



APPENDIX A

INSTRUMENT MECHANIC

(Time-Based)

D.O.T. CODE 710.281-026

O*NET CODE 17-3023.01

This training outline is a minimum standard for Work Processes and Related Instruction. Changes in technology and regulations may result in the need for additional on-the-job or classroom training.

WORK PROCESSES

	<u>Approximate Hours</u>
A. <u>Safe Work Practices</u>	500
1. Using Personal Protective Equipment (PPE) when necessary.	
2. Understanding and practicing chemical hazard safety; including Material Safety Data Sheet (MSDS) training; using, storing, and disposing of chemicals (if applicable).	
3. Storing hand tools and power tools safely.	
4. Using mechanical equipment safely.	
B. <u>Parts, Tools, and Equipment</u>	500
1. Becoming familiar with parts, their location in stockroom, and utilizing applicable procurement method(s).	
2. Using and caring for hand tools and power tools, including, but not limited to: screwdrivers, hammers, drills, grinders, reciprocating saws, portable band saws, and hydraulic knockouts.	
3. Using and caring for diagnostic equipment, for example: ammeters, multimeters, process meters, and field communicators.	

C. Instrument Repair 2200

1. Developing familiarity with various types of instruments and their operation, such as: pneumatic valves, level transmitters, control/service valves, and air regulators.
2. Reading work orders.
3. Inspecting faulty instruments to determine source of malfunction.
4. Disassembling component parts.
5. Repairing and cleaning component parts.
6. Re-assembling instrument.
 - a. Using cleaned parts
 - b. Using repaired or replacement parts.
7. Checking operation of repaired instrument.

D. Calibration and Certification 2000

1. Connecting instrument(s) to appropriate diagnostic equipment
2. Calibrating according to proper procedures.
3. Operating controls and adjusting equipment while “on line.”
4. Setting pointers or indicators and calibrating instrument according to established standards, such as: National Institute of Standards and Technology (NIST) Traceability Standards.
5. Disconnecting instrument(s) from test equipment
6. Recordkeeping and completing inspection paperwork (for internal and/or external certification purposes).

E. Instrument and Related Equipment Maintenance 2000

1. Learning and implementing procedures for cleaning and maintaining instruments and related equipment.
2. Performing scheduled maintenance and monitoring; for example, evaluating chart recorder printouts, data readouts to aid in troubleshooting and potential repair(s).
3. Manually cleaning instruments and equipment.
4. Cleaning instruments with solvents or chemicals.
5. Inspecting cleaned instruments and related equipment.
6. Labelling and packaging cleaned and inspected instruments and equipment.

F. Inventory and Quality Control 300

1. Reviewing work orders against supplies of parts and materials on hand and handling inventory requests accordingly.
2. Inspecting finished work, including, but not limited to,

items such as: ensuring all instruments covered by work order are accounted for, welds are clean (if applicable), instrument has a clean appearance and is properly labeled.

G. Instrument Fabrication (Optional*)

500

1. Selecting, measuring, and scribing stock.
2. Setting up and operating machine tools, such as lathes or drill presses.
3. Welding or brazing.
4. Assembling components and verifying dimensions and correct operation of instrument, using measuring devices and testing methods.

Total Hours

8000

**If optional Work Process is not selected, the hours should be devoted to further mastery of the other required work processes.*

Apprenticeship work processes are applicable only to training curricula for apprentices in approved programs. Apprenticeship work processes have no impact on classification determinations under Article 8 or 9 of the Labor Law. For guidance regarding classification for purposes of Article 8 or 9 of the Labor Law, please refer to <http://www.labor.state.ny.us/workerprotection/publicwork/PDFs/Article8FAQS.pdf>

APPENDIX B
INSTRUMENT MECHANIC
RELATED INSTRUCTION

Safety & Health

General Workplace Safety
Right-to-Know/Material Safety Data Sheets (MSDS)
Proper Use of All Trade-Related Personal Protective Equipment (PPE)
First Aid & CPR (minimum 6.5 hours every 3 years)
Lock-Out/Tag-Out (LOTO)

Engineering Drawings & Mathematics

Reading Blueprints and Schematic Drawings
Mechanical Blueprint Reading and Sketching
Electrical Blueprint Reading and Sketching
Math Fundamentals
Precision Measurement
Trade-Specific Applications

Trade Theory and Science

Tools, Machines and Equipment
Operation, Care and Maintenance
Materials
Terminology
Basic Mechanics
Fundamentals of Electricity
Fundamentals of Electronics
Pneumatics
Hydraulics
History of Instrument Making
Physical Properties of Materials
Principles of Instrument Making (if Work Process G selected)
Principles of Instrument Repair and Maintenance
Metallurgy
Welding/Brazing (if Work Process G selected)

Other Workplace Skills

Sexual Harassment Prevention Training (minimum 3 hours)

Other Courses as Necessary

A Minimum of 144 Hours of Related Instruction is Required for Each Apprentice for Each Year.