WISCONSIN— YOUTH APPRENTICESHIP

Manufacturing Processes

Youth Apprenticeship

MANUFACUTURING 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 or two years

COMPETENCIES

Manufacturing Processes youth apprentice must complete **a total of 17** competencies during year 1. All **7** Manufacturing Fundamentals Competencies must be completed. No substitutions to this list. **Ten** Manufacturing Processes competencies must be completed. Employers can substitute up to **1** Manufacturing Processes competency with another occupationally appropriate skill. Substitutions must be added to the competency list for assessment. Note that where necessary, skills can be simulated.

NOTE: Students completing a 2-year manufacturing processes youth apprenticeship must select a minimum of 1 different manufacturing process than the first year and indicate it in the appropriate place on this guide.

Document the Manufacturing Process for each year in this guide.

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

Manufacturing Fundamentals Competencies			Manufacturing Processes Competencies
1.	Focus on customer needs	1.	Read technical drawings and work orders
2.	Use various instruments	2.	Interpret manufacturing processes
3.	Operate tools and equipment safely	3.	Identify set up for manufacturing process
4.	Practice quality assurance principles	4.	Select tools and materials
5.	Follow personal safety requirements	5.	Assist production set up
6.	Maintain a safe work environment	6.	Support set up
7.	Demonstrate professional role to be used	7.	Operate equipment
	in an emergency	8.	Monitor product and process specifications
		9.	Process production documents
		10.	Follow shutdown process

REGISTERED APPRENTICESHIP BRIDGING OPPORTUNITIES

The following Registered Apprenticeship is available in this area:

• Machine Repair

POST-SECONDARY PATHWAY OPPORTUNITIES

There are several post-secondary pathway opportunities in this area. The following is an example.

• 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 Con	nsortium
School District	High So	chool Graduation Date
REQUIREMENTS		
• • •	cklist cklist (in this OJL Guide) or the al to 1 high school credit or at	DPI Employability Skills Certificate
	cklist cklist (in this OJL Guide) or the al to 2 high school credits or a	DPI Employability Skills Certificate
HOURS		
Record the hours the youth app	prentice worked.	
Total Hours Employed	Company Name	Telephone Number

CAREER PREPARATION

Youth apprentices must complete on	ne of the following during Youth Apprenticeship participation:
\square 1. Student is participating in a loc	al or regional career pathway*.
Identify the pathway below:	
	ct the <u>Wisconsin Department of Public Instruction</u> . Additional help <u>Wisconsin Pathways – Regional Career Pathways</u> and <u>DPI Career</u> pages.
or has completed at least one CTE cl	ys as defined by the WI DPI means that a student is participating in ass in a cluster pathway sequence and has completed at least one of onts: instructional related course, work-based learning, dual college student organization.
☐ 2. Student has completed one of certification earned previously.	the following certificates during their YA program or possess current
list below. Leadership Certificate (Di OSHA Safety Training (10 SNAP ON Certifications (i - Manufacturing Skill- Sta	or 30) .e., precision measurement) ndards Certification (MSSC) ed by the Career and Technical Education (CTE) Approved to this occupational field (or related to this occupation)
	al Enrollment Course connected to any postsecondary education consin Association of Independent Colleges and Universities in Technical Colleges (WTCS).
College Name:	
College Course Title:	Course Number:
WTCSWAICU	ment opportunities, please contact one of the resources below:

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SIGNATURES

The On-the-Job Learning Performance Standards Guide includes a list of competencies youth apprentices learn through mentoring and training at the worksite.

Instructions for the Worksite Employers/Mentors and School-Base or YA coordinators: This document should be reviewed with the employer / mentor, school-based or YA coordinator on a regular basis with the youth apprentice to record progress and plan future steps to ensure completion of the required competencies. Mentors, school-based / YA coordinator, and the apprentice sign below.

