronics Technicians Association - Comprehensive</li> <li>NCCER Electronic Systems Technician, Electronics</li> <li>NCCER Core (module 6 is an elective</li> </ul>  | tal Concepts and Circuitry; Computer<br>nications; and Technician Work Procedures.<br>sciation (ETA).<br>Workforce Careers<br>• Electronics Repair Technician<br>• Electronics Installer               |  |  |  |  |
| Course           Number           17106G1002           13997G1003           13997G1001           17104G1003           17106G1001           20101G1033           21009G1005           13001G1000           21009G1001           21009G1002           17049G1000           17106G1003           17109G1000  | Formulas; Electronic Circuits; Series and Parallel; Amplifi<br>Electronics; Computer Applications; Audio & Video Syst<br>Students will be prepared to earn entry level credentials re<br><b>Career Pathway Program Courses</b><br>Alternating Current<br>Career Pathway Project in Manufacturing<br>CTE Lab in Manufacturing<br>Digital Electronics<br>Direct Current<br>Electronics and Control Systems<br>Embedded Arduino Controls<br>Introduction to Manufacturing<br>Introduction to Robotics<br>Robotics Applications<br>Safety and Health Regulations<br>Semiconductors<br>Telecommunications Cabling | <ul> <li>iers; Interfacing of Electronics Products, Digitems; Optical Electronics; Basic Telecommucognized by the Electronics Technicians Association (CRI)</li> <li>Alabama Certified Worker (Ready to Work)</li> <li>Electronics Technicians Association - Student Electronics Technician</li> <li>Electronics Technicians Association - Basic DC</li> <li>Electronics Technicians Association - Basic AC</li> <li>Electronics Technicians Association - Basic Aalog</li> <li>Electronics Technicians Association - Basic Digital</li> <li>Electronics Technicians Association - Basic Digital</li> <li>Electronics Technicians Association - Basic Digital</li> <li>Electronics Technicians Association - Comprehensive</li> <li>NCCER Electronics Systems Technician, Electronics</li> <li>NCCER Core (module 6 is an elective and not required for CRI)</li> </ul>                                      | tal Concepts and Circuitry; Computer<br>nications; and Technician Work Procedures.<br>sciation (ETA).<br>Workforce Careers<br>• Electronics Repair Technician<br>• Electronics Installer               |  |  |  |  |
| Course           Number           17106G1002           13997G1003           13997G1001           17106G1001           20101G1033           21009G1005           13001G1000           21009G1001           21009G1002           17049G1000           17106G1003           17106G1003           17106G1003           17109G1000   | Formulas; Electronic Circuits; Series and Parallel; Amplifi<br>Electronics; Computer Applications; Audio & Video Syst<br>Students will be prepared to earn entry level credentials re<br><b>Career Pathway Program Courses</b><br>Alternating Current<br>Career Pathway Project in Manufacturing<br>CTE Lab in Manufacturing<br>Digital Electronics<br>Direct Current<br>Electronics and Control Systems<br>Embedded Arduino Controls<br>Introduction to Manufacturing<br>Introduction to Robotics<br>Robotics Applications<br>Safety and Health Regulations<br>Semiconductors<br>Telecommunications Cabling | <ul> <li>iers; Interfacing of Electronics Products, Digitems; Optical Electronics; Basic Telecommucognized by the Electronics Technicians Association (CRI)</li> <li>Alabama Certified Worker (Ready to Work)</li> <li>Electronics Technicians Association - Student Electronics Technician</li> <li>Electronics Technicians Association - Basic DC</li> <li>Electronics Technicians Association - Basic AC</li> <li>Electronics Technicians Association - Basic Aalog</li> <li>Electronics Technicians Association - Basic Digital</li> <li>Electronics Technicians Association - Basic Digital</li> <li>Electronics Technicians Association - Basic Digital</li> <li>Electronics Technicians Association - Comprehensive</li> <li>NCCER Electronics Systems Technician, Electronics</li> <li>NCCER Core (module 6 is an elective and not required for CRI)</li> <li>MSSC – Certified Production</li> </ul> | tal Concepts and Circuitry; Computer<br>nications; and Technician Work Procedures.<br>sciation (ETA).<br>Workforce Careers<br>• Electronics Repair Technician<br>• Electronics Installer               |  |  |  |  |
| Course           Number           17106G1002           13997G1003           13997G1001           17104G1003           17106G1001           20101G1033           21009G1005           13001G1000           21009G1001           21009G1002           17049G1000           17106G1003           17106G1003           17109G1000   | Formulas; Electronic Circuits; Series and Parallel; Amplifi<br>Electronics; Computer Applications; Audio & Video Syst<br>Students will be prepared to earn entry level credentials re<br><b>Career Pathway Program Courses</b><br>Alternating Current<br>Career Pathway Project in Manufacturing<br>CTE Lab in Manufacturing<br>Digital Electronics<br>Direct Current<br>Electronics and Control Systems<br>Embedded Arduino Controls<br>Introduction to Manufacturing<br>Introduction to Robotics<br>Robotics Applications<br>Safety and Health Regulations<br>Semiconductors<br>Telecommunications Cabling | <ul> <li>iers; Interfacing of Electronics Products, Digitems; Optical Electronics; Basic Telecommucognized by the Electronics Technicians Association (CRI)</li> <li>Alabama Certified Worker (Ready to Work)</li> <li>Electronics Technicians Association - Student Electronics Technician</li> <li>Electronics Technicians Association - Basic DC</li> <li>Electronics Technicians Association - Basic AC</li> <li>Electronics Technicians Association - Basic Aalog</li> <li>Electronics Technicians Association - Basic Digital</li> <li>Electronics Technicians Association - Comprehensive</li> <li>NCCER Electronics Systems Technician, Electronics</li> <li>NCCER Core (module 6 is an elective and not required for CRI)</li> <li>MSSC – Certified Production Technician (CPT)</li> </ul>  | tal Concepts and Circuitry; Computer<br>nications; and Technician Work Procedures.<br>sciation (ETA).<br>Workforce Careers<br>• Electronics Repair Technician<br>• Electronics Installer               |  |  |  |  |

