Work Process Schedule

WORK PROCESS SCHEDULE[1]	O*NET-SOC Code: 49-2094.00
Mechatronics Technician (Intermediate, installer-focus) (Alternate Title: Electrical and Electronics Repairers, Commercial and Industrial Equipment (Intermediate, installer-focus))	RAPIDS Code: 2014CB

Job Title:		
Level:	**Specialization:**	
Stackable Program ___yes ___no **Base Occupation Name:**		
Company Contact:		
Address:	**Phone:**	**Email:**
Apprenticeship Type: **_____Competency-Based** **_____Time-Based _____Hybrid**	**Prerequisites:**	

JOB FUNCTION 1: Maintain safety and health at work while contributing to the avoidance of instances of environmental pollution caused by the company

Competencies	Core or Optional	OJT	RTI
A. Ascertain health and safety risk in the workplace and adopt measures for the avoidance of hazards	Core		
B. Deploy occupationally related health and safety and accident prevention measures	Core		
C. Describe behaviors when accidents occur and institute initial	Core		

[1] See full framework for certifications and occupational pathways, cross-cutting competencies, and detailed job functions at https://www.dol.gov/cgi-bin/leave-dol.asp?exiturl=https://www.urban.org/policy-centers/center-labor-human-services-and-population/projects/competency-based-occupational-frameworks-registered-apprenticeships&exitTitle=www.urban.org.

measures			
D. Deploy regulations for preventative fire protection; describe behaviors in the event of a fire and initiate firefighting measures	Core		
E. Explain possible instances of environmental pollution caused by the company providing training and its contribution to environmental protection using examples	Core		
JOB FUNCTION 2: Follow company and technical communication guidelines			
Competencies	Core or Optional	OJT	RTI
A. Procure and evaluate information	Core		
B. Conduct discussions with line managers, colleagues, and within the team in a manner appropriate to the situation; present facts and circumstances	Core		
C. Use opportunities to resolve conflicts	Core		
D. Handle IT systems and, in particular, deploy software and connect and use peripheral devices	Core		
E. Protect and secure data	Core		
F. Prepare protocols and reports using standard software	Core		
G. Read and use partial, group, and overall drawings	Core		
H. Read and use circuit documentation on sub-assemblies and devices used in fluid power	Core		
I. Read and use electrical, block, function, assembly, and connection plans	Core		
J. Utilize technical regulations, operating instructions, work directives, and other information	Core		
K. Explain products and work results on handover and provide initial instructions on function	Core		
L. Use company information and communication systems	Core		
JOB FUNCTION 3: Plan and control work processes and check and evaluate the quality of work			
Competencies	Core or Optional	OJT	RTI
A. Stipulate stages of work in accordance with functional, technical production and business criteria	Core		
B. Stipulate and secure work processes in accordance with organizational and information criteria	Core		
C. Plan work in a team; assign tasks	Core		
D. Plan and set up the workplace	Core		
E. Request and provide materials, tools, and equipment in an order-related manner	Core		

F. Prepare processing machines for the work process	Core		
G. Calibrate tools, machine tools, testing and measuring equipment, and technical equipment ready for operational use; check and maintain such tools and equipment and initiate measures for the rectification of errors	Core		
H. Monitor, evaluate, and check own work and work done by others	Core		
I. Document materials, spare parts, work time, and technical checks	Core		
J. Observe standards and specifications for quality assurance of the products and secure quality in completing the order with due consideration for upstream and downstream divisions	Core		
JOB FUNCTION 4: Check, mark off, and label workpieces to ensure quality assurance			
Competencies	Core or Optional	OJT	RTI
A. Measure lengths, observe tolerances, and check matching	Core		
B. Check areas for evenness, angularity, and precision of form, and evaluate the quality of surface areas	Core		
C. Monitor form of surface areas and characteristics of joining surfaces in accordance with technical requirements	Core		
D. Mark off and label workpieces	Core		
E. Measure angles and check them using angle gauges	Core		
JOB FUNCTION 5: Cut, separate, and reform manually or by machine and then join equipment			
Competencies	Core or Optional	OJT	RTI
A. Select and use measuring instruments for the measurement and checking of lengths, angles, and areas	Core		
B. Saw sheet metals, boards, and metal and plastic profiles as marked out	Core		
C. File and chamfer areas and forms on workpieces so they are flat, angled, and parallel to measure	Core		
D. Create and deburr drill holes	Core		
E. Create internal and external screw threads	Core		
F. Process workpieces by turning	Optional		
G. Process workpieces by milling	Optional		
H. Cut metal and acrylic sheets profiles as marked out	Core		
I. Select and install fasteners according to torque specifications	Core		

