ICATT | APPRENTICESHIP PROGRAM

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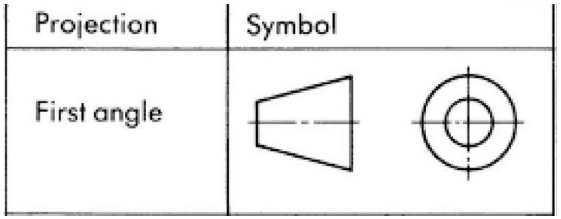
CNC MACHINING PRO
PART 1 AND PART 2
FINAL PROJECT
DISTRIBUTION DAY

AGENDA

- YELLOW Exam Prep Questions
- Final exam project drawings
- Final exam projects required documentation
- Practical and Written Exam Expectations
- Reminders
- Important Dates
- Exam Info

YELLOW PREP QUESTIONS

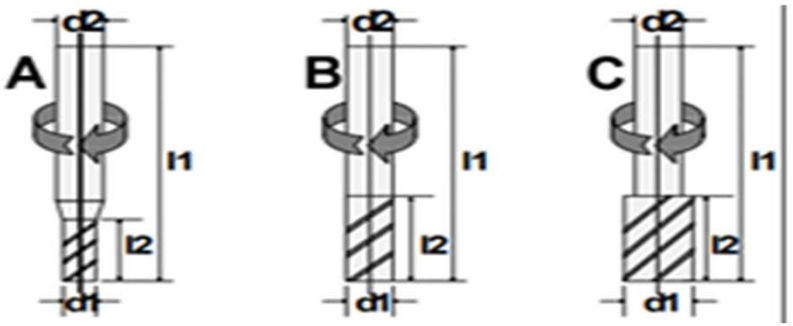
What material would be considered equivalent in the US?	S235JR+C – 1015 pg. 461 11SMn30+C – 1213 pg. 462 If the equivalent is not identified in the book or findable, reasonably close with similar characteristics
Are you allowed to use equivalent US material from what is listed on the preparation documents for this exam?	YES
What projection method is used for the blueprints for this exam?	
In the US, is it ok to use US standard tooling if the called for metric dimensions and tolerances in the prints can be met with that tooling?	YES!!, it is ok –document it in your planning and implementation docs and address it in your presentation

YELLOW PREP QUESTIONS

What diameter is the end mill A20N?	20mm

A20N

The letter in the front refers to the Form of the end mill
A: tapered cutting edge diameter
B: Cutting edge diameter equal to shank diameter
C: extended cutting edge diameter.



20: that's the diameter, 20mm
N: that's the application group. N = steel and cast iron with **n**ormal strength.