#### Industrial Maintenance Electrical & Instrumentation (Must teach three courses from this program list within two years) Career Industrial maintenance is divided into two distinct pathways, electrical and instrumentation and mechanical. Industrial maintenance technicians are Pathway needed in every industry that uses machinery, from automotive assembly plants to computer manufacturers. Not only do they repair and maintain Program electrical instruments and equipment, but they also install and dismantle them. Every time a new appliance leaves a factory, or a new car rolls off the line, a skilled industrial maintenance technician played a role in producing it. This program aligns with NCCER standards and covers topics such as Fasteners and Anchors, Process Mathematics, Pneumatic Controls, Oxyfuel Cutting, Introduction to Piping Components, and Laser Alignment. Course **Career Pathway Program Courses Career Readiness Indicator (CRI)** Workforce Careers Number Career Pathway Project in Manufacturing 13997G1003 • Industrial Maintenance Electrical · Alabama Certified Worker (Ready to CTE Lab in Manufacturing 13997G1001 Repair Technician Work) 13303G1001 Industrial Maintenance - Electrical & Instrumentation I • Industrial Maintenance • NCCER Core (module 6 is an elective Industrial Maintenance - Electrical & Instrumentation II 13303G1002 Instrumentation Repair Technician and not required for CRI) Industrial Maintenance - Electrical & Instrumentation III 13303G1003 NCCER Industrial Maintenance E & 13001G1000 Introduction to Manufacturing I Level 1 Safety and Health Regulations 17049G1000 • FANUC CERT- Handling Tool Operations and Programming • MSSC - Certified Production Technician (CPT) (Each module will count as a CRI) **Industrial Maintenance Mechanical** (Must teach three courses from this program list within two years) Career Industrial maintenance is divided into two distinct pathways, electrical and instrumentation and mechanical. Industrial maintenance technicians Pathway are needed in every industry that uses machinery, from automotive assembly plants to computer manufacturers. Not only do they repair and Program maintain electrical instruments and equipment, but they also install and dismantle them. Every time a new appliance leaves a factory, or a new car rolls off the line, a skilled industrial maintenance technician played a role in producing it. This program aligns with NCCER standards and covers topics such as Fasteners and Anchors, Process Mathematics, Pneumatic Controls, Oxyfuel Cutting, Introduction to Piping Components, and Laser Alignment. Course Workforce Careers **Career Pathway Program Courses Career Readiness Indicator (CRI)** Number 13997G1003 Career Pathway Project in Manufacturing • Pipefitting Technician · Alabama Certified Worker (Ready to 13997G1001 CTE Lab in Manufacturing Work) • Industrial Maintenance Mechanical Industrial Maintenance - Mechanical I 13303G1004 NCCER Core (module 6 is an elective Repair Technician 13303G1005 Industrial Maintenance - Mechanical II and not required for CRI) 13303G1006 Industrial Maintenance - Mechanical III NCCER Industrial Maintenance Mechanic Level 1 13001G1000 Introduction to Manufacturing • FANUC CERT- Handling Tool 17049G1000 Safety and Health Regulations Operations and Programming • MSSC - Certified Production Technician (CPT) (Each module will count as a CRI) Modern Manufacturing Career (Must teach three courses from this program list within two years) Pathway Modern Manufacturing is designed to prepare students for entry level positions in manufacturing. These courses align with MSSC and NCCER Program standards which includes modular courses for: Safety, Quality, Production and Maintenance. Course **Career Pathway Program Courses Career Readiness Indicator (CRI)** Workforce Careers Number 13997G1003 Career Pathway Project in Manufacturing • Alabama Certified Worker (Ready to Manufacturing Operations Technician 13997G1001 CTE Lab in Manufacturing Work) · Manufacturing Operations Manager 13001G1000 Introduction to Manufacturing • FANUC CERT- Handling Tool 13002G1013 Manufacturing I - Safety **Operations and Programming** 13002G1023 Manufacturing II - Quality NCCER Core (module 6 is an elective Manufacturing III - Production 13002G1033 and not required for CRI) Manufacturing IV - Maintenance 13002G1043 MSSC - Certified Production Safety and Health Regulations 17049G1000 Technician (CPT) (Each module will count as a CRI)

| Caroor   | Pre   | ecision Machining Program  |  |  |  |  |  |
|--|---|--|--|--|--|--|--|
| Dethemen   | (Must teach three courses from this program list within two years)  |  |  |  |  |  |  |
| Patnway  | Precision machinists set up and operate a variety of machine tools to produce precision parts and instruments. The precision machining curriculum   |  |  |  |  |  |  |
| Program  | includes necessary skills for students to fabricate, modify, or renair mechanical instruments.  |  |  |  |  |  |  |
| Course   |   |  |  |  |  |  |  |
| Number   | Career Pathway Program Courses  | Career Readiness Indicator (CRI)   | Workforce Careers  |  |  |  |  |
| 13997G1003   | Career Pathway Project in Manufacturing   | - Alshama Cartifical Warker (Das hats  | Provision Machinist  |  |  |  |  |
| 13203G1004   | Commuter Aided Design and Commuter Aided  | • Alabama Certified worker (Ready to   | CNC Machinist  |  |  |  |  |
| 1520501004   | Manufacturing I   |  | • CNC Machinist  |  |  |  |  |
| 13203G1005   | Computer-Aided Design and Computer-Aided  | • NIMS Level 1 Measurement, Materials  |  |  |  |  |  |
| 1020001000   | Manufacturing II  | & Salety   |  |  |  |  |  |
| 13203G1006   | Computer Numerical Control (CNC) I  | • NIMS Level 1 Job Planning,   |  |  |  |  |  |
| 13203G1007   | Computer Numerical Control (CNC) II   | Benchwork & Layout   |  |  |  |  |  |
| 13204G1001   | Coordinate Measuring Machine  | NIMS Level 1 Manual Milling Skills   |  |  |  |  |  |
| 13997G1001   | CTE Lab in Manufacturing  | NIMS Level 1 Turning   |  |  |  |  |  |
| 13204G1006   | Drill Press   | Operations: Turning Between  |  |  |  |  |  |
| 13204G1004   | Intermediate Lathe and Bench Work   | Centers  |  |  |  |  |  |
| 13204G1002   | Introduction to Lathe   | NIMS Level 1 Turning Operations:   |  |  |  |  |  |
| 13001G1000   | Introduction to Manufacturing   | Turning Chucking Skills  |  |  |  |  |  |
| 13203G1001   | Introduction to Precision Machining   | NIMS Level I Grinding Skills   |  |  |  |  |  |
| 13203G1008   | Milling and Surface Grinder I   | • NIMS Level 1 Drill Press Skills  |  |  |  |  |  |
| 1220201000   | Milling and Graff an Chindra II   | NIMS Level 1 CNC Turning:  |  |  |  |  |  |
| 13203G1009   | Milling and Surface Grinder II  | Programming Setup & Operations   |  |  |  |  |  |
| 1/049G1000   | Safety and Health Regulations   | <ul> <li>NIMS Level 1 CNC Milling:</li> </ul>  |  |  |  |  |  |
|  |   | Programming Setup & Operations   |  |  |  |  |  |
|  |   | <ul> <li>NIMS Level 1 Turning: Operations</li> </ul>   |  |  |  |  |  |
|  |   | <ul> <li>NIMS Level 1 Milling Operations</li> </ul>  |  |  |  |  |  |
|  |   | MSSC – Certified Production  |  |  |  |  |  |
|  |   | Technician (CPT)   |  |  |  |  |  |
|  |   | (Each module will count as a CRI)  |  |  |  |  |  |
