

Release of Updated Training Standard Logbook

Trade Name and Code	Mould Maker 431A
Implementation Date of New Standard	January 4 th , 2022 released as Version 300
Implementation Plan	<ul style="list-style-type: none"> ▪ Apprentices who began their apprenticeship on the former 2003 Mould Maker 431A Training Standard can complete their program using that standard. ▪ All apprentices with initial training agreements registered on or after January 4th, 2022 must be trained to the new standard. ▪ On or after January 4th, 2022, any apprentice who loses his or her training standard must be trained to and completed with the new standard even if they began their apprenticeship with the 2003 version.
Impact on Curriculum Standards or Related Trades	The corresponding Curriculum Standard has not been updated as of this date. As a result, the numbers listed as “cross references to the training standard” for Mould Maker in the Precision Machining and Tooling Common Core Level 1, Mould Maker Level 2 and Mould Maker Level 3 do not reflect the new Training Standard document.
Training Standard Access	As of January 4 th , 2022: <ul style="list-style-type: none"> ▪ The new Log Book will be available on the Skilled Trades Ontario (STO) website.

Existing Skill Sets:	New Skill Sets:
1. Protect Self and Others 5245	1. Protect Self, Others and the Environment 9386
2. Plan and Prepare for Machining Job 5246	2. Plan and Prepare for Machining Job 9387
3. Perform Work-In-Process Dimensional or Surface Verification 5247	3. Perform Work-In-Process Dimensional or Surface Verification 9388
4. Perform Benchwork 5248	4. Perform Benchwork 9389
5. Perform Sawing 5249	5. Perform Power Sawing 9390
6. Perform Drilling Using Drill Press/Machine 5250	6. Perform Drilling Using Drilling Machine 9391
7. Perform Machine Grinding 5251	7. Perform Machine Grinding 9392
8. Perform Lathe Work 5252	8. Perform Lathe Work 9393
9. Perform Milling 5253	9. Perform Milling 9394
10. Perform Numerically Controlled (NC)/ Computerized Numerically Controlled (CNC) 5254	10. Perform Computerized Numerically Controlled (CNC) Machining 9395
11. Perform Electrical Discharge Machining (EDM) 5255	11. Perform Electrical Discharge Machining (EDM) 9396
12. Devise and Detail a Plan for The Mould-Building Process 5256	12. Create a Plan for The Mould-Building Process 9397
13. Build/Fabricate Mould Components 5257	13. Manufacture Mould Components 9398
14. Fit and Assemble Mould 5258	14. Fit, Assemble and Repair Mould 9399
15. Finish/Polish Moulding Surface 5259	15. Finish and Polish Moulding Surface 9400
Key Changes	<ul style="list-style-type: none"> ▪ Rationale: The Working Group Committee determined that there was considerable opportunity for reordering, restructuring and regrouping the Skill Sets due to several inter-related skills and to close gaps. This created a more efficient Apprenticeship Training Standard and ensures optimal flow from one competency to the next for the successful completion of the Mould Maker Apprenticeship program. ▪ Major content changes made throughout document driven by industry and technological changes. Also, as there is a lot of commonality between this trade and both the General Machinist and Tool and Die Maker trades and as such, changes were made to align the first 10 Skill Sets.

Key Changes	<p>9386 Protect Self, Others and the Environment (formerly 5245):</p> <ul style="list-style-type: none"> ▪ Skill Set name changed from ‘Protect Self and Others’ to Protect Self, Others and the Environment ▪ Skills added: Identify and locate workplace features, Follow fire procedures, Follow hydraulic and pneumatic safe-testing procedures, Follow welding safety procedures and Protect the environment ▪ Skill deleted: ‘Check tapers’ ▪ Increased from 15 to 19 skills ▪ Rationale: New skills added to this skill set as these are critical skills for apprentices to learn. Specifically, Follow hot-runner safe testing procedures, Follow hydraulic and pneumatic safe testing procedures and Follow welding safety procedures were added to acknowledge the importance of not only testing, but safe testing procedures that are crucial for Mould Making processes. Environment was added to Protect Self, Others and the Environment as it is critical for trades to reduce their carbon footprint. <p>9387 Plan and Prepare for Machining Job (formerly 5246):</p> <ul style="list-style-type: none"> ▪ Skill Select Inspect and use rigging and hoisting equipment and components was changed from optional to Mandatory ▪ Skill ‘Identify and select machines’ was changed to Identify and select conventional and computer numerically controlled (CNC) machines ▪ Remains at 16 skills ▪ Rigging and hoisting skills are critical skills for apprentices to learn. The safe operation of hoisting and rigging equipment, the proper use of reference tables and calculations, to achieve a proper and safe movement of materials through a shop are critical, and therefore made mandatory. Also, these changes align with the common skill sets shared with the General Machinist and Tool and Die Maker trades. <p>9388 Perform Work-in-process Dimensional or Surface Verification (formerly 5247):</p> <ul style="list-style-type: none"> ▪ Skills Check hardness and Maintain material identification were changed from optional to Mandatory ▪ Skill ‘Check surfaces’ was integrated with Check shapes to incorporate modern techniques and machinery available now such as CMM or Laser Scanning. ▪ Remains at 11 skills ▪ Rationale: Checking hardness and maintaining material identification skills are critical for apprentices to maintain identification of materials due to the vast variety of new
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materials available, which may have the same appearance of other materials, but different properties and different applications. Improper identification or no identification could cause huge implications such as safety hazards or improper mold operation and therefore made mandatory. Also, these changes align with the common skill sets shared with the General Machinist and Tool and Die Maker trades.