Employer/Mentor Signature	Employer/Mentor Signature
Employer/Mentor	Employer/Mentor
Business/Company	Business/Company
Date Signed	Date Signed
School-Based and/or YA Coordinator Signature	School-Based and/or YA Coordinator Signature
School-Based and/or YA Coordinator	School-Based and/or YA Coordinator
SCHOOL-Based and/or YA Coordinator	SCHOOL-Based and/or YA Coordinator
School District or Organization	School District or Organization
Date Signed	Date Signed
Youth Apprentice Signature	Youth Apprentice Signature
Youth Apprentice	Youth Apprentice
School District / High School	School District / High School
Date Signed	Date Signed

EMPLOYABILITY SKILLS

Youth apprentices must demonstrate key employability skills.

The DWD YA program employability skills requirement may be attained and demonstrated through two processes. (See options listed below.) Employability skills must be completed for every year a student is in the program. The DPI Employability Skills Certificate may be counted as meeting one of those two years, provided the certificate is earned in the same year the student is enrolled in youth apprenticeship or they can complete the YA Employability Skills in the OJL. The Employability Skills Certificate must be obtained through the DPI.

- If a student has successfully completed a Wisconsin Department of Public Instruction (DPI)
 State-Certified Cooperative Education, <u>Co-Op Employability Skill certification</u> then they have met
 the YA Employability Skills requirement for that year. A copy of the student's DPI Co-Op
 Employability Skill Certificate must be maintained on file with their YA regional consortium.
 - ☐ Earned Wisconsin Employability Skills Certificate (checked if applicable) or,
- 2. Completed and rated "Employability Skills" through this YA OJL guide as described 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 this behavior

The following skills are required of all youth apprentices.

	Employability Skills	Rating		
	Competency and Rating Criteria		n Rating of 2 Check Ratin	
	Competency and Nating Criteria		_	
		1	2	3
1.	Develops positive work relationships with others.		Year 1 Ratin	g
	Examples of qualities and habits that the employee might exhibit			
	include		Year 2 Ratin	ig
	 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			
		l		i

2.	Communicates effectively with others		Year 1 Ratir	ng
	Examples of qualities and habits that the employee might exhibit			
	include	,	 Year 2 Ratir	ng
	 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 			
3.	Collaborates with others	,	Year 1 Ratir	ng
	Examples of qualities and habits that the employee might exhibit			
	include	,	Year 2 Ratir	ng
	 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 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 			
4.	Maintains composure under pressure		Year 1 Ratir	
	Examples of qualities and habits that the employee might exhibit include			
	 Uses critical thinking to determine the best options or outcomes 		Year 2 Ratir	ng
	 Sees critical trimking to determine the best options of 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 			
5.	Demonstrates integrity	,	Year 1 Ratir	ng
	Examples of qualities and habits that the employee might exhibit			
	include	,	Year 2 Ratir	ng
	 Carries our 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 			

6.	Performs quality work	,	Year 1 Ratir	ng
	Examples of qualities and habits that the employee might exhibit			
	include	,	Year 2 Ratir	ng
	Carries out written and verbal directions accurately			
	Completes work efficiently and effectivelyPreforms calculations accurately			
	 Preforms 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			
7.	Provides quality goods or services (internal and external)	•	Year 1 Ratir	ng
	Examples of qualities and habits that the employee might exhibit			
	include	•	Year 2 Ratir	ng
	Shows support for the organizational goals and principles by			
	 own personal actions Displays a respectful and professional image to customers 			
	 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			
8.	Shows initiative and self-direction	,	l Year 1 Ratir	ng
0.	Examples of qualities and habits that the employee might exhibit			<u>ъ</u>
	include	_	Year 2 Ratir	
	Prioritizes and carries out responsibilities without being told			П
	 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 			
	responsibilities			
9.	Adapts to change		Year 1 Ratir	ng
	Examples of qualities and habits that the employee might exhibit include			
	Shows flexibility and willingness to learn new skills for various		Year 2 Ratir	ng 🗆
	job roles			
	Uses problem-solving and critical-thinking skills to cope with changing circumstances.			
	changing circumstancesModifies own work behavior based on feedback, unsatisfactory			
	outcomes, efficiency, and effectiveness			
	Displays a "can do" attitude			
1				