|  |   | (Each module will could us a Citi)   |  |  |  |  |  |
|  |   |  |  |  |  |  |  |
|  | Robotics and  | Automated Manufacturing Progr  | am   |  |  |  |  |
|  | Robotics and  | Automated Manufacturing Progr  | am   |  |  |  |  |
| Career   | Robotics and<br>(Must teach three co  | Automated Manufacturing Progr<br>ourses from this program list within tw   | am<br>vo years)  |  |  |  |  |
| Career<br>Pathway  | Robotics and<br>(Must teach three co<br>The Robotics and Automated Manufacturing program cov  | Automated Manufacturing Progr<br>ourses from this program list within tw<br>ers a variety of topics including: Computer Au   | <b>am</b><br><b>vo years)</b><br>itomation, Design, and Production, as well as   |  |  |  |  |
| Career<br>Pathway<br>Program   | Robotics and<br>(Must teach three co<br>The Robotics and Automated Manufacturing program cove<br>Introduction to Robotics, Robotics Application, Electronic<br>by the Electronics Technicians Association (ETA) MSSC  | Automated Manufacturing Progr<br>ourses from this program list within tw<br>ers a variety of topics including: Computer Au<br>s and Control Systems. Students will be prepa  | <b>am</b><br><b>vo years)</b><br>itomation, Design, and Production, as well as<br>ired to earn entry level credentials recognized  |  |  |  |  |
| Career<br>Pathway<br>Program   | Robotics and<br>(Must teach three or<br>The Robotics and Automated Manufacturing program cove<br>Introduction to Robotics, Robotics Application, Electronic<br>by the Electronics Technicians Association (ETA), MSSC   | Automated Manufacturing Progr<br>ourses from this program list within tw<br>ers a variety of topics including: Computer Au<br>s and Control Systems. Students will be prepa<br>, and NCCER.  | am<br>vo years)<br>itomation, Design, and Production, as well as<br>ired to earn entry level credentials recognized  |  |  |  |  |
| Career<br>Pathway<br>Program<br>Course   | Robotics and<br>(Must teach three co<br>The Robotics and Automated Manufacturing program cove<br>Introduction to Robotics, Robotics Application, Electronic<br>by the Electronics Technicians Association (ETA), MSSC<br>Career Pathway Program Courses   | Automated Manufacturing Progr<br>ourses from this program list within tw<br>ers a variety of topics including: Computer Au<br>s and Control Systems. Students will be prepa<br>, and NCCER.<br>Career Readiness Indicator (CRI)  | am<br>vo years)<br>itomation, Design, and Production, as well as<br>ired to earn entry level credentials recognized<br>Workforce Careers   |  |  |  |  |
| Career<br>Pathway<br>Program<br>Course<br>Number   | Robotics and<br>(Must teach three or<br>The Robotics and Automated Manufacturing program cove<br>Introduction to Robotics, Robotics Application, Electronic<br>by the Electronics Technicians Association (ETA), MSSC<br>Career Pathway Program Courses   | Automated Manufacturing Progr<br>ourses from this program list within tw<br>ers a variety of topics including: Computer Au<br>s and Control Systems. Students will be prepa<br>, and NCCER.<br>Career Readiness Indicator (CRI)  | am<br>vo years)<br>itomation, Design, and Production, as well as<br>ired to earn entry level credentials recognized<br>Workforce Careers   |  |  |  |  |
| Career<br>Pathway<br>Program<br>Course<br>Number<br>13997G1003   | Robotics and<br>(Must teach three or<br>The Robotics and Automated Manufacturing program cow<br>Introduction to Robotics, Robotics Application, Electronic<br>by the Electronics Technicians Association (ETA), MSSC<br>Career Pathway Program Courses  | Automated Manufacturing Progr<br>ourses from this program list within tw<br>ers a variety of topics including: Computer Au<br>s and Control Systems. Students will be prepa<br>, and NCCER.<br>Career Readiness Indicator (CRI)<br>• Alabama Certified Worker (Ready to  | am<br>vo years)<br>itomation, Design, and Production, as well as<br>ired to earn entry level credentials recognized<br>Workforce Careers<br>• Controls Engineer  |  |  |  |  |
| Career<br>Pathway<br>Program<br>Course<br>Number<br>13997G1003<br>13997G1001   | Robotics and<br>(Must teach three co<br>The Robotics and Automated Manufacturing program cove<br>Introduction to Robotics, Robotics Application, Electronic<br>by the Electronics Technicians Association (ETA), MSSC<br>Career Pathway Program Courses<br>Career Pathway Project in Manufacturing<br>CTE Lab in Manufacturing  | Automated Manufacturing Progr<br>ourses from this program list within tw<br>ers a variety of topics including: Computer Au<br>s and Control Systems. Students will be prepa<br>, and NCCER.<br>Career Readiness Indicator (CRI)<br>• Alabama Certified Worker (Ready to<br>Work)   | am<br>vo years)<br>itomation, Design, and Production, as well as<br>ired to earn entry level credentials recognized<br>Workforce Careers<br>• Controls Engineer<br>• Industrial Maintenance  |  |  |  |  |
| Career<br>Pathway<br>Program<br>Course<br>Number<br>13997G1003<br>13997G1001<br>21010G1001   | Robotics and<br>(Must teach three of<br>The Robotics and Automated Manufacturing program cove<br>Introduction to Robotics, Robotics Application, Electronic<br>by the Electronics Technicians Association (ETA), MSSC<br>Career Pathway Program Courses<br>Career Pathway Project in Manufacturing<br>CTE Lab in Manufacturing<br>Computer Integrated Automation  | Automated Manufacturing Progr<br>ourses from this program list within tw<br>ers a variety of topics including: Computer Au<br>s and Control Systems. Students will be prepa<br>, and NCCER.<br>Career Readiness Indicator (CRI)<br>Alabama Certified Worker (Ready to<br>Work)<br>Autodesk Inventor Certified User   | am<br>vo years)<br>normation, Design, and Production, as well as<br>red to earn entry level credentials recognized<br>Workforce Careers<br>• Controls Engineer<br>• Industrial Maintenance<br>• Electronic Technician  |  |  |  |  |
| Career<br>Pathway<br>Program<br>Course<br>Number<br>13997G1003<br>13997G1001<br>21010G1001<br>21010G1002   | Robotics and<br>(Must teach three of<br>The Robotics and Automated Manufacturing program cove<br>Introduction to Robotics, Robotics Application, Electronic<br>by the Electronics Technicians Association (ETA), MSSC<br>Career Pathway Program Courses<br>Career Pathway Project in Manufacturing<br>CTE Lab in Manufacturing<br>CTE Lab in Manufacturing<br>Computer Integrated Automation<br>Computer Integrated Design  | Automated Manufacturing Progr<br>ourses from this program list within tw<br>ers a variety of topics including: Computer Au<br>s and Control Systems. Students will be prepa<br>, and NCCER.<br>Career Readiness Indicator (CRI)<br>• Alabama Certified Worker (Ready to<br>Work)<br>• Autodesk Inventor Certified User<br>• Autodesk-AutoCAD Certified User  | am<br>vo years)<br>normation, Design, and Production, as well as<br>red to earn entry level credentials recognized<br>Workforce Careers<br>• Controls Engineer<br>• Industrial Maintenance<br>• Electronic Technician<br>• Programmable Logic Controller   |  |  |  |  |