9389 Perform Benchwork (formerly 5248):

- Skill 'Check threads' was changed to **Repair thread** and from optional to Mandatory
- New skills added: **Maintain material identification, Perform inspection** and **Complete work documentation**
- Increased from 8 to **11** skills
- Rationale: 'Check threads' was changed to **Repair threads** in the benchwork section as a mandatory skill in order that apprentices learn how rework or fix damaged threads after they have been
- machined. The skill 'check thread' has been added to **Perform Work in Process Dimensional or Surface Verification** as a skill to verify threads in process while being machined. Also, these changes align with the common skill sets shared with the General Machinist and Tool and Die Maker trades.

9390 Perform Power Sawing (formerly 5249):

- Skill Set name changed from 'Perform sawing' to **Perform Power Sawing**
- New skill added: **Select and visually inspect blade**
- Skills deleted: 'lay out features of engineering drawings' and 'Move workpiece'
- Skill 'check fused/welded blade' changed to **Select and visually inspect blade**
- Skills **Cut shapes using a vertical bandsaw** and **Maintain material identification** were changed from optional to Mandatory
- Increased from 8 to **11** skills
- Rationale: Skill 'lay out features of engineering drawings' is part of planning the machining job and it is not required to be in every section therefore it was removed within this skill set. 'Move workpiece' is part of the setup and orientation process. 'Cutting shapes' and 'maintaining material identification' skills are critical for apprentices and therefore made mandatory. Also, these changes align with the common skill sets shared with the General Machinist and Tool and Die Maker trades.

- 9391 Perform Drilling using Drilling Machine (formerly 5250):**
- Skill Set name changed from 'Perform drilling using Drill/Press Machine' to **Perform Drilling using Drilling Machine**
 - Skills amalgamated: **Chamfer a hole** and **Countersink a hole**
 - Skills deleted: 'Maintain material identification' and 'Move workpiece'
 - Skill 'machine-thread a hole' changed to **Tap a hole**
 - Decreased from 19 to **16** skills
 - Rationale: Skills 'Chamfer a hole' and 'Countersink a hole' were amalgamated into one skill because 'countersink' and 'chamfer' have the same meaning. 'Maintain material identification' was removed as it is not part of drilling and 'move workpiece' is part of the setup and orientation process. Also, these changes align with the common skill sets shared with the General Machinist and Tool and Die Maker trades.
- 9392 Perform Machine Grinding (formerly 5251):**
- Skills **Hole holes** and **Lap workpiece** were changed from mandatory to Optional
 - Skills added: **Dress Grinding Wheel** and **Select feed rate and depth of cut**
 - Skill deleted: 'Move workpiece'
 - Increased from 14 to **15** skills
 - Rationale: New skills added to this skill set as they are critical for apprentices to learn. **Hone holes** and **Lap workpiece** were changed to Optional as they are not necessarily required of Mould Makers when performing lathe work. 'Move workpiece' is part of the setup and orientation process. Also, these changes align with the common skill sets shared with the General Machinist and Tool and Die Maker trades.
- 9393 Perform Lathe Work (formerly 5252):**
- Skill **Maintain material identification** was changed from optional to Mandatory
 - Skill deleted: 'Move workpiece'
 - Decreased from 23 to **22** skills
 - Rationale: **Maintain material identification** was changed to mandatory as it is a critical skill for apprentices to learn. 'Move workpiece' is part of the setup and orientation process. Also, these changes align with the common skill sets shared with the General Machinist and Tool and Die Maker trades.

