



Manufacturing Processes

Youth Apprenticeship

MANUFACTURING PROCESSES

Manufacturing Process youth apprentices work with tools, equipment, and processes in various manufacturing industries. Apprentices must adhere to industry safety and security standards.

Length of Apprenticeship: One Year

COMPETENCIES

Manufacturing Processes youth apprentice must complete **a total of 17** competencies during year. All **7** Manufacturing Fundamentals Competencies must be complete. **Ten** of the Manufacturing Processes competencies listed below must be complete. Employers can substitute up to **1** competency with other occupationally appropriate skills. Substitutions must be added to the competency list for assessment. Note that where necessary, skills can be simulated.

***Students who completed a previous Manufacturing YA program do *not* need to repeat the Manufacturing Fundamentals Competencies.

Manufacturing Fundamentals Competencies	Manufacturing Processes Competencies
<ol style="list-style-type: none"> 1. Focus on customer needs 2. Use various instruments 3. Operate tools and equipment safely 4. Practice quality assurance principles 5. Follow personal safety requirements 6. Maintain a safe work environment 7. Demonstrate professional role to be used in an emergency 	<ol style="list-style-type: none"> 1. Read technical drawings and work orders 2. Interpret manufacturing processes 3. Identify set up for manufacturing process 4. Select tools and materials 5. Assist production set up 6. Support set up 7. Operate equipment 8. Monitor product and process specifications 9. Process production documents 10. Follow shutdown process

REGISTERED APPRENTICESHIP BRIDGING OPPORTUNITIES

Some of the related instruction courses can bridge into the following registered apprenticeship:

- Machine Repair

POST-SECONDARY PATHWAY OPPORTUNITIES

There are several post-secondary pathway opportunities in this area. Following is partial list.

- Precision Machining Technology Technical Diploma



MANUFACTURING PROCESSES

Youth Apprenticeship ON-THE-JOB LEARNING PERFORMANCE STANDARDS GUIDE

YOUTH APPRENTICE INFORMATION

Youth Apprentice Name	
YA Coordinator	YA Consortium
School District	High School Graduation Date

REQUIREMENTS

Requirements

Youth apprentices must complete ALL the items listed below. Check completed areas.

- Competency checklist
- Employability Skills checklist (in this job book) or the DPI Employability Skills Certificate
- Related instruction equal to 1 high school credit or at least 3 college credits
- Minimum of 450 work hours

HOURS

Record the hours the youth apprentice worked.

Total Hours Employed	Company Name	Telephone Number

CAREER PLANNING (THIS SECTION IS SUSPENDED FOR THE 2020-2021 SCHOOL YEAR.)

SIGNATURES

The Job Book includes a list of competencies youth apprentices learn through mentoring and training at the worksite. Rate the student's achievement of each competency below. Review this document on a regular basis with the youth apprentice to record progress and plan future steps to ensure completion of the required competencies. Mentors, instructors, and the apprentice sign below.

Mentor Signature	
Mentor Signature	
Mentor Signature	
Instructor Signature	
Instructor Signature	
Apprentice Signature	

EMPLOYABILITY SKILLS

Youth apprentices must demonstrate key employability skills.

The DWD YA program employability skills requirement may be attained and demonstrated through two processes.

1. If a student has successfully completed a Wisconsin Department of Public Instruction (DPI) State-Certified Cooperative Education, [Co-Op Employability Skill certification](#) then they have met the YA Employability Skills requirement.

Earned Wisconsin Employability Skills Certificate (checked if applicable) or,

2. Rate the ability of the youth apprentice to demonstrate the employability skills below.

3	Exceeds Expectations: Exceeds entry-level criteria; requires minimal supervision; consistently displays this behavior
2	Meets Expectations: Meets entry-level criteria; requires some supervision; often displays this behavior
1	Working to Meet Expectations: Needs improvement; requires much assistance and supervision; rarely displays behavior

The following skills are required of all youth apprentices.