| Career<br>Pathway<br>Program<br>Course<br>Number<br>13997G1003<br>13997G1001<br>21010G1001<br>21010G1002<br>21010G1003   | Robotics and<br>(Must teach three of<br>The Robotics and Automated Manufacturing program cove<br>Introduction to Robotics, Robotics Application, Electronic<br>by the Electronics Technicians Association (ETA), MSSC<br>Career Pathway Program Courses<br>Career Pathway Project in Manufacturing<br>CTE Lab in Manufacturing<br>CTE Lab in Manufacturing<br>Computer Integrated Automation<br>Computer Integrated Design<br>Computer Integrated Production  | Automated Manufacturing Progr<br>ourses from this program list within tw<br>ers a variety of topics including: Computer Au<br>s and Control Systems. Students will be prepa<br>, and NCCER.<br>Career Readiness Indicator (CRI)<br>• Alabama Certified Worker (Ready to<br>Work)<br>• Autodesk Inventor Certified User<br>• Autodesk Inventor Certified User<br>• Electronics Technicians Association -  | am<br>vo years)<br>ntomation, Design, and Production, as well as<br>red to earn entry level credentials recognized<br>Workforce Careers<br>• Controls Engineer<br>• Industrial Maintenance<br>• Electronic Technician<br>• Programmable Logic Controller<br>Technician   |  |  |  |  |
| Career<br>Pathway<br>Program<br>Course<br>Number<br>13997G1003<br>13997G1001<br>21010G1001<br>21010G1002<br>21010G1003<br>20101G1033<br>132001G1033  | Robotics and<br>(Must teach three of<br>The Robotics and Automated Manufacturing program covo<br>Introduction to Robotics, Robotics Application, Electronic<br>by the Electronics Technicians Association (ETA), MSSC<br>Career Pathway Program Courses<br>Career Pathway Project in Manufacturing<br>CTE Lab in Manufacturing<br>Computer Integrated Automation<br>Computer Integrated Design<br>Computer Integrated Production<br>Electronics and Control Systems   | Automated Manufacturing Progr<br>ourses from this program list within ty<br>ers a variety of topics including: Computer Au<br>s and Control Systems. Students will be prepa<br>, and NCCER.<br>Career Readiness Indicator (CRI)<br>• Alabama Certified Worker (Ready to<br>Work)<br>• Autodesk Inventor Certified User<br>• Autodesk Inventor Certified User<br>• Electronics Technicians Association -<br>Student Electronics Technician  | am<br>vo years)<br>nomation, Design, and Production, as well as<br>red to earn entry level credentials recognized<br>Workforce Careers<br>• Controls Engineer<br>• Industrial Maintenance<br>• Electronic Technician<br>• Programmable Logic Controller<br>Technician<br>• Automation Technician               |  |  |  |  |
| Career<br>Pathway<br>Program<br>Course<br>Number<br>13997G1003<br>13997G1001<br>21010G1001<br>21010G1002<br>21010G1003<br>20101G1033<br>13001G1000   | Robotics and<br>(Must teach three or<br>The Robotics and Automated Manufacturing program covo<br>Introduction to Robotics, Robotics Application, Electronic<br>by the Electronics Technicians Association (ETA), MSSC<br>Career Pathway Program Courses<br>Career Pathway Project in Manufacturing<br>CTE Lab in Manufacturing<br>Computer Integrated Automation<br>Computer Integrated Design<br>Computer Integrated Production<br>Electronics and Control Systems<br>Introduction to Manufacturing  | Automated Manufacturing Progr<br>ourses from this program list within ty<br>ers a variety of topics including: Computer Au<br>s and Control Systems. Students will be prepa<br>, and NCCER.<br>Career Readiness Indicator (CRI)<br>• Alabama Certified Worker (Ready to<br>Work)<br>• Autodesk Inventor Certified User<br>• Autodesk Inventor Certified User<br>• Electronics Technicians Association -<br>Student Electronics Technician<br>• Electronics Technicians Association -   | am<br>vo years)<br>ntomation, Design, and Production, as well as<br>red to earn entry level credentials recognized<br>Workforce Careers<br>• Controls Engineer<br>• Industrial Maintenance<br>• Electronic Technician<br>• Programmable Logic Controller<br>Technician<br>• Automation Technician              |  |  |  |  |
| Career<br>Pathway<br>Program<br>Course<br>Number<br>13997G1003<br>13997G1001<br>21010G1001<br>21010G1003<br>20101G1003<br>13001G1000<br>21009G1001   | Robotics and<br>(Must teach three or<br>The Robotics and Automated Manufacturing program cove<br>Introduction to Robotics, Robotics Application, Electronic<br>by the Electronics Technicians Association (ETA), MSSC<br>Career Pathway Program Courses<br>Career Pathway Project in Manufacturing<br>CTE Lab in Manufacturing<br>CTE Lab in Manufacturing<br>Computer Integrated Automation<br>Computer Integrated Design<br>Computer Integrated Production<br>Electronics and Control Systems<br>Introduction to Manufacturing<br>Introduction to Robotics  | Automated Manufacturing Progr<br>ourses from this program list within tw<br>ers a variety of topics including: Computer Au<br>s and Control Systems. Students will be prepa<br>, and NCCER.<br>Career Readiness Indicator (CRI)<br>• Alabama Certified Worker (Ready to<br>Work)<br>• Autodesk Inventor Certified User<br>• Autodesk Inventor Certified User<br>• Electronics Technicians Association -<br>Student Electronics Technician<br>• Electronics Technicians Association -<br>Basic DC   | am<br>vo years)<br>ntomation, Design, and Production, as well as<br>red to earn entry level credentials recognized<br>Workforce Careers<br>• Controls Engineer<br>• Industrial Maintenance<br>• Electronic Technician<br>• Programmable Logic Controller<br>Technician<br>• Automation Technician              |  |  |  |  |
| Career<br>Pathway<br>Program<br>Course<br>Number<br>13997G1003<br>13997G1001<br>21010G1001<br>21010G1002<br>21010G1003<br>20101G1033<br>13001G1000<br>21009G1001<br>21009G1001<br>21009G1002               | Robotics and<br>(Must teach three or<br>The Robotics and Automated Manufacturing program cove<br>Introduction to Robotics, Robotics Application, Electronic<br>by the Electronics Technicians Association (ETA), MSSC<br>Career Pathway Program Courses<br>Career Pathway Project in Manufacturing<br>CTE Lab in Manufacturing<br>Computer Integrated Automation<br>Computer Integrated Design<br>Computer Integrated Design<br>Computer Integrated Production<br>Electronics and Control Systems<br>Introduction to Manufacturing<br>Introduction to Robotics<br>Robotics Application  | Automated Manufacturing Progr<br>ourses from this program list within tw<br>ers a variety of topics including: Computer Au<br>s and Control Systems. Students will be prepa<br>, and NCCER.<br>Career Readiness Indicator (CRI)<br>• Alabama Certified Worker (Ready to<br>Work)<br>• Autodesk Inventor Certified User<br>• Autodesk Inventor Certified User<br>• Electronics Technicians Association -<br>Student Electronics Technician<br>• Electronics Technicians Association -<br>Basic DC<br>• Electronics Technicians Association -  | am<br>vo years)<br>itomation, Design, and Production, as well as<br>red to earn entry level credentials recognized<br>Workforce Careers<br>• Controls Engineer<br>• Industrial Maintenance<br>• Electronic Technician<br>• Programmable Logic Controller<br>Technician<br>• Automation Technician              |  |  |  |  |