- 9394 Perform Milling (formerly 5253):**
- Skill **Maintain material identification** was changed from optional to Mandatory
 - Skills added: **Ream a hole** and **Tap a hole**
 - Skill deleted: 'Move workpiece'
 - Increased from 17 to **18** skills
 - Rationale: **Maintain material identification** was changed to mandatory as it is a critical skill for apprentices to learn. **Ream a hole** and **Tap a hole** are critical to milling operations and therefore added to this skill set. 'Move workpiece' is part of the setup and orientation process. Also, these changes align with the common skill sets shared with the General Machinist and Tool and Die Maker trades.
- 9395 Perform Computer Numerically Controlled (CNC) Machining (formerly 5254):**
- Skill Set name changed from 'Perform NC/CNC Machining' to
 - **Computer Numerically Controlled (CNC) Machining**
 - Removed all instances of Numerically Controlled (NC)
 - Skills added: **Prepare CNC set-up sheet, Input CNC, CAD/CAM program data into the machine memory, Determine tool path and calculate coordinates** and **Deburr workpiece**
 - Entire skill set was changed from optional to Mandatory
 - Several content changes
 - Increased from 13 to **16** skills
 - Rationale: All instances of Numerically Controlled was removed due to technological changes and advancements. Entire skill set was changed from optional to Mandatory because Mould Maker deals with contoured and 3D surfaces which utilizes CNC machining. Also, these changes align with the common skill sets shared with the General Machinist and Tool and Die Maker trades.
- 9396 Perform Electrical Discharge Machining (EDM) (formerly 5255):**
- Skills deleted: 'Input and verify part program to the EDM machine control' and 'Move workpiece'
 - Decreased from 12 to **10** skills
 - Rationale: Two (2) skills were deleted, and the content has been integrated within **Identify, select and set up EDM and components** and **Identify, select and set machine parameters**. 'Move workpiece' is part of the setup and orientation process. Also, these changes align with the common skill sets shared with the Tool and Die Maker trade.

- 9397 Create a Plan for the Mould-Building Process (formerly 5256):**
- Skill Set name changed from ‘Devise and Detail a Plan for the Mould- building Process’ to **Create a Plan for the Mould-Building Process**
 - Skills deleted: ‘Build tooling aids for mould-building process’, ‘Lay out template(s)’ and ‘Produce template(s)’
 - Decreased from 8 to **5** skills
 - Rationale: The term ‘create’ better describes this skill set. Templates are not used as often due to improvements in technology such as Laser Scanners and CMM equipment. **Develop the mould-building plan** incorporates the potential needs of fixtures and tooling to aid the mould building process.
- 9398 Manufacture Mould Components (formerly 5257):**
- Skill Set name changed from ‘Build/Fabricate Mould Components’ to
 - **Manufacture Mould Components**
 - Skills added: **Manufacture mould components** and **Deburr workpiece**
 - Skills deleted: ‘Produce lifters, inserts, and slides’ and ‘Move workpiece’
 - Increased from 10 to **11** skills
 - Rationale: **Manufacture mould components** was added to replace ‘Produce lifters, inserts, and slides’ in order to identify more features and components which may be required for a mould build such as core pins and ejector plates to align with today’s manufacturing methods. ‘Move workpiece’ is part of the setup and orientation process.
- 9399 Fit, Assemble and Repair Mould (formerly 5258):**
- Skill Set name changed from ‘Fit and Assemble a Mould’ to **Fit, Assemble and Repair Mould**
 - Skills added: **Repair mould, if required** and **Practice housekeeping in the workplace**
 - Skills deleted: ‘Install mould components in the spotting press’, ‘Spot the mould’ and ‘Move workpiece’
 - Decreased from 11 to **10** skills
 - Rationale: **Repair mould, if required** has been added to identify possible repair skills needed to keep moulds operational. Welding, brazing, and refinishing operations are critical to Mould Makers’ tasks and therefore was added to this section. ‘Move workpiece’ is part of the setup and orientation process.

	<p>9400 Finish and Polish the Moulding Surface (formerly 5259):</p> <ul style="list-style-type: none"> ▪ Skill Set name changed from ‘Finish/Polish the Moulding Surface’ to ▪ Finish and Polish the Moulding Surface ▪ Skills added: Practice housekeeping in the workplace ▪ Skill deleted: ‘Move workpiece’ ▪ Remains at 8 skills ▪ Rationale: Finish and Polish the Moulding Surface are critical skills for apprentices to learn and to better align current manufacturing methods and terminology. ‘Move workpiece’ is part of the setup and orientation process.
<p>General Notes & Rationale</p>	<ul style="list-style-type: none"> ▪ This Training Standard revision includes 15 skill sets and 199 skills (previously 15 skill sets and 204 skills). ▪ The Mould Maker Training Standard was last updated in 2003 and was no longer reflective of industry needs. All of the changes reflect the evolution of the trade and industry’s needs. ▪ The Precision Machining and Tooling Trade Board reviewed and approved the draft Training Standard. ▪ Due to a lack of quorum, the Ontario College of Trade’s Industrial Divisional Board (IDB) did not have the opportunity to review the Mould Maker Apprenticeship Training Standard. However, it is important to remember that this new Mould Maker Apprenticeship Training Standard was developed, reviewed, validated and approved by industry through an elaborate process with industry representation including; the working group, survey respondents and Trade Board. It is also important to acknowledge that because the IDB did not have a representative from the Mould Maker trade, any review by the IDB would have only been a confirmation that the process was completed and the benchmarks met (which it was) and would not have been a review of content which had already been reviewed, validated and approved by subject matter experts.