J. Install dowels and pins	Optional		
K. Join pipe connections	Core		
L. Weld, cut, deburr, and thread metal pipes	Optional		
JOB FUNCTION 6: Install electrical subassemblies and components			
Competencies	Core or Optional	OJT	RTI
A. Assemble, connect, and wire electrical components, housings, and circuit unit combinations	Core		
B. Select, install, connect, and label components for electrical auxiliary and circuit units	Core		
C. Install and label components for open- and closed- loop control; measure, test, and debug	Core		
D. Select, prepare, lay, and connect cables according to electrical load, routing, and purpose	Optional		
E. Wire up sub-assemblies and devices using various methods according to documentation and prints	Core		
F. Correct errors and document changes to electrical prints	Optional		
JOB FUNCTION 7: Measure and test electrical values and install and test hardware and software components			
Competencies	Core or Optional	OJT	RTI
A. Specify measuring procedures and devices; assess measurement errors, and set up measuring equipment	Core		
B. Measure voltages, current; then select correct size of cables and/or conductors	Core		
C. Measure and test analog and digital signals	Core		
D. Check electrical parameters of sub-assemblies and components	Core		
E. Build electrical circuits and test function	Core		
F. Test hardware and software interfaces, compatibility of hardware components, and system requirements with software	Core		
G. Assemble and connect system components	Core		
H. Configure hardware; install and test software	Core		
I. Install and configure network systems	Core		
J. Test signals at interfaces, interpret protocols, and test systems	Core		
K. Carry out version changes of software	Core		
L. Document changes in hardware and software	Core		

JOB FUNCTION 8: Build and test control systems and program mechatronic systems			
Competencies	Core or Optional	OJT	RTI
A. Install, connect, and test electrical and fluid power circuits	Core		
B. Build and connect electrical and fluid power circuits; test and adjust systems for the provision of electrical, pneumatic, or hydraulic pressure	Core		
C. Measure and adjust pressure in fluid power systems	Core		
D. Analyze assignment, in particular sequences and reciprocal effect, at interfaces of the system to be controlled	Core		
E. Align control concepts and select control equipment	Core		
F. Install sensors, actuators, and valving	Core		
G. Check and adjust the interaction of connected functions; consider interfaces in localizing errors	Core		
H. Evaluate control systems of different designs	Core		
I. Prepare, enter, and test application programs for control systems	Core		
J. Monitor program process in mechatronic systems; identify and rectify errors	Core		
JOB FUNCTION 9: Assemble subassemblies and components into machines and systems			
Competencies	Core or Optional	OJT	RTI
A. Identify and troubleshoot sub-assemblies and components and check that characteristics are error-free	Core		
B. Carry out preliminary installations	Core		
C. Install lubricating and cooling systems	Core		
D. Install fluid power component, in particular cylinders and valves	Core		
E. Prepare, lay, and connect up pipes and hoses; check for leaks	Core		
F. Match sub-assemblies and components, adjust to the correct functionality, and secure position	Core		
G. Install mechanical drive systems, drives, gears, and coupling systems, and verify the functionality of movable parts	Core		
H. Install and connect circuit devices	Core		
I. Install, adjust, and connect sensors	Core		
J. Check functions during the installation process	Core		
JOB FUNCTION 10: Test and adjust the functioning of mechatronic systems			

Competencies	Core or Optional	OJT	RTI
A. Install/troubleshoot signal processing sub-assemblies and check incoming and outgoing signals	Core		
B. Calibrate measuring equipment for the recording of pressure and temperature	Core		
C. Adjust sensing distance of sensors	Core		
D. Install and adjust actuators in accordance with technical specifications	Core		
E. Locate symptoms and faults for mechanical, fluidic, and electrical equipment through visual checks, testing, and measurement	Core		
F. Install and troubleshoot Variable Frequency Drives (VFD)	Core		
G. Install, test, and debug automated manufacturing equipment	Core		
JOB FUNCTION 11: Commission, operate, and maintain mechatronic systems			
Competencies	Core or Optional	OJT	RTI
A. Check guarding against direct contact	Core		
B. Check effectiveness of protective measures, in particular, fault current protective equipment, measure insulation, and short circuits	Core		
C. Check the effectiveness of mechanical and electrical safety fixtures, in particular, emergency off switches and alarm systems	Core		
D. Test and commission auxiliary and control current circuits including the relevant signal and command transmitters for open and closed loop control and monitoring systems	Core		
E. Check main circuits and gradually commission, measure operational values, and adjust target values	Core		
F. Commission fluid power equipment	Core		
G. Check and secure fixing, energy supply, lubrication, cooling, and disposal systems	Core		
H. Load and secure programs and data; check and adjust program process	Core		
I. Check protective measures for electromagnetic compatibility	Core		
J. Identify system parameters at the time when commissioning takes place; compare with stipulated values and adjust	Core		
K. Inspect mechatronic systems, check function of safety systems and protocol checks	Core		
L. Dismantle devices and sub-assemblies, noting their function, and label parts with regard to position and functional alignment	Core		
M. Correct malfunctions by conducting remedial procedures and exchanging parts and sub-assemblies	Core		
N. Correct software errors	Core		

O. Compare system parameters with stipulated values and make adjustments	Core		
P. Repair mechatronic systems with due consideration for company processes	Core		