| Career<br>Pathway<br>Program<br>Course<br>Number<br>13997G1003<br>13997G1001<br>21010G1001<br>21010G1002<br>21010G1003<br>20101G1033<br>13001G1000<br>21009G1001<br>21009G1002<br>21010G1002               | Robotics and<br>(Must teach three or<br>The Robotics and Automated Manufacturing program cove<br>Introduction to Robotics, Robotics Application, Electronic<br>by the Electronics Technicians Association (ETA), MSSC<br>Career Pathway Program Courses<br>Career Pathway Project in Manufacturing<br>CTE Lab in Manufacturing<br>CTE Lab in Manufacturing<br>Computer Integrated Automation<br>Computer Integrated Design<br>Computer Integrated Production<br>Electronics and Control Systems<br>Introduction to Manufacturing<br>Introduction to Robotics<br>Robotics Application<br>Robotics and Automation   | Automated Manufacturing Progr<br>ourses from this program list within tv<br>ers a variety of topics including: Computer Au<br>s and Control Systems. Students will be prepa<br>, and NCCER.<br>Career Readiness Indicator (CRI)<br>• Alabama Certified Worker (Ready to<br>Work)<br>• Autodesk Inventor Certified User<br>• Autodesk Inventor Certified User<br>• Electronics Technicians Association -<br>Student Electronics Technician<br>• Electronics Technicians Association -<br>Basic DC<br>• Electronics Technicians Association -<br>Basic AC  | am<br>vo years)<br>itomation, Design, and Production, as well as<br>irred to earn entry level credentials recognized<br>Workforce Careers<br>• Controls Engineer<br>• Industrial Maintenance<br>• Electronic Technician<br>• Programmable Logic Controller<br>Technician<br>• Automation Technician            |  |  |  |  |
| Career<br>Pathway<br>Program<br>Course<br>Number<br>13997G1003<br>13997G1001<br>21010G1001<br>21010G1002<br>21010G1003<br>20101G1033<br>13001G1000<br>21009G1001<br>21009G1002<br>21010G1002<br>17049G1000 | Robotics and<br>(Must teach three or<br>Introduction to Robotics, Robotics Application, Electronic<br>by the Electronics Technicians Association (ETA), MSSC         Career Pathway Program Courses         Career Pathway Project in Manufacturing         CTE Lab in Manufacturing         Computer Integrated Automation         Computer Integrated Design         Computer Integrated Production         Electronics and Control Systems         Introduction to Robotics         Robotics Application         Robotics and Automation   | Automated Manufacturing Progr<br>ourses from this program list within tv<br>ers a variety of topics including: Computer Au<br>s and Control Systems. Students will be prepa<br>, and NCCER.<br>Career Readiness Indicator (CRI)<br>• Alabama Certified Worker (Ready to<br>Work)<br>• Autodesk Inventor Certified User<br>• Autodesk-AutoCAD Certified User<br>• Electronics Technician Association -<br>Student Electronics Technician<br>• Electronics Technicians Association -<br>Basic DC<br>• Electronics Technicians Association -<br>Basic AC<br>• Electronics Technicians Association -   | am<br>vo years)<br>itomation, Design, and Production, as well as<br>irred to earn entry level credentials recognized<br>Workforce Careers<br>Workforce Careers<br>Controls Engineer<br>Industrial Maintenance<br>Electronic Technician<br>Programmable Logic Controller<br>Technician<br>Automation Technician |  |  |  |  |
| Career<br>Pathway<br>Program<br>Course<br>Number<br>13997G1003<br>13997G1001<br>21010G1001<br>21010G1002<br>21010G1003<br>20101G1033<br>13001G1000<br>21009G1001<br>21009G1001<br>21009G1002<br>17049G1000 | Robotics and<br>(Must teach three or<br>The Robotics and Automated Manufacturing program cover<br>Introduction to Robotics, Robotics Application, Electronic<br>by the Electronics Technicians Association (ETA), MSSC         Career Pathway Program Courses         Career Pathway Program Courses         Career Pathway Program Courses         Career Pathway Project in Manufacturing         CTE Lab in Manufacturing         Computer Integrated Automation         Computer Integrated Design         Computer Integrated Production         Electronics and Control Systems         Introduction to Robotics         Robotics Application         Robotics and Automation         Safety and Health Regulations | Automated Manufacturing Progr<br>ourses from this program list within tv<br>ers a variety of topics including: Computer Au<br>s and Control Systems. Students will be prepa<br>, and NCCER.<br>Career Readiness Indicator (CRI)<br>• Alabama Certified Worker (Ready to<br>Work)<br>• Autodesk Inventor Certified User<br>• Autodesk Inventor Certified User<br>• Electronics Technicians Association -<br>Student Electronics Technician<br>• Electronics Technicians Association -<br>Basic DC<br>• Electronics Technicians Association -<br>Basic AC<br>• Electronics Technicians Association -<br>Basic AC   | am<br>vo years)<br>itomation, Design, and Production, as well as<br>irred to earn entry level credentials recognized<br>Workforce Careers<br>Workforce Careers<br>Controls Engineer<br>Industrial Maintenance<br>Electronic Technician<br>Programmable Logic Controller<br>Technician<br>Automation Technician |  |  |  |  |
| Career<br>Pathway<br>Program<br>Course<br>Number<br>13997G1003<br>13997G1001<br>21010G1001<br>21010G1002<br>21010G1003<br>20101G1033<br>13001G1000<br>21009G1001<br>21009G1002<br>21010G1002<br>21010G1002 | Robotics and<br>(Must teach three or<br>The Robotics and Automated Manufacturing program cover<br>Introduction to Robotics, Robotics Application, Electronic<br>by the Electronics Technicians Association (ETA), MSSC         Career Pathway Program Courses         Career Pathway Program Courses         Career Pathway Program Courses         Career Pathway Project in Manufacturing         CTE Lab in Manufacturing         Computer Integrated Automation         Computer Integrated Design         Computer Integrated Production         Electronics and Control Systems         Introduction to Robotics         Robotics Application         Robotics and Automation         Safety and Health Regulations | Automated Manufacturing Progr<br>ourses from this program list within tw<br>ers a variety of topics including: Computer Au<br>s and Control Systems. Students will be prepa<br>, and NCCER.<br>Career Readiness Indicator (CRI)<br>• Alabama Certified Worker (Ready to<br>Work)<br>• Autodesk Inventor Certified User<br>• Autodesk Inventor Certified User<br>• Electronics Technicians Association -<br>Student Electronics Technician<br>• Electronics Technicians Association -<br>Basic DC<br>• Electronics Technicians Association -<br>Basic AC<br>• Electronics Technicians Association -<br>Basic Ac   | am<br>vo years)<br>itomation, Design, and Production, as well as<br>ired to earn entry level credentials recognized<br>Workforce Careers<br>Workforce Careers<br>Controls Engineer<br>Industrial Maintenance<br>Electronic Technician<br>Programmable Logic Controller<br>Technician<br>Automation Technician  |  |  |  |  |
