Indiana CTE Next Level Programs of Study

Advanced Manufacturing Technology (2025)

Advanced Manufacturing Technology

1. **Conduct assigned tasks in a safe and workmanlike manner while working either independently or in small groups** 7103.D1.1
2. **Identify basic manufacturing processes and major types of production systems.** 7103.D1.2
3. **Define common properties of industrial materials, their application, testing and enhancement** 7103.D1.3
4. **Describe the design, tooling, and production aspects of manufacturing.** 7103.D1.4
5. **Demonstrate a general knowledge of non-traditional manufacturing processes and automation.** 7103.D1.5
6. **Explain the basic concepts of electrical, hydraulic, and pneumatic power systems.** 7103.D1.6
7. **Describe and solve for basic electrical quantities such as voltage, amperage, resistance, and power.** 7103.D1.7
8. **Describe the types of basic fluid power systems used in manufacturing.** 7103.D1.8
9. **Determine fluid system properties such as pressure, flow, viscosity, and pressure drop** 7103.D1.9
10. **Identify the common types and operation of bearing, coupling, belt, and chain systems.** 7103.D1.10
11. **Identify physical principles including force, torque, simple machines, and mechanical drives.** 7103.D1.11
12. **Describe the basic concepts of machine control, machine automation, and electrical control.** 7103.D1.12
13. **Communicate effectively using listening, speaking, reading, and writing skills.** 7103.D1.13
14. **Use quantitative analytical skills to evaluate and process numerical data.** 7103.D1.14

15 **Solve problems using critical and creative thinking skills.** 7103.D1.15

16 **Utilize and apply software where appropriate to the course.** 7103.D1.16

17 **Attain readiness to take MSSC Production and Maintenance Awareness Certification exams.** 7103.D1.17

18 **Demonstrate ability to read and interpret technical documents.** 7103.D1.18

19 **Demonstrate the ability to use various types of software applicable to course.** 7103.D1.19

Electrical Power

1 **Demonstrate proper safety precautions related to equipment.** 7103.D2.1

2 **Define the following terms: voltage, resistance, current amperage, direct current, alternating current, and power supply.** 7103.D2.2

3 **Identify electrical components and form a schematic diagram.** 7103.D2.3

4 **Identify types of electrical mechanical switches (SPDT, DPDT, etc.)** 7103.D2.4

5 **Calculate voltage, current, and resistance in series, parallel, and series-parallel circuits using Ohm's Law.** 7103.D2.5

6 **Perform voltage, current, and resistance measurements using the proper measurement devices (both analog and digital meters).** 7103.D2.6

7 **Create a schematic drawing and complete single phase AC electrical service connections including meter bases and service panels.** 7103.D2.7

8 **Identify basic principles and characteristics of transformers, resistors, capacitors and diodes.** 7103.D2.8

9 **Calculate values for AC and DC resistive, inductive, and capacitive components.** 7103.D2.9

10 **Assemble and test laboratory exercises including building single phase AC switched circuits, and circuits using mechanical relays.** 7103.D2.10

11 **Demonstrate ability to read and interpret technical documents.** 7103.D2.11

12 **Demonstrate ability to use various types of software applicable to course.** 7103.D2.12

13 **Recall fundamental content to meet/exceed the cut-score for the SACA (Smart Automation Certification Alliance) C-201 Electrical Systems I Certification exam - Silver Certification.** 7103.D2.13

14 **Demonstrate skills to obtain the SACA C-201 Electrical Systems I Certification exam - Gold Certification at a 100% of skill standard.** 7103.D2.14

1 **Demonstrate understanding of the basic functions of PLC's** `7103.D3.1`