YELLOW EXAM PREP QUESTIONS

Calculating MASS

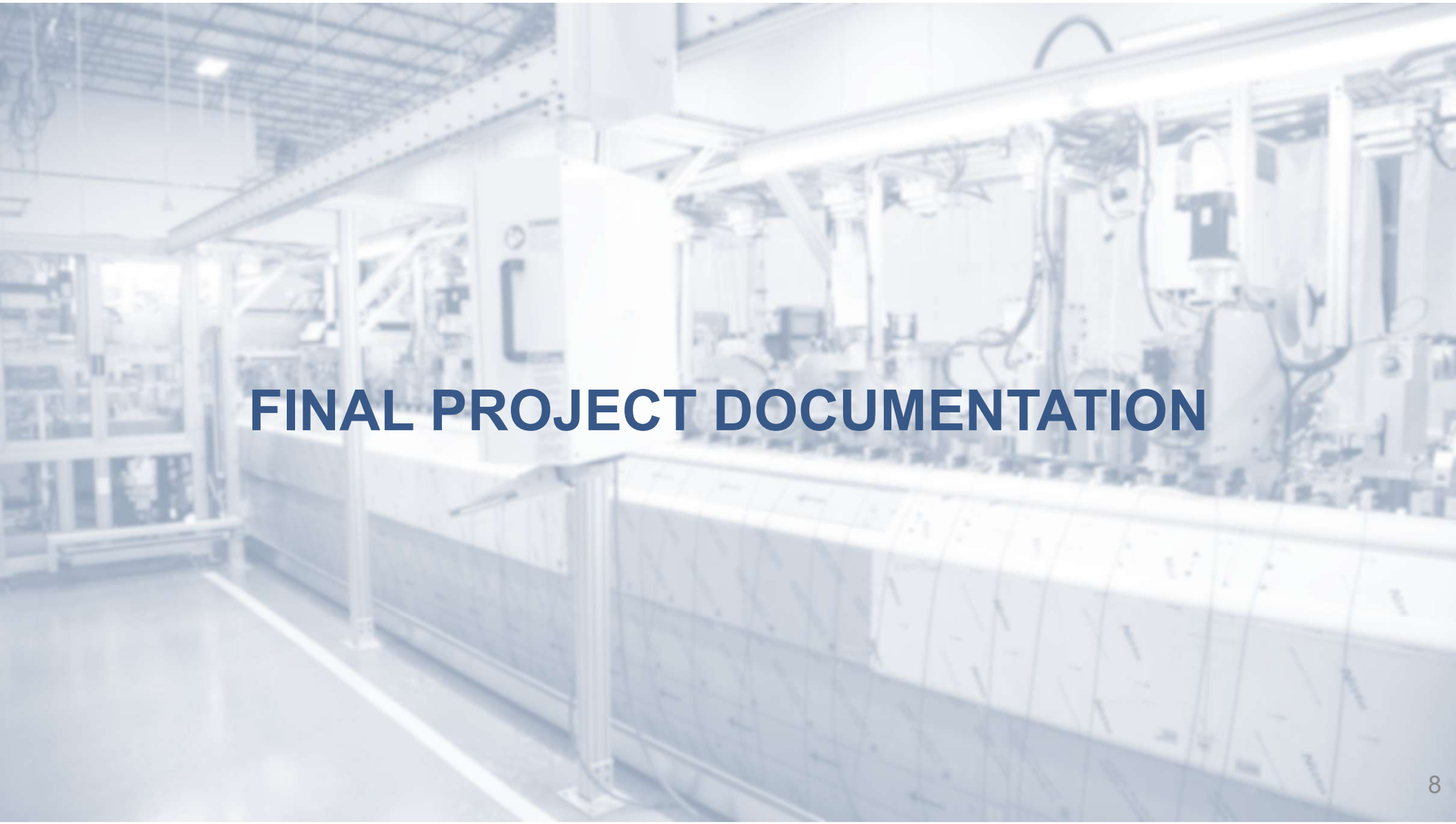
Density = kg/dm^3

Parts are provided in mm. – don't forget to convert to dm.

Volume x Density = Mass

Calculating MASS of a part:

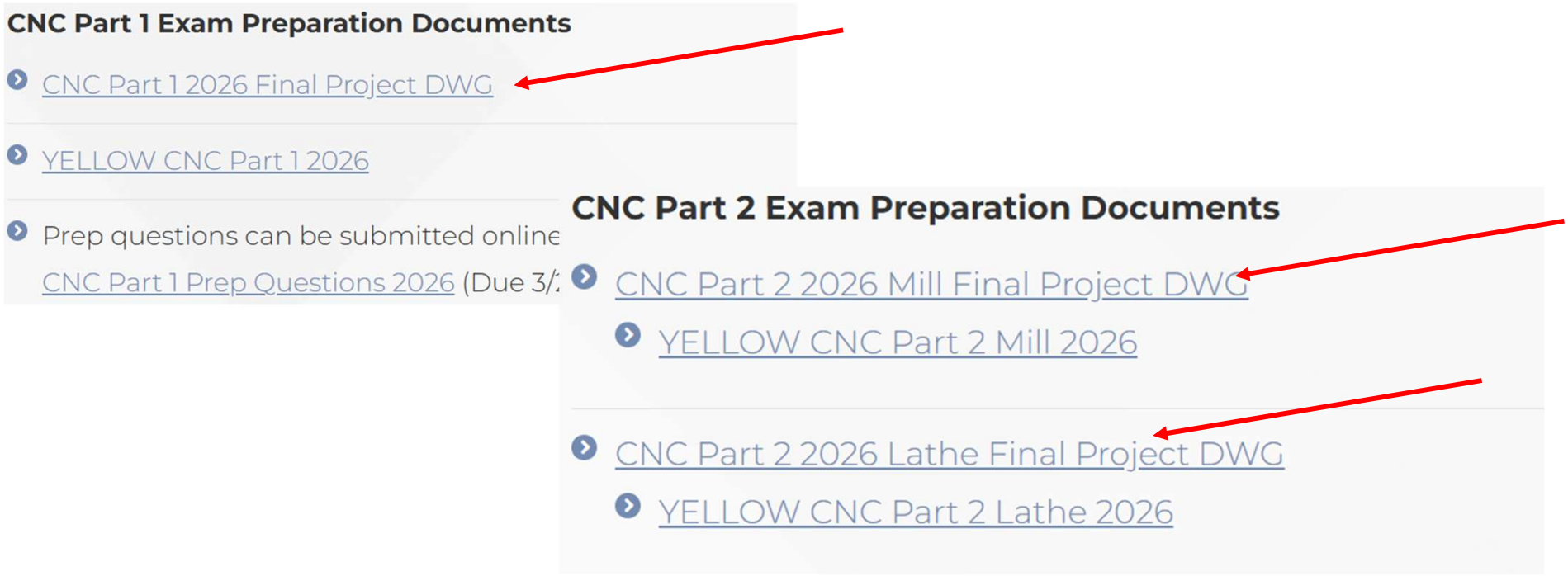
Blue Book Exercises 2 examples



FINAL PROJECT DOCUMENTATION

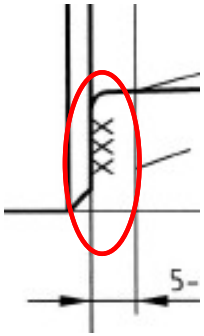
FINAL PROJECT DOCUMENTATION

This document is password protected and can be found here:



FINAL PROJECT DOCUMENTATION

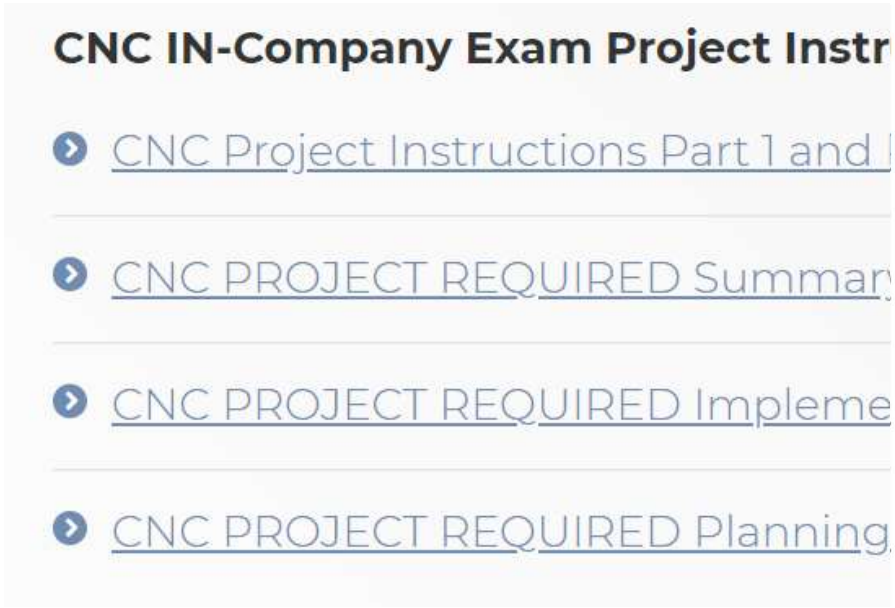
- Downloadable from the ICATT resource page
- Password protected
- Allotted time indicated in the title block of your drawings on the bottom right