| Career<br>Pathway<br>Program<br>Course<br>Number<br>13997G1003<br>13997G1001<br>21010G1001<br>21010G1003<br>20101G1033<br>13001G1000<br>21009G1001<br>21009G1001<br>21009G1002<br>17049G1000               | Robotics and<br>(Must teach three of<br>The Robotics and Automated Manufacturing program cover<br>Introduction to Robotics, Robotics Application, Electronic<br>by the Electronics Technicians Association (ETA), MSSC           Career Pathway Program Courses           Career Pathway Program Courses           Career Pathway Project in Manufacturing           CTE Lab in Manufacturing           Computer Integrated Automation           Computer Integrated Design           Computer Integrated Production           Electronics and Control Systems           Introduction to Robotics           Robotics Application           Robotics and Automation           Safety and Health Regulations                | Automated Manufacturing Progr<br>ourses from this program list within ty<br>ers a variety of topics including: Computer Au<br>s and Control Systems. Students will be prepa<br>, and NCCER.<br>Career Readiness Indicator (CRI)<br>• Alabama Certified Worker (Ready to<br>Work)<br>• Autodesk Inventor Certified User<br>• Autodesk Inventor Certified User<br>• Electronics Technicians Association -<br>Student Electronics Technician<br>• Electronics Technicians Association -<br>Basic DC<br>• Electronics Technicians Association -<br>Basic AC<br>• Electronics Technicians Association -<br>Basic AC<br>• Electronics Technicians Association -<br>Basic AC<br>• Electronics Technicians Association -<br>Basic Analog<br>• Electronics Technicians Association -<br>Basic Digital   | am<br>vo years)<br>normation, Design, and Production, as well as<br>red to earn entry level credentials recognized<br><b>Workforce Careers</b><br>• Controls Engineer<br>• Industrial Maintenance<br>• Electronic Technician<br>• Programmable Logic Controller<br>Technician<br>• Automation Technician       |  |  |  |  |
| Career<br>Pathway<br>Program<br>Course<br>Number<br>13997G1003<br>13997G1001<br>21010G1001<br>21010G1002<br>21010G1003<br>20101G1003<br>13001G1000<br>21009G1002<br>21010G1002<br>21010G1002               | Robotics and<br>(Must teach three or<br>Introduction to Robotics, Robotics Application, Electronic<br>by the Electronics Technicians Association (ETA), MSSC         Career Pathway Program Courses         Career Pathway Program Courses         Career Pathway Project in Manufacturing         CTE Lab in Manufacturing         Computer Integrated Automation         Computer Integrated Design         Computer Integrated Production         Electronics and Control Systems         Introduction to Robotics         Robotics Application         Robotics and Automation         Safety and Health Regulations  | Automated Manufacturing Progr<br>ourses from this program list within ty<br>ers a variety of topics including: Computer Au<br>s and Control Systems. Students will be prepa<br>, and NCCER.<br>Career Readiness Indicator (CRI)<br>• Alabama Certified Worker (Ready to<br>Work)<br>• Autodesk Inventor Certified User<br>• Autodesk Inventor Certified User<br>• Electronics Technicians Association -<br>Student Electronics Technician<br>• Electronics Technicians Association -<br>Basic DC<br>• Electronics Technicians Association -<br>Basic AC<br>• Electronics Technicians Association -<br>Basic Analog<br>• Electronics Technicians Association -<br>Basic Digital<br>• Electronics Technicians Association -<br>Basic Digital   | am<br>vo years)<br>nomation, Design, and Production, as well as<br>red to earn entry level credentials recognized<br>Workforce Careers<br>• Controls Engineer<br>• Industrial Maintenance<br>• Electronic Technician<br>• Programmable Logic Controller<br>Technician<br>• Automation Technician               |  |  |  |  |
| Career<br>Pathway<br>Program<br>Course<br>Number<br>13997G1003<br>13997G1001<br>21010G1001<br>21010G1002<br>21010G1003<br>20101G1033<br>13001G1000<br>21009G1001<br>21009G1002<br>21010G1002<br>17049G1000 | Robotics and<br>(Must teach three or<br>Introduction to Robotics, Robotics Application, Electronic<br>by the Electronics Technicians Association (ETA), MSSC         Career Pathway Program Courses         Career Pathway Program Courses         Career Pathway Project in Manufacturing         CTE Lab in Manufacturing         Computer Integrated Automation         Computer Integrated Design         Computer Integrated Production         Electronics and Control Systems         Introduction to Manufacturing         Robotics Application         Robotics and Automation         Safety and Health Regulations   | Automated Manufacturing Progr<br>ourses from this program list within ty<br>ers a variety of topics including: Computer Au<br>s and Control Systems. Students will be prepa<br>, and NCCER.<br>Career Readiness Indicator (CRI)<br>• Alabama Certified Worker (Ready to<br>Work)<br>• Autodesk Inventor Certified User<br>• Autodesk Inventor Certified User<br>• Electronics Technicians Association -<br>Student Electronics Technician<br>• Electronics Technicians Association -<br>Basic DC<br>• Electronics Technicians Association -<br>Basic AC<br>• Electronics Technicians Association -<br>Basic Analog<br>• Electronics Technicians Association -<br>Basic Digital<br>• Electronics Technicians Association -<br>Basic Digital   | am<br>vo years)<br>ntomation, Design, and Production, as well as<br>red to earn entry level credentials recognized<br>Workforce Careers<br>• Controls Engineer<br>• Industrial Maintenance<br>• Electronic Technician<br>• Programmable Logic Controller<br>Technician<br>• Automation Technician              |  |  |  |  |
