Indiana CTE Next Level Programs of Study

# Mechatronics Systems (2025)

## Electrical and Robot Systems

1. Understand the hazards of electromechanical equipment and apply safe working practices. 7106.D1.1
2. Describe the basic functions and design of a robotic mechatronic system. 7106.D1.2
3. Apply basic knowledge of robot physics in a mechatronics system. 7106.D1.3
4. Explain the role of various electrical components within a robotic mechatronic system. 7106.D1.4
5. Trace and describe the flow of energy and information in a robotic mechatronic system. 7106.D1.5
6. Describe the basic physical properties of electrical components. 7106.D1.6
7. Read, analyze, and utilize technical documents such as data sheets, timing diagrams, operational manuals, schematics, etc. for a mechatronic system. 7106.D1.7
8. Carry out measurements and adjustments on electrical components/circuits in a mechatronic system. 7106.D1.8
9. Localize, identify, document and correct (where possible) malfunctions in electrical circuits, based upon the technical documentation. 7106.D1.9
10. Transfer the knowledge learned from one system to another system. 7106.D1.10
11. Effectively use current and emerging computer technologies when applicable. 7106.D1.11
12. Demonstrate ability to read and interpret technical documents. 7106.D1.12
13. Demonstrate the ability to use various types of software applicable to course. 7106.D1.13

## Mechanical Systems

1. Understand the hazards of electromechanical equipment and apply safe working practices. 7106.D2.1
2. Explain the role of various mechanical components within a given system or module. 7106.D2.2

3 **Trace and describe the flow of energy in a given mechatronic system or subsystem.** 7106.D2.3

4 **Describe the basic physical properties of mechanical components including materials, lubrication requirements, and surface properties.** 7106.D2.4

5 **Carry out adjustments on mechanical components in a mechatronic system.** 7106.D2.5

6 **Read, analyze, and utilize the technical data sheets for the mechanical components and electrical drives within a mechatronic system.** 7106.D2.6

7 **Correctly localize, identify and document causes of malfunctions in mechanical components or electrical drives, based upon the technical documentation.** 7106.D2.7

8 **Correct malfunctions where possible, or correctly identify the expertise required to correct a malfunction.** 7106.D2.8

9 **Transfer the knowledge learned from one system to another system.** 7106.D2.9

10 **Effectively use current and emerging computer technologies when applicable.** 7106.D2.10

11 **Demonstrate ability to read and interpret technical documents.** 7106.D2.11

12 **Demonstrate the ability to use various types of software applicable to course.** 7106.D2.12