



# Appendix A14

**WORK PROCESS SCHEDULE**

**AND**

**RELATED INSTRUCTION OUTLINE**

**FOR THE OCCUPATION OF:**

**QUALITY CONTROL TECHNICIAN**

**(USDOL EXISTING OCCUPATION: INDUSTRIAL MANUFACTURING TECHNICIAN)**

**O\*NET-SOC CODE: 17-3026.00 RAPIDS CODE: 2031CB**



## Appendix A14

### **WORK PROCESS SCHEDULE QUALITY CONTROL TECHNICIAN (Existing Title: Industrial Manufacturing Technician) O\*NET-SOC CODE: 17-3026.00 RAPIDS CODE: 2031CB**

This schedule is attached to and a part of these Standards for the above identified occupation.

#### **1. APPRENTICESHIP APPROACH**

Time-based                       Competency-based                       Hybrid

#### **2. TERM OF APPRENTICESHIP**

The term of the occupation shall be defined by the attainment of all competencies of the position, which would be reasonably expected to occur within 2 to 3 years of OJL, supplemented by 170 hours of related instruction during the apprenticeship. The sponsor may recognize prior-learning achievements or demonstration of competencies to account for related instruction or OJL hours.

#### **3. RATIO OF APPRENTICES TO JOURNEYWORKERS**

The apprentice to journeyworker ratio is: 1 Apprentice to 1 Journeyworker per worksite.

#### **4. APPRENTICE WAGE SCHEDULE**

Apprentices shall be paid a progressively increasing schedule of wages. Apprentices' starting wage should be a minimum of \$14.77 per hour. The journeyworker wage is \$16.83 per hour, which is to be paid to the apprentice after completion of the apprenticeship. The starting wage and journeyworker wage may be adjusted to accommodate each employer and shall be uploaded into the Rapids database. This wage scale is specifically for Denver, CO, and may vary based on minimum wage laws in different geographic locations, which will be indicated on Appendix D.

**Term:**

1 <sup>st</sup> Period	Starting Wage (0-18 months)	\$14.77/hr
2 <sup>nd</sup> Period	On level (18-36 months)	\$15.87/hr
Completion	Full Competency	\$16.83/hr

#### **5. PROBATIONARY PERIOD**

Every apprentice selected for apprenticeship will serve a probationary period of 500 hours.

#### **6. SELECTION PROCEDURES**

Please see page 14.



**WORK PROCESS SCHEDULE**  
**QUALITY CONTROL TECHNICIAN**  
**(Existing Title: Industrial Manufacturing Technician)**  
**O\*NET-SOC CODE: 17-3026.00 RAPIDS CODE: 2031CB**

**Description:** Quality Control Technicians have the critical responsibility of ensuring that customers get parts and products that comply with their specifications. To do this, Quality Control Technicians inspect, test, sort, sample, and weigh parts for defects and deviations from specifications. They often use precision measuring instruments like calipers and micrometers to accomplish these tasks. Quality Control Technicians also read work orders, blueprints, and other instructions to determine product specifications, material requirements, and operational methods.

**On-The-Job Training:** Apprentices will receive training in the various work experiences listed below. The order in which this training is given will be determined by the flow of work on the job and will not necessarily be in the order listed.

Ratings are:

- (4) Exceeds Expectations (Advanced)
- (3) Meets Expectations (Proficient)
- (2) Meets Some Expectations (Emerging)
- (1) Does Not Yet Meet Expectations (Novice)
- (0) Not applicable (No Skill)

4. Exceeds Expectations (Advanced): Consistently exceeds performance standard established for the time in position. Achieves results above and beyond what is required. Extends themselves in their roles to exceed personally and as a team to achieve exceptional results.

3. Meets Expectations (Proficient): Employee meets all expectations in a fully satisfactory way and is proficient in the outlined competencies.

2. Meets Some Expectations (Emerging): Meets the performance standards established for time in position. Handles routine tasks & some unexpected situations with the usual amount of supervision. Can continue to develop with coaching, training or more experience to gain proficiency.

1. Does Not Yet Meet Expectations (Novice): Occasionally meets some of the objectives related to this goal but does not meet others in a fully satisfactory way. This performance level generally indicates the need for additional coaching, training or other plan for performance improvements.

0. Not Applicable (No Skill): Training in this competency has not yet begun.

Apprentices need to receive a “3” or better in each competency in order to complete the apprenticeship.



