# **Work Process Schedule**

|  |
| --- |
| Mechatronics Technician/Engineer (Basic, fitter-focus) |
| **Job Description:** Work with complex high-performance manufacturing systems and are able to analyze, troubleshoot, and repair systems to maintain process efficiency |
| **RAPIDS Code:** 2014CB | **O\*NET Code:** 49-2094.00 |
| **Estimated Program Length:** 4 years |
| **Apprenticeship Type:** [x]  Competency-Based [ ]  Time-Based [ ]  Hybrid |

Suggested On-the-Job Learning Outline

|  |
| --- |
| Follows work processes closely to ensure a safe environment |
| **Competencies** | **Date Completed** | **Initial** |
| 1. Identifies contact points within organization
 |  |  |
| 1. Follows company policies and regulations
 |  |  |
| 1. Recognizes safety, health, and environmental requirements in all departments
 |  |  |
| 1. Recognizes safety machinery procedures
 |  |  |

|  |
| --- |
| Communicates and works well within a team environment |
| **Competencies** | **Date Completed** | **Initial** |
| 1. Reliably follows the instructions of others
 |  |  |
| 1. Willingly asks questions about things not fully understood
 |  |  |
| 1. Works with due regard for the safety of others
 |  |  |
| 1. Establishes a system of maintaining appropriate notes and reminders and completes any required logs, calibration records, etc.
 |  |  |
| 1. Ensures proper communications between previous and next shifts, with both operations and supervision
 |  |  |
| 1. Identifies problems and changes which could lead to problems by exchanging information with operators, supervisors, and others
 |  |  |
| 1. Establishes trust and rapport with operators, supervisors, and others
 |  |  |

|  |
| --- |
| Works capably with technical documentation |
| **Competencies** | **Date Completed** | **Initial** |
| 1. Reads and interprets mechanical drawings
 |  |  |
| 1. Reads and interprets fluid power (hydraulics/pneumatics)
 |  |  |
| 1. Reads and interprets electrical drawings
 |  |  |
| 1. Reads and interprets Process and Instrumentation Diagram (P&ID) and process control loop drawings
 |  |  |
| 1. Reads and interprets vendor information
 |  |  |

|  |
| --- |
| Works capably with a computer |
| **Competencies** | **Date Completed** | **Initial** |
| 1. Locates a machine according to a print
 |  |  |
| 1. Levels a machine (noncritical machines +/- 1/8")
 |  |  |
| 1. Verifies circuit size and protection
 |  |  |
| 1. Verifies proper voltage and phasing, grounding, and proper guards are in place
 |  |  |
| 1. Installs proper mounts and raceways for adding a component (such as a sensor) or interlocking a machine
 |  |  |
| 1. Properly sizes, installs, labels, and tests circuit conductors for adding a component or interlocking a machine
 |  |  |
| 1. Properly lays out, cuts, drills, taps, and assembles a control station for an addition to a machine
 |  |  |
| 1. Connects compressed air to a machine from a supply header and verifies proper air pressures and volumes for a machine
 |  |  |
| 1. Adds pneumatic or hydraulic components and lines to a machine
 |  |  |
| 1. Aligns and adjusts shafts, motors, belts, and chains on a machine
 |  |  |
| 1. Verifies proper operation of all safety devices and circuits on a machine and checks and verifies circuits on a machine
 |  |  |
| 1. Checks, lubricates, and powers up a machine
 |  |  |
| 1. Verifies proper current draw of a machine and machine operation according to a sequence of operation
 |  |  |

|  |
| --- |
| Performs work with material transfer conveyors |
| **Competencies** | **Date Completed** | **Initial** |
| 1. Assembles rollers and belts
 |  |  |
| 1. Adjusts height and distance to adjoining belts
 |  |  |
| 1. Reverses direction of travel
 |  |  |
| 1. Sets and adjusts tracking
 |  |  |
| 1. Measures and adjusts belt speed
 |  |  |
| 1. Determines if proper guards are in place
 |  |  |
| 1. Adjusts and modifies guards and verifies safe operation meets OSHA standards
 |  |  |

|  |
| --- |
| Understands, identifies, locates malfunctions, removes, replaces, adjusts, and returns to service industrial components |
| **Competencies** | **Date Completed** | **Initial** |
| 1. Installs and troubleshoots key mechanical components
 |  |  |
| 1. Installs and troubleshoots electrical components
 |  |  |
| 1. Installs and troubleshoots electronic sensors and components
 |  |  |
| 1. Installs and troubleshoots electrical control components
 |  |  |
| 1. Installs and troubleshoots fluid power components
 |  |  |
| 1. Installs and troubleshoots vacuum system components
 |  |  |

|  |
| --- |
| Works with PLCs |
| **Competencies** | **Date Completed** | **Initial** |
| 1. Installs basic components of a Programmable Logic Controller (PLC) including racks, ethernet, power supply, processor, and single point digital input/output modules
 |  |  |
| 1. Connects power and digital input/output (I/O) wiring to a PLC
 |  |  |
| 1. Selects and appropriately connects sinking and sourcing inputs and outputs
 |  |  |
| 1. Configures and connects a laptop or other programming device to a PLC to upload, download, and save a program
 |  |  |
| 1. Changes preset timer and counter values and applies and removes forces from a program
 |  |  |
| 1. Troubleshoots a machine or process by observing PLC indicator lights and reviewing the PLC software ladder diagram (relays, timers, and counters)
 |  |  |
| 1. Adds a function to a machine or process that requires wiring of additional I/O and basic ladder logic programming
 |  |  |
| 1. Troubleshoots a PLC or a PLC-controlled machine or process by observing input and output conditions and monitoring the program in real time
 |  |  |
| 1. Properly installs and terminates wiring for low-level analog signals
 |  |  |
| 1. Troubleshoots a machine or process utilizing a PLC or a Programmable Automation Controller (PAC) that implements closed loop process control and general-purpose multi-axis motion control
 |  |  |

|  |
| --- |
| Performs work with robotic systems |
| **Competencies** | **Date Completed** | **Initial** |
| 1. Exercises appropriate safety procedures for working with robots
 |  |  |
| 1. Identifies types of robots
 |  |  |
| 1. Programs robot movement with a teach pendant
 |  |  |
| 1. Uploads, downloads, saves, and runs a robot program
 |  |  |
| 1. Interfaces a robot to a conveyor system
 |  |  |
| 1. Interfaces an end effector to a robot controller
 |  |  |
| 1. Calibrates a robot to a conveyor system
 |  |  |
| 1. Interfaces a robot to a vision system
 |  |  |
| 1. Sets up lighting for a vision system
 |  |  |
| 1. Teaches a vision system how to identify and orient good and bad products
 |  |  |
| 1. Troubleshoots a robot system, replaces components, and returns to operation
 |  |  |
| 1. Performs repair procedures on a robot arm
 |  |  |

Suggested Related Instruction Outline

|  |
| --- |
| Provider |
| **Name:**  |
| **Address:**  |
| **Email:** | **Phone Number:** |
| **Suggested Related Instruction Hours:** 576 |

|  |  |  |
| --- | --- | --- |
| **Course Number** | **Course Title** | **Contact Hours** |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |