

Plumbing/HVAC

Skills Indicators

Student: _____
 Address: _____
 City, State Zip: _____
 Telephone: _____



FREDERICK COUNTY PUBLIC SCHOOLS



Career & Technology Center
 7922 Opossumtown Pike
 Frederick, MD 21702
 301-694-6920

COMPETENCY CERTIFICATION RATINGS GUIDE

- Mastered** - Independently meets the industry level standard for knowledge or performance
Assist - Requires some assistance to meet the industry level standard for knowledge or performance
Attempt - Unable to meet the industry standard standard for knowledge or performance without significant assistance
Blank - No exposure or experience to date

ABC APPRENTICESHIP CORE

Mastered	Assist	Attempt	A: Basic Safety (ABC 00101)
initials/date	date	date	
/			1. Written test (70%)
/			2. Practical Test (100%)

Mastered	Assist	Attempt	B: Basic Math (ABC 00102)
/			1. Written test (70%)
/			2. Practical Test (100%)

Mastered	Assist	Attempt	C: Introduction to Hand Tools (ABC 00103)
/			1. Written test (70%)
/			2. Practical Test

Mastered	Assist	Attempt	D: Introduction to Power Tools (ABC 00104)
/			1. Written test (70%)
/			2. Practical Test (100%)

Mastered	Assist	Attempt	E: Introduction to Blueprints (ABC 00105)
/			1. Written test (70%)
/			2. Practical Test (100%)

Mastered	Assist	Attempt	F: Basic Rigging (ABC 00106)
initials/date	date	date	
/			1. Written test (70%)
/			2. Practical Test (100%)

ABC PLUMBING 1 CURRICULUM

Mastered	Assist	Attempt	A: The Plumbing Trade (ABC 02101)
/			1. Discuss how the plumbing trade developed as a need to improve public health
/			2. Explain how water supply and sewage treatment facilities function

Mastered	Assist	Attempt	B: Basic Plumbing Tools (ABC 02102)
/			1. List all basic measuring, layout and cutting tools
/			2. List all basic drilling, boring and reaming tools
/			3. Name all basic hammers, screwdrivers and vises
/			4. Care for and use the tools safely and efficiently

ABC Plumbing 1 Curriculum Continued

Mastered Assist Attempt

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C: Math for Plumbers (ABC 02105)

1. Measure pipe using the following methods:
 - a. end to end
 - b. end to center
 - c. center to center
 - d. end to face
 - e. face to face
 - f. face to crotch
2. Determine end to end dimensions by figuring fitting allowance and make-up
3. Use a framing square to find the center of fittings
4. Use a framing square to figure 45-degree offsets

Mastered Assist Attempt

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D: Introduction to Plumbing Blueprint Reading (ABC 02106)T

1. Interpret information from given drawings
2. Make isometric sketches from other drawings
3. Make schematic drawings from orthographic drawings
4. Make orthographic piping drawings

Mastered Assist Attempt

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E: Reading Residential Plumbing Drawings (ABC 02107)

1. Obtain information about piping systems from a set of residential plans
2. Explain the relationship between drawings, specifications and the local plumbing code
3. Prepare a material takeoff for DWV and cold water piping
4. Summarize the list of materials required in a form that could be used to order plumbing supplies from a wholesaler
5. Prepare an isometric sketch of a piping system
6. Identify basic differences in the plumbing plans for several different styles of houses
7. Explain how the plumbing drawings for different residences vary
8. Describe how different code requirements affect various types of plans

Mastered Assist Attempt

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F: Joining Plastic Pipe and Fittings (02201)

1. Interpret information from labels found on plastic pipe
2. Make solvent welded joints with plastic pipe and fittings

Mastered Assist Attempt

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G: Soldering and Brazing Copper Pipes and Fittings (ABC 02202)

1. Calculate tubing length requirements
2. Set up oxyacetylene equipment safely and properly
3. Prepare and solder copper tubing and fittings
4. Prepare and braze copper tubing and fittings

Mastered Assist Attempt

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H: Joining Galvanized and Black Pipe and Fittings (ABC 02203)

1. Identify different fittings and state their uses
2. Identify specific tools and state their uses
3. Cut, ream, thread and assemble steel pipe using hand tools / within 1/16"

Mastered Assist Attempt

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I: Joining Cast-Iron Hub and Spigot Pipe and Fittings (ABC 02205)

1. Join cast iron pipe using compression joints
2. Join cast iron pipe using lead and oakum joints
3. Join No-Hub cast iron pipe and fittings

Mastered Assist Attempt

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J: Making Flare and Compression Joints with Copper Pipe (ABC 02206)

1. Make flared joints using a flaring tool
2. Make flared joints using an impact flaring tool
3. Make compression joints

Mastered	Assist	Attempt
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- K: Installing Traps and Interceptors (ABC 02207)**
1. Describe the different types of traps and how they work
 2. Identify the critical dimensions in trap installation
 3. Describe the purpose of interceptors and how each type functions
 4. Describe the basic installation and maintenance requirements for interceptors

Mastered	Assist	Attempt
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- L: Fitting and Clean Out Requirements for DWV Piping (ABC 02208)**
1. Identify the different types of DWV fittings and discuss their applications
 2. Select proper DWV fittings in accordance with local code requirements
 3. Collect a sputum specimen
 4. Assist a patient to deep breath and cough
 5. Provide care for a patient receiving oxygen

Mastered	Assist	Attempt
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- M: Installing Natural Gas Piping Systems (ABC 02501)**
1. Identify local and regional code regulations which apply to natural gas systems
 2. Identify natural gas plumbing materials and their specific uses
 3. Read plumbing drawings and create piping layouts
 4. Construct a natural gas piping system from gas main to the house
 5. Layout a piping system within a house

Mastered	Assist	Attempt
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- N: Installing LPG Piping Systems (ABC 02502)**
1. Identify local and national code regulations that apply to LPG systems
 2. Identify LPG plumbing materials and their specific uses
 3. Identify the different storage containers and their advantages
 4. Read plumbing plans and create LPG system layouts
 5. Construct LPG piping systems
 6. Install LPG appliances

Mastered	Assist	Attempt
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- O: Installing Fuel Oil Piping Systems (ABC 02503)**
1. Identify local and regional code regulations which apply to fuel oil systems
 2. Identify fuel oil plumbing materials and their specific uses
 3. Read plumbing drawings and create pipe system layouts
 4. Construct a fuel oil piping system from the storage tank to the house
 5. Layout a piping system within a house
 6. Test and bleed a newly installed system
 7. Install appliances

ESSENTIAL SKILLS

Mastered	Assist	Attempt
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- A: Safety**
1. Follows general lab/ worksite safety rules
 2. Demonstrate safe use of tools and equipment
 3. Keep work area clean and orderly

Mastered	Assist	Attempt
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- B: Measurement**
1. Linear measurements using 1/2, 1/4, 1/8 and 1/16 inch
 2. Use accurate measurements within 1/16" accuracy
 3. Use a level to determine grade and plumb

Mastered	Assist	Attempt
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- C: Application of Academic Skills**
1. Communicate directions clearly
 2. Communicate with co-workers
 3. Complete appropriate written records/reports
 4. Obtain information from technical manuals/ Plumbing code
 5. Apply math functions appropriate to the program area

Mastered Assist Attempt

Mastered	Assist	Attempt
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- D: Installing Fixtures**
1. Assemble and install bathtub and shower
 2. Assemble and install lavatory and vanity
 3. Assemble and install water closet
 4. Install water heater
 5. Install submersible water pump
 6. Connect legal traps to all fixtures
 7. Install kitchen fixtures (sink, faucet, dishwasher and disposal)

Mastered Assist Attempt

Mastered	Assist	Attempt
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- E: Career Development**
1. Prepare a resume
 2. Practice interviewing skills
 3. Complete a job application
 4. Applied computer applications

Mastered Assist Attempt

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- F: Duct Systems**
1. Fabricate ductwork
 2. Insulate ductwork
 3. Install ductwork
 4. Utilize sheet metal shop tools
 - a. brake
 - b. shear
 - c. Pittsburgh
 - d. bar folder
 - e. box brake

Mastered Assist Attempt

Mastered	Assist	Attempt
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- G: Rough in skills**
1. Plans rough in for plumbing fixtures
 2. Lays out accurately
 3. Drills proper holes
 4. Explains the system
 5. Demonstrates nail plate location

Advanced Skills

Mastered Assist Attempt

Mastered	Assist	Attempt
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- A: Fixtures and applications**
1. Install flush valve units in water closets and urinals
 2. Troubleshoot and repair water heaters
 3. Diagnose and repair faucet problems
 4. Assemble disassembled faucet units
 5. Troubleshoot and repair water pump system
 6. Install sump and sewage pump system
 7. Demonstrates techniques of clearing block lines

Mastered Assist Attempt

Mastered	Assist	Attempt
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- B: Heating Systems**
1. Install boiler
 2. Install furnace
 3. Install radiant heating
 4. Install circulator pump
 5. Install ceiling heater
 6. Demonstrate proper venting of oil and gas flues
 7. Clean and adjust boiler

Mastered Assist Attempt

Mastered	Assist	Attempt
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- C: Technical Training**
1. Size and layout water supply and DWV lines
 2. Develop material list from plans
 3. Ordering material (telephone, e-mail fax)
 4. Checking in orders / inventory

MASTERY OF CONTENT

	# of skills mastered
132	# of total skills
0.0%	MASTERY

INTERNSHIPS/WORK STUDY	
Employer:	
Address:	
Contact/Supervisor:	
Phone #:	
Employment Dates:	
Job title/description:	

ATTENDANCE & EMPLOYABILITY SKILLS
Dates of enrollment:
Attendance:
Ratings Scale
3 - Exemplary
2 - Good
1 - Fair
0 - Poor
RELATIONS WITH OTHERS
(effectiveness in working with students, instructors, and others: cooperation:show of respect)
DEPENDABILITY
(attendance, punctuality, adherence to schedules and deadlines consistency and results, perserverance)
WORK ATTITUDES
(willingness to learn, willingness to accept and profit from evaluation, enthusiasm, initiative, commitment, pride in work)
COMMUNICATIONS
(listening, speaking, and nonverbal skills; effectiveness in communicating with students, teachers, and others)
SAFETY
(follows safety guidelines for equipment and tool operations and considers the safety ramifications of all actions in the workplace)
Additional Comments:

RELATED STUDENT ACHEIVEMENT INFORMATION
Participation in SkillsUSA VICA (Activities/Events/Offices):

Frederick Community College Construction Management Course
Semester: _____
Final Letter Grade: _____

I certify that the ratings on this performance profile for **student name** are the result of personal observations and evaluations and further certify that **student name** has mastered **X** of the **Y** skills that were covered in the Plumbing/HVAC program.

Signature _____ *Date*
 Instructors Name Date

I certify that the ratings included in this competency profile were completed by my HVACP instructor.

Signature _____ *Date*
 Student's Name Date