10. Demonstrates safety and security regulations and practices	,	Year 1 Ratir	ıg
Examples of qualities and habits that the employee might exhibit			
include	•	Year 2 Ratir	ıg
Follows personal safety requirements			
Maintains a safe work environment			
Demonstrates professional role in an emergency			
Follows security procedures			
Maintains confidentiality			
11. Applies job-related technology, information, and media		Year 1 Ratir	ig —
Examples of qualities and habits that the employee might exhibit			
include	•	Year 2 Ratir	ıg
Applies technology effectively in the workplace			
Assesses and evaluates information on the job			
Assesses training manuals, website, and other media related to			
the job			
12. Fulfills training or certification requirements for employment	,	 Year 1 Ratir	ησ
Examples of qualities and habits that the employee might exhibit			' <u>ь</u>
include			_
Participation in required career-related training and/or		Year 2 Ratir	ıg
educational programs			Ш
 Passing certification tests to qualify for licensure and/or 			
certification			
Participation in company training or orientation			
. , , ,			
13. Sets personal goals for improvement	,	Year 1 Ratir	ıg
Examples of qualities and habits that the employee might exhibit			
include	,	Year 2 Ratir	ıg
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			
goals			

MANUFACTURING FUNDAMENTALS COMPETENCIES

Manufacturing Processes youth apprentices must complete a total of 17 competencies during year 1. All 7 Manufacturing Fundamentals Competencies must be completed. No substitutions to this list. Ten Manufacturing Processes competencies must be completed. Employers can substitute 1 Manufacturing Processes competency with another occupationally appropriate skill. 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.

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		
	competency and Rating effects	1	2	3
1.	 Focus on customer needs identify internal and external customers impacted by the production process satisfy internal and external customer 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 			

	Competency and Rating Criteria		Rating of 2	
		1	2	3
2.	 Use various instruments 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 			
3.	 Operate tools and equipment safely 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 shut down and label any tool/equipment that is not operating as expected follow Lock Out/Tag Out procedures as applicable document use and maintenance 			

	Competency and Rating Criteria		Minimum Rating of 2 for EACH Check Rating		
		1	2	3	
4.	 Practice quality assurance principles 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 				
5.	 Follow personal safety requirements (safety) 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 safety data sheets (SDS) 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 				

			Rating of 2	
	Competency and Rating Criteria		Check Rating	
6.	Maintain a safe work environment (safety)	1 □	2	3 □
	 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 			
7.	 Demonstrate professional role to be used in an emergency (safety) 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 			
Со	mments:			

MANUFACTURING PROCESSES COMPETENCIES

Enter the Manufacturing Processes practiced by the Youth Apprentice. A minimum of 1 process is required for each year. Year 2 must be different than year 1. Multiple processes per year are acceptable.

Year 1 Manufacturing Processes	Year 2 Manufacturing Processes	

Manufacturing Processes Examples		
1. Casting Examples: Metal, Sand, Die, Plaster, Slush, Static, Centrifugal, Continuous	5. Forming Examples: Forging, Open/Closed Die, Extrusion, Pressing, Punching, Blanking, Drawing, Piercing	
2. Conditioning Examples: Heat Treating, Annealing, Hardening, Tempering	6. Jointing/Combining Examples: Welding, Brazing, Soldering, Sintering, Adhesive Bonding, Thermosetting, Fastening, Stitching, Stapling, Press-Fitting, Chemical	
3. Filing Examples: Aseptic, Bottling, Canning	7. Molding Examples: Power Compaction, Sintering, Injection, Blow, Liquid Resin, Thermoforming, Extrusion, Foam, Vacuum Forming, Compression, Shrink Filing	
4. Finishing Examples: Barrel, Sanding, Deburring, Buffing, Brushing, Polishing, Electropolishing, Chemical Cleaning, Ultrasound Cleaning, Vapor Degreasing, Painting, Coating, Dipping, Electroplating, Engraving, Plating	8. Separating Examples: Cutting, Sawing, Centrifuging, Filtration, Pressing, Distillation, Evaporation, Fractionalization, Chemical	