Employability Skills	Rating		
	Minimum Rating of 2 for EACH		
	Check Rating		
Competency and Rating Criteria	1	2	3
1. Develop positive work relationships with others. <i>Examples of qualities and habits that the employee might exhibit include . . .</i> <ul style="list-style-type: none"> • Interacts with others with respect and in a non-judgmental manner • Responds to others in an appropriate and non-offensive manner • Helps co-workers and peers accomplish tasks or goals • Applies problem-solving strategies to improve relations with others • When managing others, shows traits such as compassion, listening, coaching, team development, and appreciation 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Communicate effectively with others <i>Examples of qualities and habits that the employee might exhibit include . . .</i> <ul style="list-style-type: none"> • Adjust the communication approach for the target audience, purpose, and situation to maximize impact • Organizes messages/information in a logical and helpful manner • Speaks clearly and writes legibly • Models behaviors to show active listening • Applies what was read to actual practice • Asks appropriate questions for clarity 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Employability Skills	Rating		
Competency and Rating Criteria	Minimum Rating of 2 for EACH Check Rating		
	1	2	3
<p>3. Collaborate with others</p> <p><i>Examples of qualities and habits that the employee might exhibit include . . .</i></p> <ul style="list-style-type: none"> • Works effectively in teams with people of diverse backgrounds regardless of sex, race, ethnicity, nationality, sexuality, religion, political views, and abilities • Shares responsibility for collaborative work and decision making • Uses the problem-solving process to work through differences of opinion in a constructive manner to achieve a reasonable compromise • Avoids contributing to an unproductive group conflict • Shares information and carries out responsibilities in a timely manner 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<p>4. Maintain composure under pressure</p> <p><i>Examples of qualities and habits that the employee might exhibit include . . .</i></p> <ul style="list-style-type: none"> • Uses critical thinking to determine the best options or outcomes when faced with a challenging situation • Carries out assigned duties while under pressure • Acts in a respectful, professional, and non-offensive manner while under pressure • Applies stress management techniques to cope under pressure 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<p>5. Demonstrate integrity</p> <p><i>Examples of qualities and habits that the employee might exhibit include . . .</i></p> <ul style="list-style-type: none"> • Carries out responsibilities in an ethical, legal and confidential manner • Responds to situations in a timely manner • Takes personal responsibility to correct problems • Models behaviors that demonstrate self-discipline, reliability, and dependability 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<p>6. Perform quality work</p> <p><i>Examples of qualities and habits that the employee might exhibit include . . .</i></p> <ul style="list-style-type: none"> • Carries out written and verbal directions accurately • Completes work efficiently and effectively • Performs calculations accurately • Conserves resources, supplies, and materials to minimize costs and environmental impact • Uses equipment, technology, and work strategies to improve workflow • Applies problem-solving strategies to improve productivity • Adheres to worksite regulations and practices • Maintains an organized work area 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Employability Skills	Rating		
Competency and Rating Criteria	Minimum Rating of 2 for EACH Check Rating		
	1	2	3
<p>7. Provide quality goods or services (internal and external) <i>Examples of qualities and habits that the employee might exhibit include . . .</i></p> <ul style="list-style-type: none"> • Shows support for the organizational goals and principles by own personal actions • Displays a respectful and professional image to customers • Displays an enthusiastic attitude and desire to take care of customer needs • Seeks out ways to increase customer satisfaction • Produces goods to workplace specifications 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<p>8. Show initiative and self-direction <i>Examples of qualities and habits that the employee might exhibit include . . .</i></p> <ul style="list-style-type: none"> • Prioritizes and carries out responsibilities without being told • Responds with enthusiasm and flexibility to handle tasks that need immediate attention • Reflects on any unsatisfactory outcome as an opportunity to learn • Improves personal performance by doing something different or differently • Analyzes how own actions impact the overall organization • Supports own action with sound reasoning and principles • Balances personal activities to minimize interference with work responsibilities 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<p>9. Adapt to change <i>Examples of qualities and habits that the employee might exhibit include . . .</i></p> <ul style="list-style-type: none"> • Shows flexibility and willingness to learn new skills for various job roles • Uses problem-solving and critical-thinking skills to cope with changing circumstances • Modifies own work behavior based on feedback, unsatisfactory outcomes, efficiency, and effectiveness • Displays a "can do" attitude • Maintains confidentiality 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<p>10. Demonstrate safety and security regulations and practices <i>Examples of qualities and habits that the employee might exhibit include . . .</i></p> <ul style="list-style-type: none"> • Follows personal safety requirements • Maintains a safe work environment • Demonstrates professional role in an emergency • Follows security procedures 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Employability Skills	Rating		
Competency and Rating Criteria	Minimum Rating of 2 for EACH Check Rating		
	1	2	3
<p>11. Apply job-related technology, information, and media <i>Examples of qualities and habits that the employee might exhibit include . . .</i></p> <ul style="list-style-type: none"> • Applies technology effectively in the workplace • Assess and evaluates information on the job • Assesses training manuals, website, and other media related to the job 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<p>12. Fulfill training or certification requirements for employment <i>Examples of qualities and habits that the employee might exhibit include . . .</i></p> <ul style="list-style-type: none"> • Participation in required career-related training and/or educational programs • Passing certification tests to qualify for licensure and/or certification • Participation in company training or orientation 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<p>13. Set personal goals for improvement <i>Examples of qualities and habits that the employee might exhibit include . . .</i></p> <ul style="list-style-type: none"> • Setting goals that are specific and measurable • Setting work related goals that align with the organization's mission • Identifying strategies to reach goals • Reflecting on goal progress to regularly evaluate and modify 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