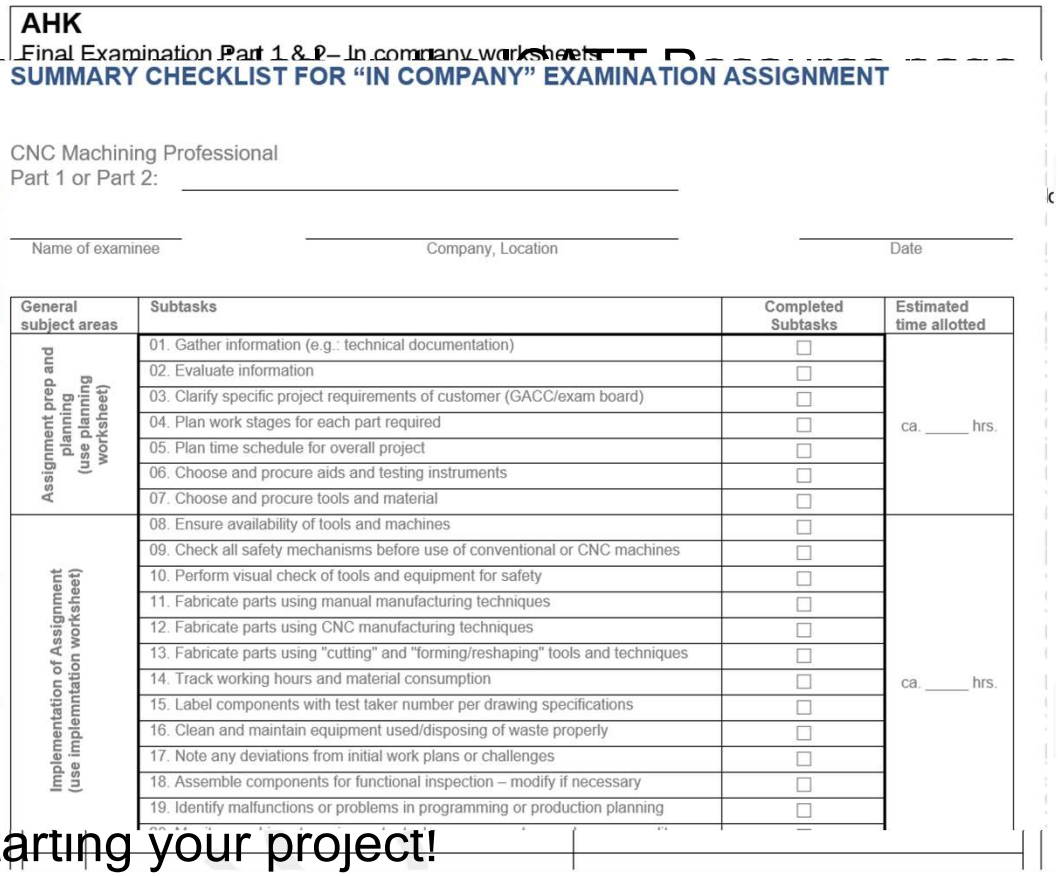


- Completed parts should be marked with your test taker ID. If more than 3 digits just use the LAST 3. **So 44477 – you would mark 477**
- Email coming to you and by end of day today with your test taker number and the password to your respective final project documents, where to send your product after June 3rd, as well as your written and oral exam test date, location and time.