| Career<br>Pathway<br>Program<br>Course<br>Number<br>13997G1003<br>13997G1001<br>21010G1001<br>21010G1002<br>21010G1003<br>20101G1003<br>13001G1000<br>21009G1001<br>21009G1002<br>21010G1002<br>17049G1000 | Robotics and<br>(Must teach three or<br>Introduction to Robotics, Robotics Application, Electronic<br>by the Electronics Technicians Association (ETA), MSSC         Career Pathway Program Courses         Career Pathway Program Courses         Career Pathway Project in Manufacturing         CTE Lab in Manufacturing         Computer Integrated Automation         Computer Integrated Design         Computer Integrated Production         Electronics and Control Systems         Introduction to Robotics         Robotics Application         Safety and Health Regulations  | Automated Manufacturing Progr<br>ourses from this program list within ty<br>ers a variety of topics including: Computer Au<br>s and Control Systems. Students will be prepa<br>, and NCCER.<br>Career Readiness Indicator (CRI)<br>• Alabama Certified Worker (Ready to<br>Work)<br>• Autodesk Inventor Certified User<br>• Autodesk Inventor Certified User<br>• Electronics Technicians Association -<br>Student Electronics Technician<br>• Electronics Technicians Association -<br>Basic DC<br>• Electronics Technicians Association -<br>Basic AC<br>• Electronics Technicians Association -<br>Basic AC<br>• Electronics Technicians Association -<br>Basic Digital<br>• Electronics Technicians Association -<br>Basic Digital   | am<br>vo years)<br>itomation, Design, and Production, as well as<br>red to earn entry level credentials recognized<br>Workforce Careers<br>• Controls Engineer<br>• Industrial Maintenance<br>• Electronic Technician<br>• Programmable Logic Controller<br>Technician<br>• Automation Technician              |  |  |  |  |
| Career<br>Pathway<br>Program<br>Course<br>Number<br>13997G1003<br>13997G1001<br>21010G1001<br>21010G1002<br>21010G1003<br>20101G1003<br>13001G1000<br>21009G1001<br>21009G1002<br>21010G1002<br>17049G1000 | Robotics and<br>(Must teach three or<br>The Robotics and Automated Manufacturing program cover<br>Introduction to Robotics, Robotics Application, Electronic<br>by the Electronics Technicians Association (ETA), MSSC         Career Pathway Program Courses         Career Pathway Program Courses         Career Pathway Program Courses         Career Pathway Project in Manufacturing         CTE Lab in Manufacturing         Computer Integrated Automation         Computer Integrated Design         Computer Integrated Production         Electronics and Control Systems         Introduction to Robotics         Robotics Application         Robotics and Automation         Safety and Health Regulations | Automated Manufacturing Progr<br>ourses from this program list within ty<br>ers a variety of topics including: Computer Au<br>s and Control Systems. Students will be prepa<br>, and NCCER.<br>Career Readiness Indicator (CRI)<br>• Alabama Certified Worker (Ready to<br>Work)<br>• Autodesk Inventor Certified User<br>• Autodesk Inventor Certified User<br>• Electronics Technicians Association -<br>Student Electronics Technician<br>• Electronics Technicians Association -<br>Basic DC<br>• Electronics Technicians Association -<br>Basic AC<br>• Electronics Technicians Association -<br>Basic AC<br>• Electronics Technicians Association -<br>Basic Digital<br>• Electronics Technicians Association -<br>Comprehensive<br>• NCCER Electronic Systems<br>Technician, Electronics<br>• NCCER Core (module 6 is an elective   | am<br>vo years)<br>itomation, Design, and Production, as well as<br>red to earn entry level credentials recognized<br>Workforce Careers<br>• Controls Engineer<br>• Industrial Maintenance<br>• Electronic Technician<br>• Programmable Logic Controller<br>Technician<br>• Automation Technician              |  |  |  |  |
| Career<br>Pathway<br>Program<br>Course<br>Number<br>13997G1003<br>13997G1001<br>21010G1001<br>21010G1003<br>20101G1003<br>20101G1003<br>13001G1000<br>21009G1001<br>21009G1002<br>21010G1002<br>17049G1000 | Robotics and<br>(Must teach three or<br>The Robotics and Automated Manufacturing program cover<br>Introduction to Robotics, Roboties Application, Electronic<br>by the Electronics Technicians Association (ETA), MSSC         Career Pathway Program Courses         Career Pathway Program Courses         Career Pathway Project in Manufacturing         CTE Lab in Manufacturing         Computer Integrated Automation         Computer Integrated Design         Computer Integrated Production         Electronics and Control Systems         Introduction to Robotics         Robotics Application         Robotics and Automation         Safety and Health Regulations  | Automated Manufacturing Progr<br>ourses from this program list within ty<br>ers a variety of topics including: Computer Au<br>s and Control Systems. Students will be prepa<br>, and NCCER.<br>Career Readiness Indicator (CRI)<br>Alabama Certified Worker (Ready to<br>Work)<br>Autodesk Inventor Certified User<br>Autodesk Inventor Certified User<br>Electronics Technicians Association -<br>Student Electronics Technician<br>Electronics Technicians Association -<br>Basic DC<br>Electronics Technicians Association -<br>Basic AC<br>Electronics Technicians Association -<br>Basic AC<br>Electronics Technicians Association -<br>Basic AC<br>Electronics Technicians Association -<br>Basic Dgital<br>Electronics Technicians Association -<br>Basic Digital<br>Electronics Technicians Association -<br>Comprehensive<br>NCCER Electronics<br>NCCER Core (module 6 is an elective<br>and not required for CRI)                    | am<br>vo years)<br>itomation, Design, and Production, as well as<br>red to earn entry level credentials recognized<br>Workforce Careers<br>• Controls Engineer<br>• Industrial Maintenance<br>• Electronic Technician<br>• Programmable Logic Controller<br>Technician<br>• Automation Technician              |  |  |  |  |
| Career<br>Pathway<br>Program<br>Course<br>Number<br>13997G1003<br>13997G1001<br>21010G1001<br>21010G1002<br>21010G1003<br>20101G1033<br>13001G1000<br>21009G1001<br>21009G1002<br>21010G1002<br>17049G1000 | Robotics and<br>(Must teach three or<br>Introduction to Robotics, Robotics Application, Electronic<br>by the Electronics Technicians Association (ETA), MSSC         Career Pathway Program Courses         Career Pathway Program Courses         Career Pathway Project in Manufacturing         CTE Lab in Manufacturing         Computer Integrated Automation         Computer Integrated Design         Computer Integrated Production         Electronics and Control Systems         Introduction to Robotics         Robotics Application         Robotics and Automation         Safety and Health Regulations  | <ul> <li>Automated Manufacturing Progrourses from this program list within twers a variety of topics including: Computer Autors and Control Systems. Students will be prepared and NCCER.