COMPETENCIES

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Rating Scale

3: Exceeds entry level criteria | Requires minimal supervision | Consistently displays this behavior

2: Meets entry level criteria | Requires some supervision | Often displays this behavior

1: Needs improvement | Requires much assistance and supervision | Rarely displays behavior

MANUFACTURING FUNDAMENTALS – Complete all competencies

Competency and Rating Criteria	Minimum Rating of 2 for EACH Check Rating		
	1	2	3
1. Focus on customer needs <ul style="list-style-type: none"> • Identify internal and external customers impacted by the production process • Satisfy internal and external customer's expectations • Collaborate with team • Assist work site professional to keep internal and/or external customers informed of project progress and decisions that may affect them • Define the impact of the Voice of the Customer • Determine the impact of your work to the internal and external customer 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Competency and Rating Criteria	Minimum Rating of 2 for EACH Check Rating		
	1	2	3
<p>2. Use various instruments</p> <ul style="list-style-type: none"> • Consider the degree of precision required by the part feature • Choose correct measuring instrument for task • Verify equipment is available for use and in working order • Verify equipment preventative maintenance and/or calibration • Inspect tools and work area for safety considerations • Clean and adjust measuring instrument prior to use • Use gauges, calipers, and micrometer instruments • Use semi-precision and precision layout tools • Use digital gauges, checking fixtures • Use digital scales, thermometers • Confirm measurement accuracy • Record measurement correctly including unit of measurement at proper interval • Calibrate, clean, and store measuring instruments properly • Convert standard to metric – metric to standard measurement units 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<p>3. Operate tools and equipment safely</p> <ul style="list-style-type: none"> • Operate only tool/equipment that he/she is trained on • Choose correct tool/equipment for the task • Follow tool check list • Verify tool/equipment is available for use and in working order • Verify tool/equipment is current for preventative maintenance and/or calibration • Wear appropriate Personal Protective Equipment (PPE) • Inspect tool/equipment and work area for safety considerations • Prepare tool/equipment for safe operation • Operate tool/equipment safely with guarding devices • Monitor tool/equipment for safe operation while operating • Compare tool/equipment performance regularly to optimal equipment operations • Follow facility procedures for clean-up and shut down after use • Perform required preventative maintenance procedures • Report abnormal tool/equipment conditions • Properly shuts down and labels any tool/equipment that is not operating as expected • Follow Lock Out/Tag Out procedures as applicable • Document use and maintenance 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Competency and Rating Criteria	Minimum Rating of 2 for EACH Check Rating		
	1	2	3
<p>4. Practice quality assurance principles</p> <ul style="list-style-type: none"> • Inspect materials/piece/product at all stages of production • Identify quality or condition of materials/piece/product • Monitor materials, processes, equipment, tools, and products throughout the production process • Inspect final product/piece to ensure it meets specifications • Identify and segregate materials and/or product that do not meet specification • Communicate with work site professional if materials/product do not meet requirements • Document all quality checks • Participate in root-cause analysis of process/product • Take ownership of work • Collaborate with work site professional on corrective action 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<p>5. Follow personal safety requirements (safety)</p> <ul style="list-style-type: none"> • Participate in required safety training • Follow all worksite guidelines for personal safety • Apply principles of proper body mechanics • Report exposures, injuries, near misses, or accidents, personal or to others immediately • Locate key information on Material Safety Data Sheets (MSDS) • Handle and dispose of any hazardous materials appropriately • Operate equipment that he/she is trained on • Adhere to equipment safety standards • Visually inspect equipment before operation • Wear required Personal Protective Equipment (PPE) at all times • Follow company emergency action plan • Identify hazardous conditions and restricted areas in the workplace • Avoid pinch points • Be aware of surroundings 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Competency and Rating Criteria	Minimum Rating of 2 for EACH Check Rating		
	1	2	3