## Apprentice Competency Evaluation

Core Competencies	Required for this employer (yes/no)	Rating	Supervisor Sign-off	Date
<p><b>Safety</b>  <i>Understands and upholds safe workplace practices in a manufacturing environment</i></p> <ul style="list-style-type: none"> <li>• Adheres to employer’s safety protocols including those relating to personal protective equipment (PPE) and material handling.</li> <li>• Uses, stores, and maintains tools, equipment, and chemicals according to OSHA and EPA standards.</li> <li>• Understands Safety Data Sheets (SDS) and accesses them when necessary.</li> </ul>				
<p><b>Organization</b>  <i>Conducts general housekeeping and cleanup. Maintains a tidy, organized workspace.</i></p> <ul style="list-style-type: none"> <li>• Conducts housekeeping and clean up when assigned or reminded.</li> <li>• Conducts housekeeping and clean up when a workspace becomes dirty and disorganized.</li> <li>• Maintains a clean workspace with tools and equipment that are ready for the next job.</li> <li>• Understands methodologies such as lean manufacturing and 5S.</li> </ul>				
<p><b>Work Orders</b>  <i>Reads and interprets work orders to prepare for quality inspection and support of production.</i></p> <ul style="list-style-type: none"> <li>• Keeps work orders associated with the relevant raw materials and finished products.</li> <li>• Identifies basic information on work orders including customer name, order number, part number, and anticipated ship date.</li> <li>• Verifies the certification of material and outside processes.</li> <li>• Provides quality documentation (ie. first article inspection report) with finished products per customer requirements.</li> </ul>				
<p><b>Technical Drawings</b>  <i>Reads and interprets technical drawings, including dimension, tolerance, and standards requirements.</i></p>				



<ul style="list-style-type: none"> <li>• Understands types of lines, revision levels, and title block information.</li> <li>• Identifies drawing note requirements and specifications.</li> <li>• Identifies section views and projection views.</li> <li>• Visualizes connection between views on simple drawings.</li> <li>• Communicates with others effectively regarding information contained in technical drawings.</li> </ul>				
<p><b>Technical Mathematics</b>  <i>Uses technical math including decimal to fraction conversion, metric to English measurement conversion, trigonometry, and statistics to complete work activities.</i></p> <ul style="list-style-type: none"> <li>• Converts fractions to decimals and visa versa.</li> <li>• Converts English measurements to metric measurements and visa versa.</li> <li>• Applies trigonometric concepts to quality inspections.</li> <li>• Applies statistical concepts to quality inspections and analysis of quality inspection results.</li> <li>• Understands statistical process control.</li> </ul>				
<p><b>Quality Inspection</b>  <i>Tests and inspects parts or products to evaluate whether they meet specifications.</i></p> <ul style="list-style-type: none"> <li>• Understands quality plans and inspection requirements.</li> <li>• Understand the capabilities of the organization's inspection equipment.</li> <li>• Collects samples of parts or products for testing per a sampling plan (e.g. pull 500 pieces out of 50,000).</li> <li>• Measures simple parts or products using hand tools such as calipers and micrometers.</li> <li>• Measures complex parts or products using hand tools such as calipers and micrometers.</li> <li>• Performs inspections with more advanced measurement tools such as comparators and height gauges.</li> <li>• Analyzes quality inspection results to determine if parts or products meet specifications.</li> </ul>				
<p><b>Reporting and Record Keeping</b></p>				