</li> <li>Carcer Readiness Indicator (CRI)</li> <li>Alabama Certified Worker (Ready to Work)</li> <li>Autodesk Inventor Certified User</li> <li>Autodesk Inventor Certified User</li> <li>Autodesk-AutoCAD Certified User</li> <li>Electronics Technicians Association - Student Electronics Technicians Association - Basic DC</li> <li>Electronics Technicians Association - Basic AC</li> <li>Electronics Technicians Association - Basic AC</li> <li>Electronics Technicians Association - Basic DC</li> <li>Electronics Technicians Association - Basic AC</li> <li>Electronics Technicians Association - Basic Cogital</li> <li>Electronics Technicians Association - Basic Digital</li> <li>Electronics Technicians Association - Basic Digital</li> <li>Electronics Technicians Association - Basic Digital</li> <li>Electronics Technicians Association - Comprehensive</li> <li>NCCER Electronics</li> <li>NCCER Core (module 6 is an elective and not required for CRI)</li> </ul> | am<br>vo years)<br>ntomation, Design, and Production, as well as<br>red to earn entry level credentials recognized<br>Workforce Careers<br>• Controls Engineer<br>• Industrial Maintenance<br>• Electronic Technician<br>• Programmable Logic Controller<br>Technician<br>• Automation Technician              |  |  |  |  |

Technician (CPT)
(Each module will count as a CRI)
SolidEdge Certified Associate
SolidWorks Associate

### 2022-2023 Subject and Personnel Codes Manufacturing Cluster

| Course     | Course  | Course     | Course Name                         |
|------------|---|------------|-------------------------------------|
| Number     | Name  | Number     |                                     |
| 21106G1033 | Advanced Drafting Design                                  | 21106G1023 | Intermediate Drafting Design        |
| 17106G1002 | Alternating Current                                       | 13204G1004 | Intermediate Lathe and Bench Work   |
| 13997G1003 | Career Pathway Project in Manufacturing                   | 21106G1013 | Introduction to Drafting Design     |
| 13203G1004 | Computer-Aided Design and Computer-Aided                  | 21004G1001 | Introduction to Engineering Design  |
|            | Manufacturing I   |            |                                     |
| 13203G1005 | Computer-Aided Design and Computer-Aided                  | 13204G1002 | Introduction to Lathe               |
|            | Manufacturing II  |            |                                     |
| 21010G1001 | Computer Integrated Automation                            | 13001G1000 | Introduction to Manufacturing       |
| 21010G1002 | Computer Integrated Design                                | 13203G1001 | Introduction to Precision Machining |
| 21010G1003 | Computer Integrated Production                            | 21009G1001 | Introduction to Robotics            |
| 13203G1006 | Computer Numerical Control (CNC) I                        | 13002G1013 | Manufacturing I - Safety            |
| 13203G1007 | Computer Numerical Control (CNC) II                       | 13002G1023 | Manufacturing II - Quality          |
| 13204G1001 | Coordinate Measuring Machine                              | 13002G1033 | Manufacturing III - Production      |
| 13997G1001 | CTE Lab in Manufacturing                                  | 13002G1043 | Manufacturing IV - Maintenance      |
| 17104G1003 | Digital Electronics                                       | 13203G1008 | Milling and Surface Grinder I       |
| 17106G1001 | Direct Current  | 13203G1009 | Milling and Surface Grinder II      |
| 13204G1006 | Drill Press   | 21009G1004 | Robotics and Automation             |
| 20101G1033 | Electronics and Control Systems                           | 21009G1002 | Robotics Applications               |
| 21009G1005 | Embedded Arduino Controls                                 | 17049G1000 | Safety and Health Regulations       |
| 21002G1001 | Engineering Design Applications                           | 17106G1003 | Semiconductors                      |
| 13303G1001 | Industrial Maintenance – Electrical & Instrumentation I   | 17109G1000 | Telecommunications Cabling          |
| 13303G1002 | Industrial Maintenance – Electrical & Instrumentation II  | 21107G1012 | Three-Dimensional Solid Modeling I  |
| 13303G1003 | Industrial Maintenance – Electrical & Instrumentation III | 21107G1022 | Three-Dimensional Solid Modeling II |
| 13303G1004 | Industrial Maintenance - Mechanical I                     |            |                                     |
| 13303G1005 | Industrial Maintenance - Mechanical II                    | ]          |                                     |
| 13303G1006 | Industrial Maintenance - Mechanical III                   |            |                                     |

| Shared Courses   |                                     |  |                                   |  |  |
|------------------|-------------------------------------|--|-----------------------------------|--|--|
| Course<br>Number | Course Name                         | Cluster(s)                                 | Required Year to<br>Implement COS |  |  |
| 21106G1033       | Advanced Drafting Design            | Architecture and Construction              | 2022-2023                         |  |  |
| 17106G1002       | Alternating Current                 | Information Technology                     | 2022-2023                         |  |  |
| 17106G1001       | Direct Current                      | Information Technology                     | 2022-2023                         |  |  |
| 20101G1033       | Electronics and Control Systems     | Architecture and Construction              | 2022-2023                         |  |  |
| 21106G1023       | Intermediate Drafting Design        | Architecture and Construction              | 2022-2023                         |  |  |
| 21106G1013       | Introduction to Drafting Design     | Architecture and Construction              | 2022-2023                         |  |  |
| 17049G1000       | Safety and Health Regulations       | Architecture and Construction              | 2022-2023                         |  |  |
|                  |                                     | Transportation, Distribution and Logistics |                                   |  |  |
| 21107G1012       | Three-Dimensional Solid Modeling I  | Architecture and Construction              | 2022-2023                         |  |  |
| 21107G1022       | Three-Dimensional Solid Modeling II | Architecture and Construction              | 2022-2023                         |  |  |

**General Note:** Course descriptions and content standards for most courses are located on the Alabama Department of Education website at: <a href="https://www.alabamaachieves.org/career-and-technical-education/cte-courses-of-study/">https://www.alabamaachieves.org/career-and-technical-education/cte-courses-of-study/</a>.