<p>6. Maintain a safe work environment (safety)</p> <ul style="list-style-type: none"> • Comply with posted safety warnings and symbols • Identify unsafe conditions and/or work habits • Report unsafe conditions and/or work habits • Help maintain a clean and safe working environment free of debris and obstacles • Maintain clean, organized work area • Use hazardous materials according to company procedure • Report any indications of insects or pests, if necessary • Follow appropriate Lock out – tag out procedures • Adhere to Occupational Safety and Health Administration (OSHA) Safety guidelines • Follow rules for operating equipment (Powered Industrial Vehicle PIV) • Identify applicable Emergency Stops 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<p>7. Demonstrate professional role to be used in an emergency (safety)</p> <ul style="list-style-type: none"> • Participate in emergency safety simulations and drills • Describe company’s policy and procedures for work site incidents, accidents, electrical, fire, tornado, bomb threats, robbery, hostage situations, and other emergency situations • Identify the closest fire alarms and emergency exits • Identify the fire extinguishers • Identify appropriate alarms and procedures for using alarms • Contact emergency personnel in the event of an emergency • Contribute to emergency incident documentation 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

MACHINING

Competency and Rating Criteria	Minimum Rating of 2 for EACH Check Rating		
	1	2	3
1. Read technical drawings and work orders <ul style="list-style-type: none"> • Review technical drawings • Gather reference materials • Determine type of print and views used • Determine material specifications • Determine critical dimensions and tolerances • Analyze supplementary data • Determine product/job instructions and specifications • Interpret assembly/packaging symbols • Follow assembly/packaging procedures 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Interpret manufacturing processes <ul style="list-style-type: none"> • Interpret technical drawings for job task • Use appropriate terminology • Identify lines, views, symbols, and representations on the drawings • Interpret dimensions, tolerances, and scale on the drawings • Interpret threads, tapers, and shop notes on the drawings • Interpret assembly and packaging plan from a technical drawing 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Identify set up for manufacturing process <ul style="list-style-type: none"> • Review technical drawings, work orders, and/or procedures • Plan process sequencing • Identify tools and equipment needed for process • Identify set up • Verify correct set-up, production schedule, deadlines, and time frames 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Select tools and materials <ul style="list-style-type: none"> • Select tools and production equipment for process • Select appropriate work holding devices for work piece and equipment • Check raw materials needed against work order • Verify raw material(s) meet specifications • Gather all resources needed at the workstation • Notify work site professional of discrepancies 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Competency and Rating Criteria	Minimum Rating of 2 for EACH Check Rating		
	1	2	3
<p>5. Assist production set up</p> <ul style="list-style-type: none"> Assemble tools and production equipment Verify production equipment is available for use and in working order Verify production equipment is current for preventative maintenance and/or calibration Calculate control settings Check equipment fluid, air, pressure levels Set production equipment parameters for the procedure Secure work holding devices Stage pieces and raw materials for production 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<p>6. Support set up</p> <ul style="list-style-type: none"> Verify set up meets process requirements and product specifications Examine first piece/product or production run for visual and/or dimensional specification Make adjustments to piece/product Verify repeatability of set up Document set up procedure 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<p>7. Operate equipment</p> <ul style="list-style-type: none"> Wear required Personal Protective Equipment (PPE) Follow equipment safety procedures Operate equipment according to machine requirements Monitor equipment for correct operation Notify work site professional of operating discrepancies 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<p>8. Monitor product and process specifications</p> <ul style="list-style-type: none"> Monitor product for specification Monitor process and equipment performance Adjust process for quality and/or productivity Take corrective actions to resolve problems Replenish processing materials Test product for function Label products for compliance or non-compliance Document quality control checks Verify pieces meet specifications Notify work site professional of discrepancies 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Competency and Rating Criteria	Minimum Rating of 2 for EACH Check Rating		
	1	2	3
9. Process production documents <ul style="list-style-type: none"> • Document processing data on items such as labor, quality, quantity, and time • Verify fabrication and production documentation is completed • Verify documentation is legible • Verify documentation is complete • Verify documentation is in appropriate format • Verify documentation is stored or forwarded • Verify pieces are stored or staged 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Follow shutdown process <ul style="list-style-type: none"> • Review shutdown procedure • Stop production process • Verify all equipment is shut down safely • Identify process or equipment maintenance concerns with the production run • Report process or equipment maintenance concerns 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Competency Substitute (if you replaced a competency above, note the competency and rating)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