<p><i>Description</i>Records and maintains quality data. <i>Analyzes</i> <i>data using statistical process control techniques.</i></p> <ul style="list-style-type: none"> <li>• Understands the importance of accurate reporting and record keeping.</li> <li>• Understands and demonstrates satisfactory documentation practices.</li> <li>• Navigates the company’s Enterprise Resource Planning (ERP) or similar system to access quality, production, or operational data.</li> <li>• Navigates the company’s ERP or similar system to enter data.</li> </ul>				
<p><b>Quality Management System Standards</b> <i>Understands and adheres to the relevant quality management system standards, such as ISO 9001, ISO 13485, AS9100.</i></p> <ul style="list-style-type: none"> <li>• Understands key quality management system standards such as: ISO 9001, ISO 13485, AS9100.</li> <li>• Understands the role of Quality personnel in complying with quality management systems standards.</li> <li>• Understands and implements the work instructions and procedures that are applicable to quality management system standards.</li> <li>• Helps to modify documents for the quality management system.</li> <li>• Participates in internal quality audits.</li> </ul>				
<p><b>Manufacturing Processes</b> <i>Understands the organization’s primary manufacturing processes and how the processes are supported by quality control.</i></p> <ul style="list-style-type: none"> <li>• Understands the organization’s equipment and processes.</li> <li>• Identifies and processes non-conforming material.</li> <li>• Participates in corrective actions.</li> </ul>				
<p><b>Continuous Improvement</b> <i>Supports the organization’s business goals through continuous improvement initiatives.</i></p> <ul style="list-style-type: none"> <li>• Becomes familiar with methodologies such as lean manufacturing, theory of constraints, and 5S.</li> <li>• Participates in a continuous improvement effort or initiative.</li> <li>• Identifies continuous improvement opportunities.</li> </ul>				



In addition to completing all core competencies, an apprentice based on the employer's assigned role will complete the following additional competencies.

Optional Competencies	Required for this employer (yes/no)	Rating	Supervisor Sign-off	Date
<p><b>Automated Measuring Systems</b>  <i>Sets up, programs, and operates automated measuring systems such as Coordinate Measuring Machines (CMMs).</i></p> <ul style="list-style-type: none"> <li>• Observes the operation of automated measuring systems.</li> <li>• Operates automated measuring systems with close supervision.</li> <li>• Independently operates automated measuring systems.</li> <li>• Creates simple automated measuring system programs.</li> <li>• Makes simple edits to existing automated measuring system programs.</li> <li>• Understands the full functionality and capability of automated measuring systems.</li> <li>• Troubleshoots issues with automated measuring machines</li> </ul>				
<p><b>Geometric Dimensioning and Tolerancing (GD&amp;T)</b>  <i>Understands Geometric Dimensioning and Tolerancing (GD&amp;T) principles and applies them to quality inspections.</i></p> <ul style="list-style-type: none"> <li>• Recognizes and understands GD&amp;T symbols.</li> <li>• Performs basic GD&amp;T calculations.</li> </ul>				
<p><b>Fixtures</b>  <i>Designs and uses fixtures to inspect parts.</i></p> <ul style="list-style-type: none"> <li>• Observes the use of fixtures in quality inspections.</li> <li>• Uses fixtures to conduct quality inspections.</li> <li>• Troubleshoots issues with fixtures.</li> </ul>				

### Apprenticeship Competencies – Career Readiness

In addition to mastering all the essential technical competencies outlined in the work processes, an apprentice must consistently demonstrate growth and proficiency in the following career readiness competencies to complete the apprenticeship.

Apprentices will be evaluated in these competencies semi-annually, and the supervisor will initial and date the accomplishment of the career ready competency at each review.



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1. Does Not Yet Meet Expectations (Novice): Occasionally meets some of the objectives related to this goal but does not meet others in a fully satisfactory way. This performance level generally indicates the need for additional coaching, training or other plan for performance improvements.

0. Not Applicable (No Skill): Training in this competency has not yet begun.

Apprentices need to receive a “3” or better in each competency in order to complete the apprenticeship.

ENTREPRENEURIAL SKILLS	Required for this employer (yes/no)	Rating	Supervisor Sign-off	Date
<b>Critical Thinking/Problem Solving</b> <ul style="list-style-type: none"> <li>● Recognize that problems can be identified, and possible solutions can be generated</li> <li>● Define the problem using a variety of strategies</li> <li>● Make connections between information gathered and personal experiences to apply and/or test solutions</li> </ul>				
<b>Creativity / Innovation</b> <ul style="list-style-type: none"> <li>● Demonstrate curiosity, imagination and eagerness to learn more</li> <li>● Build on personal experience to specify a challenging problem to investigate</li> <li>● Engage in novel approaches, moves, directions, ideas and/or perspectives</li> </ul>				
<b>Inquiry</b> <ul style="list-style-type: none"> <li>● Recognize and describe cause-and-effect relationships and patterns in everyday experiences</li> </ul>				





<ul style="list-style-type: none"> <li>Investigate to form hypotheses, make observations and draw conclusions</li> <li>Test hypotheses/prototype with planned process for getting feedback</li> </ul>				
<b>Risk Taking</b> <ul style="list-style-type: none"> <li>Demonstrate a willingness to try new things</li> <li>Demonstrate flexibility, imagination and inventiveness in taking on tasks and activities</li> <li>Innovate from failure, connect learning across domains and recognize new opportunities</li> </ul>				