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 this behavior

	Competency and Rating Criteria		Minimum Rating of 2 for EACH Check Rating		
		1	2	3	
1.	Read technical drawings and work orders	Year 1 Rating			
	 review technical drawings 				
	 gather reference materials 	Year 2 Rating			

		Minimun	n Rating of 2	2 for EACH
	Competency and Rating Criteria		Check Ratin	g
		1	2	3
	 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 			
2.	Interpret manufacturing processes	•	ear 1 Ratin	g
	 interpret technical drawings for job task 			
	 use appropriate terminology 	•	ear 2 Ratin	g
	• 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			
3.	Identify set up for manufacturing process	,	ear 1 Ratin	.σ
Э.	 review technical drawings, work orders, and/or procedures 			<u> </u>
	 plan process sequencing 		 ∕ear 2 Ratin	
	 identify tools and equipment needed for process 			<u>ів</u> П
	 identify tools and equipment needed for process identify set up 			Ш
	 verify correct set-up, production schedule, deadlines, and 			
	time frames			
	time names			
4.	Select tools and materials	,	ear 1 Ratin	g
	 select tools and production equipment for process 			
	• select appropriate work holding devices for work piece and	•	ear 2 Ratin	g
	equipment			
	 check raw materials needed against work order 			
	 verify raw materials meet specifications 			
	 gather all resources needed at the workstation 			
	 notify work site professional of discrepancies 			
5.	Assist production set up	•	ear 1 Ratin	g
	assemble tools and production equipment			
			rear 2 Ratin	
				J

	Competency and Rating Criteria	Minimum Rating of 2 for EACH Check Rating		
	, , ,	1	2	3
	 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 			
6.	Support set up	,	Year 1 Rating	
	 verify set up meets process requirements and product 			
	specifications		Year 2 Ratir	ng
	 examine first piece/product or production run for visual and/or dimensional specification adjust piece/product verify repeatability of set up document set up procedure 			
7.	Operate equipment	,	Year 1 Ratir	ng
	 wear required Personal Protective Equipment (PPE) 			
	 follow equipment safety procedures 	,	Year 2 Ratir	ng
	 operate equipment according to machine requirements monitor equipment for correct operation notify work site professional of operating discrepancies 			

	Minimun	n Rating of 2	for EACH
Competency and Rating Criteria		Check Rating	3
	1	2	3
8. Monitor product and process specifications	•	Year 1 Rating	3
 monitor product for specification 			
 monitor process and equipment performance 	•	Year 2 Rating	3
 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 worksite profession of discrepancies 			
9. Process production documents	•	 Year 1 Rating	2
 document processing data on items such as labor, quality, 			
quantity, and time	,	Year 2 Rating	3
 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 			
10. Follow shutdown process	,	Year 1 Rating	3
 review shutdown procedure 			
 stop production process 	,	Year 2 Rating	3
 verify all equipment is shut down safely 			
 identify process or equipment maintenance concerns with 			
the production run			
 report process or equipment maintenance concerns 			
Competency Substitute (if you replaced a competency above,	,	Year 1 Rating	3
note the competency and rating)			
	,	Year 2 Rating	3
Comments:			

RELATED INSTRUCTION

YEAR 1: Indicate which related instruction courses the youth apprentice completed:

Course Title	Credits	Location

YEAR 2 (If applicable): Indicate which related instruction courses the youth apprentice completed:

Course Title	Credits	Location



Post-Program Completion Survey

Youth Apprenticeship

YA POST-PROGRAM COMPLETION SURVEY

The <u>Post-Program Completion Survey</u> form is to be provided 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, when the final checklist if filled out and signed. Information captured on this form must be entered online using the Youth Apprenticeship Online Data Application (YODA) System.

DWD is an equal opportunity employer and service provider. If you have a disability and need assistance with this information, please dial 7-1-1 for Wisconsin Relay Service. Please contact the Division of Employment and Training at 888-258-9966 and press 6 to request information in an alternate format, including translated to another language.