RELATED INSTRUCTION

Indicate which related instruction courses the youth apprentice completed:

Course Title	Credits	Location



Post-Program Completion Survey

Youth Apprenticeship

Information captured on this form must be entered online using the Youth Apprenticeship Online System (YODA).

This form should be given to each student completing the Youth Apprenticeship program to capture information on the student's plans after leaving the program. The form should be filled out during the final meeting between the student, mentor, and Local Youth Apprenticeship Coordinator, where the final checklist is filled out and signed.

Student Name	Expected Date of High School Graduation
School District	GPA at End of YA Program

Instructions: Indicate if the student will continue to be employed, and then check the appropriate boxes. Please include internships, opportunities to work during school breaks, and other similar situations as offers of continued employment, even if they do not start immediately.

<input type="checkbox"/> This student will be employed after completing the YA program. Check <input type="checkbox"/> Full time or <input type="checkbox"/> Part time.			
Check all that apply:		Then, fill out the following information:	
<input type="checkbox"/> Employment is related to YA program training		Employment Wage:	
<input type="checkbox"/> Employment is with same YA employer*		Employment Start Date:	
<input type="checkbox"/> Employment is seasonal and/or intermittent		Position Title (optional):	
<input type="checkbox"/> Employment is an internship		Industrial Sector [†] :	
<input type="checkbox"/> Employment is military		[†] Based on employer's NAICS Code. If unknown, describe the employer's primary income-producing line of business below.	
<input type="checkbox"/> Also entering post-secondary education/other training			
<input type="checkbox"/> Also entering a Registered Apprenticeship			
<input type="checkbox"/> Health/personal issues impacted ability for full employment			
<i>*If student accepted a job at a different employer, please provide that employer's contact information:</i>			
Employer Name		Street Address	
City	County	State	Zip
<input type="checkbox"/> This student will not be employed after completing the YA program.			

Check one:	Then, check all that apply:
<input type="checkbox"/> Student did not apply for further employment	<input type="checkbox"/> Entering post-secondary education or other training program
<input type="checkbox"/> Student applied, but was not interviewed	<input type="checkbox"/> Student unable to find an entry-level position to apply for
<input type="checkbox"/> Interviewed, but not offered employment	<input type="checkbox"/> Student had change in career interest or plans
<input type="checkbox"/> Student was offered continued employment, but did not accept	<input type="checkbox"/> Health/personal issues prohibited employment
Other comments:	

<i>MENTOR NAME</i>	<i>COMPANY NAME</i>
Mentor Signature	Date Completed

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