PERSONAL SKILLS	Required for this employer (yes/no)	Rating	Supervisor Sign-off	Date
<b>Self-Management / Self Awareness</b> <ul style="list-style-type: none"> <li>Accurately recognize one's own emotions, thoughts and values and how they influence behavior</li> <li>Appropriately express one's own emotions, thoughts and values and identify how they influence behavior</li> <li>Assess personal strengths and limitations, with a well-grounded sense of confidence, optimism and a 'growth mindset'</li> </ul>				
<b>Self-Direction</b> <ul style="list-style-type: none"> <li>Recognize personal characteristics, preferences, thoughts and strengths</li> <li>Pursue opportunities to engage and learn interests</li> <li>Apply knowledge to set goals, make informed decisions and transfer to new contexts</li> </ul>				
<b>Adaptability / Flexibility</b> <ul style="list-style-type: none"> <li>Recognize emotional response to ideas that differ from one's own</li> <li>Regulate reactions to differing perspectives</li> <li>Look for and value in different perspectives expressed by others</li> </ul>				
<b>Perseverance / Resilience</b> <ul style="list-style-type: none"> <li>Resist distractions, maintain attention, and continue the task at hand through frustration or challenges</li> <li>Set goals and develop strategies to remain focused on learning goals</li> <li>Focus on learning goals by employing motivation and familiar strategies for engagement and evaluate progress, making necessary changes to stay the course</li> </ul>				



CIVIC/INTERPERSONAL SKILLS	Required for this employer (yes/no)	Rating	Supervisor Sign-off	Date
<p><b>Collaboration / Teamwork</b></p> <ul style="list-style-type: none"> <li>Recognize how personal actions have had a positive or negative impact on others with feedback as needed</li> <li>Recognize how members of a community rely on each other, considering personal contributions as applicable</li> <li>Follow a process identified by others to help generate ideas, negotiate roles and responsibilities, and respects consensus in decision making</li> </ul>				
<p><b>Communication</b></p> <ul style="list-style-type: none"> <li>Articulate personal strengths and challenges using different forms of communication to express oneself</li> <li>Consider purpose, formality of context and audience, and distinct cultural norms when planning content, mode, delivery and expression</li> <li>Establish goals for communication and plan out steps accordingly</li> </ul>				
<p><b>Global / Cultural Awareness</b></p> <ul style="list-style-type: none"> <li>Compare attitudes and beliefs as an individual to others</li> <li>Identify and explain multiple perspectives (cultural, global) when exploring events, ideas and issues</li> <li>Plan and evaluate complex solutions to global challenges that are appropriate to their contexts using multiple disciplinary perspectives (such as cultural, historical and scientific)</li> </ul>				
<p><b>Ethics</b></p> <ul style="list-style-type: none"> <li>Takes great care with organizational data</li> <li>Does not disclose any kind of personal or sensitive organizational information; understands that all data is confidential</li> <li>Demonstrates honesty and integrity in all interactions. If an error is made, prioritizes minimal impact to the organization over their own reputation</li> </ul>				

PROFESSIONAL SKILLS	Required for this employer (yes/no)	Rating	Supervisor Sign-off	Date
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<p><b>Task/Time Management</b></p> <ul style="list-style-type: none"> <li>• Articulate task requirements and identify deadlines</li> <li>• Develop and utilize basic task and time-management strategies effectively</li> <li>• Demonstrate task-management attributes associated with producing high-quality products including the abilities to: 1) Work positively and ethically 2) Manage time and projects effectively 3) Multi-task 4) Clearly communicate with others</li> </ul>				
<p><b>Self-Advocacy</b></p> <ul style="list-style-type: none"> <li>• Appropriately express a range of emotions to communicate personal ideas/needs</li> <li>• Ask questions to develop further personal understanding</li> <li>• Demonstrate confidence in sharing ideas/feelings</li> </ul>				
<p><b>Work Ethic</b></p> <ul style="list-style-type: none"> <li>• Complete tasks with ongoing support</li> <li>• Seek clarity on tasks and needs occasional support</li> <li>• Demonstrate skill in assigned tasks and completes with little or no support</li> </ul>				