INSTRUCTIONS AND REQUIRED DOCUMENTATION

FOLLOW the CNC Project Instructior





AHK

Final Examination Part 1 & 2 – In company worksheets

SUMMARY CHECKLIST FOR "IN COMPANY" EXAMINATION ASSIGNMENT

CNC Machining Professional

Part 1 or Part 2: _____

Name of examinee | Company, Location | Date

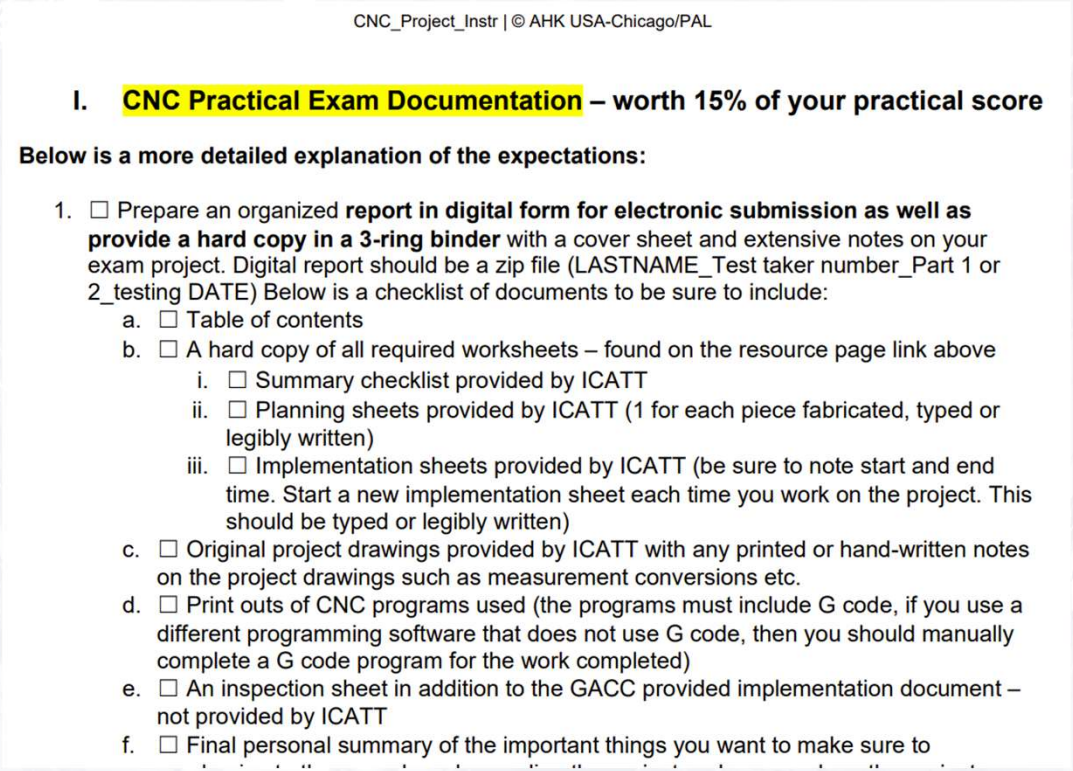
General subject areas	Subtasks	Completed Subtasks	Estimated time allotted
Assignment prep and planning (use planning worksheet)	01. Gather information (e.g.: technical documentation)	☐	ca. _____ hrs.
	02. Evaluate information	☐	
	03. Clarify specific project requirements of customer (GACC/exam board)	☐	
	04. Plan work stages for each part required	☐	
	05. Plan time schedule for overall project	☐	
	06. Choose and procure aids and testing instruments	☐	
	07. Choose and procure tools and material	☐	
Implementation of Assignment (use implemntation worksheet)	08. Ensure availability of tools and machines	☐	ca. _____ hrs.
	09. Check all safety mechanisms before use of conventional or CNC machines	☐	
	10. Perform visual check of tools and equipment for safety	☐	
	11. Fabricate parts using manual manufacturing techniques	☐	
	12. Fabricate parts using CNC manufacturing techniques	☐	
	13. Fabricate parts using "cutting" and "forming/reshaping" tools and techniques	☐	
	14. Track working hours and material consumption	☐	
	15. Label components with test taker number per drawing specifications	☐	
	16. Clean and maintain equipment used/disposing of waste properly	☐	
	17. Note any deviations from initial work plans or challenges	☐	
	18. Assemble components for functional inspection – modify if necessary	☐	
	19. Identify malfunctions or problems in programming or production planning	☐	

Review documentation BEFORE starting your project!

PRACTICAL EXAM EXPECTATIONS

- CNC Practical Exam Documentation – 15%
- CNC Presentation – 15%
- CNC Technical discussion/Oral exam – 20%

- Planning questions and Exam Board inspection – 50%



CNC_Project_Instr | © AHK USA-Chicago/PAL

I. CNC Practical Exam Documentation – worth 15% of your practical score

Below is a more detailed explanation of the expectations:

1. ☐ Prepare an organized **report in digital form for electronic submission as well as provide a hard copy in a 3-ring binder** with a cover sheet and extensive notes on your exam project. Digital report should be a zip file (LASTNAME_Test taker number_Part 1 or 2_testing DATE) Below is a checklist of documents to be sure to include:
    a. ☐ Table of contents
    b. ☐ A hard copy of all required worksheets – found on the resource page link above
        i. ☐ Summary checklist provided by ICATT
        ii. ☐ Planning sheets provided by ICATT (1 for each piece fabricated, typed or legibly written)
        iii. ☐ Implementation sheets provided by ICATT (be sure to note start and end time. Start a new implementation sheet each time you work on the project. This should be typed or legibly written)
    c. ☐ Original project drawings provided by ICATT with any printed or hand-written notes on the project drawings such as measurement conversions etc.
    d. ☐ Print outs of CNC programs used (the programs must include G code, if you use a different programming software that does not use G code, then you should manually complete a G code program for the work completed)
    e. ☐ An inspection sheet in addition to the GACC provided implementation document – not provided by ICATT
    f. ☐ Final personal summary of the important things you want to make sure to

PRACTICAL EXAM EXPECTATIONS

Practical Exam in-company time expectations and documentation:

Trainers facilitate time expectation.

Apprentice must work on his/her own.
Apprentice must RECORD TIME on their “implementation” worksheets and include it in their “summary checklist” document!

- Part 1 – **5.5 hours** to complete project – time to complete/finalize required documentation not included in 5.5 hours.
- Part 2 – **5 hours** to complete project – time to complete/finalize required documentation not included in 5 hours.

PRACTICAL EXAM EXPECTATIONS

TIME ALLOTMENT

- Planning, machine set up, programming, and machining/running the part should be included in your total allotted time.

HOWEVER,

- If you need to do Metric to US conversion, do this outside of the allotted time.
- You may do basic planning to allow you to select and procure tooling needed for the project outside of the allotted time.
- Machine can be zeroed out, checked and tool holders prepared outside of allotted time – tools should not already be set up in the machine.
- You can complete, update, formalize or modify required documentation outside of the allotted time.

PRACTICAL EXAM EXPECTATIONS

MANUAL MACHINING

- You can use a manual mill/lathe to machine your final project instead of a CNC machine
  - Same time allotment still applies
- If you are using a manual mill/lathe to machine, then you do not need to include any G-code programming.
- If you are taking the Part 2 exam, some portion of the project is expected to be programmed – not all can be done on manual, you will likely be docked points if you do not use CNC.

PRACTICAL EXAM EXPECTATIONS

PROGRAMMING

- If you are using a CNC machine that does use G-code, include a print-out in your documentation.
- If you are using a CNC machine that does NOT use G-code then you still need to write up a G-code program and include it in your documentation. While the conversational programming is considered part of the time allotted, the write up of G-code for your documentation would not be included in the time.

- You do not have to do the final project all at once, you can break up your time if needed. Record your time!

PRACTICAL EXAM EXPECTATIONS

Your practical project and a hard copy of your required documentation is due June 3rd

A digital copy of your required documentation is ALSO due by the start of your written exam on June 3rd

Bring your project and your own caliper and other measuring tools to the written exam to be able to complete an inspection!

PRACTICAL EXAM EXPECTATIONS

ALL apprentices will ship their projects and a hard copy of their binder to the location specified by the time specified in your personalized emails:

Company	Location for delivery of project
PCS Company	Henry Ford College
Seyer Part 1	Buhler
Seyer Part 2	Endress + Hauser
Wittenstein, Hermann Ultrasonics, EDM, Haering Precision	Endress + Hauser

WRITTEN EXAM DAY EXPECTATIONS

Online written exams will include:

- Part 1 –
  1. Theory - Multiple choice and Short Answer 100 min total
  2. Planning - Writing out a specific work plan related to your practical project 30min
  3. Inspection - An inspection of your practical project parts (bring your project and your own caliper and other measuring tools) 40min allowed

  You will be provided note paper that will be collected should you need to expand on any of your answers in the online system or feel that you could not properly enter an equation in the short answer sections.