<b>ACADEMIC SKILLS</b>	<b>Required for this employer (yes/no)</b>	<b>Rating</b>	<b>Supervisor Sign-off</b>	<b>Date</b>
<p><b>Core Academic Foundation</b></p> <ul style="list-style-type: none"> <li>• Begins to use math and literacy skills to inform work</li> <li>• Uses math and literacy skills to perform job tasks with frequent checks by supervisor</li> <li>• Independently and consistently use math and literacy skills to perform tasks (with occasional checks for quality)</li> </ul>				



**RELATED INSTRUCTION OUTLINE**  
**QUALITY CONTROL TECHNICIAN**  
**(Existing Title: Industrial Manufacturing Technician)**  
**O\*NET-SOC CODE: 17-3026.00 RAPIDS CODE: 2031CB**

**Related instruction** - The curriculum is defined as a variety of classes, around which the exams and projects are based. By defining the related instruction this way, all related instruction competencies required of the students are met through a combination of coursework and/or hands-on exercises. Employers will select relevant courses for related instruction in the topics outlined below, totaling **at least 144 hours** over the duration of the apprenticeship. Selection of required topics and associated training time may vary by employer and apprentice. Employer may add additional occupation specific courses as necessary over and above those specified below.

<b>RELATED INSTRUCTION</b>	<b>Approximate Hours</b>
Apprenticeship Orientation	15
Workplace Essentials	45
Employer Onboarding	10
Safety	10
Organization	5
Work Orders	5
Technical Drawings	10
Technical Mathematics	15
Quality Inspection	10
Reporting and Recordkeeping	10
Quality Management System Standards	15
Manufacturing Processes	5
Continuous Improvement	15
<b>TOTAL RI HOURS</b>	<b>170</b>

**COURSE DESCRIPTIONS**

**Apprenticeship Orientation (15 hours)**

Introduction to career-readiness to prepare students for working in a professional environment: apprenticeship and workplace expectations with a focus on growth mindset.

**Workplace Essentials (45 hours)**

Skills in common computer applications, effective workplace communication, time management, and conflict resolution.

**Employer Onboarding (10 hours)**

Orientation training provided to new employees by the employer

**Safety (10 hours)**

Understands and upholds safe workplace practices in a manufacturing environment.



**Organization (5 hours)**

Conducts general housekeeping and cleanup. Maintains a tidy, organized workspace.

**Work Orders (5 hours)**

Reads and interprets work orders to prepare for quality inspection and support of production.

**Technical Drawings (10 hours)**

Reads and interprets technical drawings, including dimension, tolerance, and standards requirements.

**Technical Mathematics (15 hours)**

Uses technical math including decimal to fraction conversion, metric to English measurement conversion, trigonometry, and statistics to complete work activities.

**Quality Inspection (10 hours)**

Tests and inspects parts or products to evaluate whether they meet specifications.

**Reporting and Recordkeeping (10 hours)**

Records and maintains quality data. Analyzes data using statistical process control techniques.

**Quality Management System Standards (15 hours)**

Understands and adheres to the relevant quality management system standards, such as ISO 9001, ISO 13485, AS9100.

**Manufacturing Processes (5 hours)**

Understands the organization's primary manufacturing processes and how the processes are supported by quality control.

**Continuous Improvement (15 hours)**

Supports the organization's business goals through continuous improvement initiatives.



## **SELECTION PROCEDURES**

1. Apprenticeship opportunities are shared with students enrolled in CareerWise and its affiliated programs.
2. Interested applicants complete the application process outlined in the apprenticeship recruitment notice. All suitably qualified applicants can apply to the apprenticeship opportunity.
3. All applicants that meet the minimum qualifications will be selected for an employer interview.
4. At the time of interview, applicants will be asked the same set of questions to ensure each applicant is treated equally.
5. Applicants shall be rated and ranked based on interview scores.

If required by the employer, the top candidates may be invited for a second interview.

6. The applicants will be notified of the hiring decision in a timely manner and all applicants will be treated equally with regard to notifications.
7. All records regarding the selection of apprentices will be forwarded to and maintained by the Sponsor (see Sponsor Requirements Guide).

### ***Direct Entry:***

The Sponsor may allow direct entry applicants that are part of an employer's incumbent workforce, a qualified pre-apprenticeship program, or Job Corps graduates whose training, similarly, qualifies them for the occupation.