WRITTEN EXAM DAY EXPECTATIONS

Online written exams will include:

- Part 2 –
  1. Theory – Test 1 Multiple choice and Short answer 115min
  2. Theory – Test 2 (Project 1 or 2) specific to mill or lathe Multiple choice and Short answer 115min
  3. Theory - OSHA and Worker's rights Multiple choice and Short answer 60min
  4. Planning – 4 questions specific to your practical exam project and writing out a specific work plan for a predetermined part from the practical project 30min
  5. Inspection - An inspection of your practical project parts (bring your project and your own caliper and other measuring tools) 45min allowed

  You will be provided note paper that will be collected should you need to expand on any of your answers in the online system or feel that you could not properly enter an equation in the short answer sections.

WRITTEN EXAM SCHEDULE

Written Exam Part 1 Agenda – Wednesday, June 4th - Please arrive 15 min before start to check-in. Note paper and reference drawings will be provided.

12:45am	CNC Part 1 **Start time!** access online testing platform and written exam instructions
1:00pm	CNC Part 1 **Start Exam -** (100 min)
2:40pm	CNC Part 1 **End Exam**
3:10pm	CNC Part 1 Return for Planning instructions
3:15pm	C
3:45pm	C
~3:50pm	C
~3:50pm	C
	ec
~4:30pm	C

EXAM AGENDAS 2026

WRITTEN EXAMINATIONS

HTC Eden Prairie BA Part 2 Written Exam Agenda 2026 – June 3

Written Exam Part 2 Agenda – Wed. June 4th – Please arrive 15 min before start to check-in.
Note paper and reference drawings will be provided.

9:00am	CNC Part 2 **Start time!** access online testing platform and written exam instructions
	5 min)
	er's (60 min)
3:00pm	CNC part 2 **End Exam 3**
3:10pm	CNC Part 2 Return for Planning instructions
3:15pm	CNC Part 2 **Start Practical Planning** (30 min)
3:45pm	CNC Part 2 **End Practical Planning**
~3:50pm	CNC Part 2 Return for Inspection instructions
~3:50pm	CNC Part 2 **Start Inspection** (40 min) – you will need your own measuring equipment
~4:30pm	CNC Part 2 **End Inspection**

You bring your project and measuring tools!

REMINDER - EXAM EXPECTATIONS

Part 2 exam

To pass and earn your certification you must:

- Pass the practical with a min of 50%

  AND

- Pass the written with a weighted combined min of 50%

  BUT

  - Have no written score (3 different subject areas) lower than 30%

    AND

  - Have scores above a 50% in at least 2 of the 3 subject areas

  AND THEN

- Have a weighted combined part 1 and part 2 score of at least 50%

If your written scores are insufficient you will be offered a Supplemental Oral Exam

REMINDERS

LOGBOOKS

ICATT 3rd year apprentices - submit logbooks electronically to scurek@gaccmidwest.org by June 30th including all recorded work hours through at least May 31st, 2026

CALCULATORS

- Non-programmable
- Non-communicable
- Must be able to do trigonometry (sin/cosin/tan)

BLUE BOOK ERROR

- Pg 330, 332, 333 – Cutting velocity should be m/min!

IMPORTANT DATES

Applies to all ICATT apprentices		
DATE	WHO?	Description of EVENT or Deadline
Friday, May 8th	Final Study Prep Q&A 12pm-1pm CST	Optional virtual event

EXAM DATES

CNC Part 1 & 2 Written Exam and Practical project due date!		
College of Apprenticeship	Testing Location	Written exam and project due date
SWIC	SWIC	Wednesday, June 3, 2026
Elgin CC	McHenry CC	
Macomb	Macomb	
GACC South	Haering Precision	

CNC Part 1 & 2 Oral Exam		
Company of Apprenticeship	Testing Location	Testing date
PCS Company	Virtual (TEAMS)	June 17, 2026
HU / Wittenstein / EDMIS / Haering		June 17, 18, 2026
Seyer		June 19, 22, 23, 2026

IMPORTANT INFORMATION

By the end of the day today apprentices will be receiving an email with:

1. Your written exam date, location, time (CST)
2. Confirmation of Part 1 or Part 2 Mill/Lathe and the expected allotted time for the project
3. The password to your FINAL Exam Project documentation
4. Your test taker number that you will stamp on your parts
5. Your virtual test date and time (CST)

If you do not see this email by Mon – contact me! If you have any questions or concerns once you get the email, contact me!